THE INTEGRATION OF DIGITAL MEDIA TECHNOLOGY TO SUPPORT CLASSROOM-BASED COMMON CORE INSTRUCTION

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Abstract

Digital media technology has immense instructional potential when integrated effectively into classroom-based learning activities. The practice of utilizing digital media to support instruction is consistent with the Universal Design for Learning paradigm to ensure access to the curriculum for all learners. This pedagogical practice is also consistent with principles of positive behavior support derived from ecological systems and learning theory and has the potential to facilitate positive outcome-based measures of achievement and adaptive behavior in a diverse student population. The Common Core Digital Media Index (CCDMI) is a website designed during this study to provide educators user-friendly access to digital media resources. Current practices and perceptions of teachers and behavioral consultants were explored with respect to digital media facilitated Common Core instruction and the potential utility of the CCDMI for its intended purpose. Study participants were surveyed with a pilot tested instrument and quantitative analyses were performed to examine trends in current perceptions and practices. Findings indicate high levels of personal time used to identify instructional resources as the most significant variable associated with positive perceptions of the utility of the CCDMI. Teachers that perceive digital media to be useful in supporting student engagement, motivation to learn and on-task behavior are significantly more likely to perceive the CCDMI to be useful for its intended purpose. Additional significant relationships were observed between restrictiveness of educational environment and endorsements indicating digital media as useful in supporting instruction. Based upon these findings, training and practice recommendations were made for teachers and behavioral consultants. Training

recommendations highlighted professional development opportunities and access to time and resources to support digital media facilitated instruction. Practice recommendations underscored the potential for digital media to function as a clinically powerful antecedent variable as well as a reinforcer to support student behavior that facilitates learning. The intentions of this dissertation are to inform best practices in education and school psychology, to provide information to improve professional development opportunities for teachers and behavioral consultants and ultimately to support universally designed learning and behavioral outcomes associated with the adaptive functioning of diverse learners.

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I have my good pearls on, Grandma.

You are still our shining star.

I love you more…

Table of Contents

PAGE

Abstract ii

Acknowledgements iv

List of Tables xi

List of Figures xiii

Chapter

I. Introduction 1

A. Background and Rationale 1

II. Review of the Literature 31

A. Ecological Systems Theory 31

a. Schools as a System 31

b. Pedagogical Variables 37

B. Positive Behavior Interventions & Supports 48

a. Multilevel Behavioral Support in the Natural Setting 48

b. The Role of the Behavioral Consultant 49

c. Antecedent Control 51

C. Summary of the Problem to be Investigated 54

D. Research Questions 58

III. Method 60

A. Pilot Survey Participants 60

B. Final Survey Participants 62

C. Procedure..... 69

a. Pilot Survey..... 71

b. Final Survey..... 72

D. Instruments..... 72

a. Common Core Digital Media Index..... 72

b. Pilot Survey..... 76

c. Final Survey..... 79

C. Data Analysis..... 81

IV. Results..... 84

A. Teacher Perceptions and State of Practice..... 84

a. Utility of the Common Core Digital Media Index (CCDMI)... 91

b. Correlational Analyses..... 93

B. Behavioral Consultant Perceptions and State of Practice..... 98

a. Utility of the Common Core Digital Media Index (CCDMI)... 104

IV. Discussion..... 106

A. Interpretation of Findings..... 106

a. Frequency of Digital Media Integration..... 106

b. Instructional and Students Factors Supported by Digital Media Integration..... 107

c. Barriers to Integrating Digital Media to Support Instruction.... 111

d. The CCDMI as a Practical Resource to Support Common Core Instruction..... 112

B. Limitations..... 114

C. Implications 120

D. Summary and Future Directions 123

References 129

Appendices

A. Informed Consent –Teacher 144

B. Informed Consent –Behavioral Consultant 146

C. Final Survey - Teacher 148

D. Final Survey – Behavioral Consultant 152

List of Tables

Table 1 Demographics of expert teacher pilot participants 61

Table 2 Demographics of expert behavioral consultant pilot participants 62

Table 3 Final survey participant demographic data 66

Table 4 Technology personal use by frequency and type/purpose of technology 68

Table 5 Current integration of digital media by teachers during Common Core instruction 86

Table 6 Types of digital media technology integrated by teachers during Common Core instruction 86

Table 7 Teacher interest in integrating digital media into Common Core lesson plans more frequently 87

Table 8 Most to least ranked important characteristics of digital media technology 88

Table 9 Teacher perceptions of the utility of digital media to support student factors 89

Table 10 Most to least ranked significant barriers to integrate digital media 90

Table 11 Most to least ranked time periods teachers search for digital media for lesson plans 91

Table 12 Teacher perceived utility of the CCDMI for its intended purpose 92

Table 13 Teacher reported likelihood and purposes for which to utilize the CCDMI 93

Table 14 Goals identified in school-based behavioral consultation 99

Table 15 Level of importance of assessing key factors in classroom-based behavioral consultation 100

Table 16 Factors that interfere with fidelity of implementation 101

Table 17 Characteristics that make digital media technology useful in differentiating instruction - Behavioral consultants....102
Table 18 Behavioral consultant perceptions of the utility of digital media to support student factors....103
Table 19 Behavioral consultant perceived utility of the CCDMI for its intended purpose....104
Table 20 Consultant reported likelihood and purposes for which to reference the CCDMI....105

List of Figures

Figure 1 NSTM Four Factor Model 23

Chapter I

Introduction

Background and Rationale

The theoretical framework of this dissertation includes the integration of principles of learning theory within the Ecological Systems model of professional behavioral consultation. This framework will be applied to inform best practices in school psychology and education in supporting twenty-first century student achievement. Current pedagogical practices with respect to the integration of digital media technology into Common Core State Standards lesson development and instruction will be explored. These practices will be explored as interventions consistent with the Universal Design for Learning paradigm to support positive behavior as well as positive outcome-based measures of achievement in a diverse student population. The systemic complexities encountered when integrating instructional technology and providing pro-active positive behavior supports to students that engage in challenging behaviors in the natural setting will be examined. This dissertation will culminate in the development of a digital media index for school psychologists and professional educators to assist in the integration of technology mediated instruction in the classroom. This digital media index will be aligned with the Common Core State Standards (CCSS) for English Language Arts-Literacy and Mathematics in kindergarten through 5th grades. It is essential to explore the

integration of instructional technology in terms of student engagement in education for several reasons indicated and subsequently discussed below.

1) Universal access to instructional technology must be ensured for all students.
2) Universal access to the curriculum must be ensured for all students.
3) All students must be prepared for success in the twenty-first century.
4) Supporting technology-mediated instruction reflects best practices in education and school psychology.
5) Educators could benefit from a user-friendly digital media index to utilize when developing core curricular lesson plans.

Universal Access to Instructional Technology Must Be Ensured For All Students

With the ongoing incorporation of technology solutions to augment alignment of local, state and federal performance standards, it is crucial for stakeholders and decision-makers to continue to ensure universal access to curriculum. Federal mandates beginning with Individuals with Disabilities Education Act (IDEA) of 1990 (IDEA, 1990) through and including the Twenty-First Century Communications and Video Accessibility Act of 2010 require that students with disabilities are provided with universal access to curriculum and technologies offered to general education peers (Twenty-First Century Communications and Video Accessibility Act, 2010). In fact, under No Child Left Behind [NCLB], the Enhancing Education Through Technology Act of 2001 defines federal goals as effectively using technology in elementary and secondary schools to improve student academic achievement and ensuring that every student is technologically literate by the end of eighth grade, regardless of student demographic variables or disability (Enhancing Education Through Technology Act, 2001). Currently, all school districts in the State of New Jersey must submit a Three-Year Educational Technology Plan to the New Jersey State Department of Education (NJDOE, 2007). This plan must outline goals and objectives specified by the NJDOE for the appropriate and effective

integration of educational technology into core curriculum subject areas, including professional development support for educators. Districts must submit technology plans to the NJDOE for approval in order to continue to receive federal funding for telecommunications and internet access via the NCLB Enhancing Education Through Technology Act and the Telecommunications Act of 1996 (more commonly referred to as E-Rate funding) (NJDOE, 2007).

Collectively, these pieces of federal legislation define the infusion of and universal access to twenty-first century technology as a crucial focus of current educational reform. Local education agencies in the State of New Jersey may lose federal funding in the absence of clearly delineated and measurable goals and objectives to integrate technology into core curricular instruction. Further, local education agencies may be cited with civil rights violations should they adopt technological advancements to access curriculum that pose a barrier for access to students with disabilities. In turn, when appropriate, evaluations for additional assistive technologies to reduce barriers to curriculum access must be conducted for students with relevant disabilities.

Universal Access to the Curriculum Must be Ensured for all Students

Government reform initiatives have significant impact on the education of students who are in need of academic/behavioral accommodations. The Education for All Handicapped Children Act of 1975 (EAHCA, 1975), with revisions up to and including, the 2004 Individuals with Disabilities Education Improvement Act of 2004 (IDEIA), calls for the free and appropriate public education for children with disabilities in a least restrictive environment (LRE) (EAHCA, 1975; IDEIA, 2004). Subsequently, the 2002 No Child Left Behind Act of 2002 (NCLB) mandates that schools be held accountable for

the continual progress of students' academic achievement, as determined by standardized testing procedures (NCLB, 2002). Schools not meeting accountability standards, as evident in required Adequate Yearly Reports (AYP), risk losing federal funding. Prior to the Education for All Handicapped Children Act in 1975, more than one half of students with disabilities were receiving no educational services, and many were institutionalized, receiving little or no educational instruction (Williamson, McCleskey, Hoppey & Rentz, 2006). The EAHCA, renamed The Individuals with Disabilities Education Act in 1990, prompted the initiative of including children with disabilities in general education classrooms. Major revisions occurred in 1997 and again in 2004, when provisions to IDEA were aligned with the No Child Left Behind Act of 2002. IDEIA requires that all children, regardless of the severity of their disability, receive a free and appropriate public education within an age appropriate setting existing along a continuum of least restrictive environments. The law favors the inclusion of children with disabilities in general education classrooms, and requires that each child's individualized education plan (IEP) delineate provisions and services offered to the child, assuring their utmost inclusion with their non-disabled peers.

The manner in which general curriculum is delivered often creates barriers to equal access related to the symptomatic nature of students' disability. These barriers to learning must be accommodated to ensure equal access to the curriculum. Public Law 94-142 (Education for All Handicapped Students Act, 1994) provided federal funding to states to support programs that provide thorough and efficient education for all students, regardless of handicapping condition in public schools. The intent of this law, now also encompassed via IDEIA, was to challenge schools to design individualized programs for

students with special needs that would facilitate the educational process in spite of the students' disabling condition.

Federal legislation mandates that districts provide educational programming that is individualized to meet the unique needs of each student with disabilities and that is structured and delivered in a manner that allows for each student to benefit from his or her learning environment. State educational codes mandate the implementation of specific and individualized accommodations to support the functioning of students with disabilities in the classroom and in the school. IDEA specifies 13 categories of disabilities – ranging from physical to cognitive, learning, developmental and emotional disabilities – under which eligibility is determined for students to receive special education and related services. These categories of disabilities include, but are not limited to, students with intellectual disabilities, hearing, visual and/or orthopedic impairments, serious emotional disturbances, autism, specific learning disabilities and other health impairments. Learner characteristics associated with educationally classified disabilities may include difficulties with decoding and comprehending written material (Cortiella, 2001), difficulties with memory (Bryant, Smith & Bryant, 2008) and attention and task persistence deficits (Barkley, 2006). Learner characteristics may also include behavioral difficulties related to low frustration tolerance and/or social skill/functional language deficits which interfere with teacher/peer relations (Bryant et al., 2008; Stichter, Conroy & Kaufmann, 2008) as well as low levels of motivation, which may be related to students becoming disengaged from instruction and/or engaging in disruptive behavior (Barkley, 2006; Stichter, et al., 2008). General curriculum delivery is permeated with inherent access barriers for learners with disabilities. Educators must develop programmatic

accommodations to alleviate these barriers and ensure universal access to the curriculum for a wide range of learners.

Universal Design for Learning (UDL) is an extension of the Universal Design architectural movement in the 1960's that sought to afford individuals with disabilities equal access to physical environments (CAST 2011; Goldsmith, 1963). Following its inception, this movement was later backed by global legislation including that of the United States (Americans with Disabilities Act, 1990; Rehabilitation Act Section 508, 1973). Universal design in architecture considers an individual's disabling condition (i.e. mobility) and related adaptive devices (i.e. wheelchairs, walkers) and creates environmental modifications to ensure equal access to public buildings (i.e. elevators, ramps, dropped curb). Universal design considers barriers related to an individual's disabling condition as an environmental problem and seeks to modify aspects of the environment to support the adaptive functioning of all community members within. From this systemic perspective, limitations in access to the environment experienced by an individual with a disability are the result of limitations in the design of the environment. The advantages to universally designed environments are indeed, universal. A building that offers ramps and elevators not only ensures access for individuals with a disability related to mobility, but also allows more efficient access for non-disabled individuals utilizing wheeled devices such as baby carriages, supply carts and/or wheeled luggage. The inconsistency between an increasingly diverse student population and a "one-size-fits all" general curriculum is an environmental limitation that can be alleviated by drawing from the historical application of universal design in architecture (Rose, Hasslebring, Stahl & Zabala, 2005).

As previously discussed with regards to disabilities related to mobility, universal design considers the individualized needs and adaptive technological devices used by individuals with disabilities in order to achieve maximized accessibility to physical environments. The interaction and integration between the individual and the environment is the junction at which universal designs are engineered. This is an important concept with regards to Universal Design for Learning. Students with disabilities have individualized needs and often utilize adaptive technological devices that must be accommodated within their learning environments in order to achieve maximized accessibility to the curriculum. Federal legislation mandates that districts provide educational programming that is individualized to meet the unique needs of each student with disabilities and that is structured and delivered in a manner that allows for each student to benefit from his or her learning environment. The law favors the inclusion of children with disabilities in general education classrooms, and requires that each child's individualized education plan (IEP) delineate provisions and services offered to the child, assuring their utmost inclusion with their non-disabled peers. The provision of appropriate accommodations and supplementary aides must be implemented in the least restrictive environment that will allow students with disabilities to access the curriculum and to be integrated with non-disabled peers to the maximum extent possible (IDEIA, 2004). As part of the comprehensive evaluation that determines special education and related services eligibility, IDEA further mandates that a student's individualized education program consider whether the student requires assistive technology devices and services. Assistive technology (AT) is any tool or device that a student with a disability uses to maintain, improve or increase the students' functional capabilities. Through the

training and implementation of AT devices, a student with a disability may perform a task that could not be achieved without the use of AT, or perform a task more efficiently. Students with physical, cognitive, learning or developmental disabilities may require AT ranging from low to high technological involvement. This may include simple "low tech" devices such as a pencil grip, wheel chair, Braille, or an activity schedule to "high tech" devices such as spell-checkers, text-to-speech function, or alternative communication devices. Assistive technology devices are individualized accommodations that are carefully engineered and adapted to meet the strengths and weaknesses of a specific individual. A current focus in the educational policy landscape is the interaction and integration of UDL and AT to define best practice standards in education (Hitchcock & Stahl, 2003). Assistive technology devices can afford individual students with disabilities the benefits of modern technology to overcome specific barriers in the curriculum and physical learning environment. The UDL paradigm utilizes modern technology to develop curriculum and design environments that inherently lack traditional barriers to learning and are inherently flexible to adjust to the needs of individual learners (Myller & Tschantz, 2003). Conceptualized through this integrated model, the learning environment and instructional materials associated with curriculum and lesson development and delivery are designed in a manner that encompasses the technological needs and learning of all students (Rose & Meyer, 2002).

An illustrative example of the benefits of technology solutions in a universally designed curriculum is especially relevant with regards to the inherent barriers present in lesson delivery via printed text and assessment measures via written text, most often found in general curricula. Considering only individualized accommodations that focus

on the inherent deficits related to a student's learning disability, academic interventions might include remedial support for decoding, comprehension and/or writing. Individualized interventions may also include AT solutions such as audio versions of material or spell checking devices. While these individualized interventions may certainly be associated with positive outcome-based measures of progress for an individual student, a UDL solution would be inherently free of such initial barriers and would integrate the advantages of technology to enhance learning for many different kinds of students.

Upon an examination of the over reliance on printed text and written assessments inherent in a curriculum, a UDL approach would target a better initial design of the curriculum that would integrate modern technology to remove barriers to engagement and mastery of content for a the widest range of learners. A universally designed curriculum, in which modern technology solutions are effectively integrated, could offer diverse options to view and manipulate core content as well as varied options for expressing knowledge. The availability of modern technology in education can afford students the opportunity to access a multimedia curriculum that could include digital, universally designed media. A flexible curriculum of this nature would pose fewer barriers to learning related to both engagement and mastery: digital text can speak aloud to reduce decoding barriers; digital images or video provide an alternative representation that reduces barriers in comprehension and engagement, and keyboard/hardware alternatives reduce barriers in navigation and control (Rose, Hasslebring, Stahl & Zabala, 2004).

UDL is grounded in emerging insights about brain development, learning, and digital media (Rose and Meyer 2002). The UDL framework provides educators with guidelines for the flexible integration of multimedia solutions to allow for systematic and effective instructional approaches. Providing students with choices and alternatives with regards to materials, content, context and tools enables flexibility in leveled curriculum delivery, assessment and teacher modification of content specific to a students' developmental skill level (Kamil, Intrator & Kim, 2000). The limitations associated with curriculum access via the use of fixed instructional materials such as printed text and paper and pencil assessments may function to reinforce educational barriers for students with disabilities. However, the versatility of technology solutions allows for a more differentiated and comprehensive instructional approach. Educational media can often be transformed from one medium to another such as from text to video or audio, the appearance of information can be modified within a medium, instant access to multifaceted information about a topic is readily accessible via hyperlinks to allow for deeper exploration of content. In this regard, the effective integration of technology solutions and UDL practices in the education of students with disabilities has the potential to serve as assistive, remedial and/or compensatory supports to provide universal access to the curriculum (Center for Applied Special Technologies, 2011; Edyburn, 2006; Zabala & Carl, 2010).

All Students Must Be Prepared for Success in the Twenty-First Century

Ongoing government efforts to restructure American systems of education by regulating accountability, ensuring universal access to curriculum and by identifying and targeting under-performing schools and students continues to raise the question of how quality education should be defined in response to the ever-changing needs and values in

society. An effective balance between academics and pragmatic, applied knowledge in a relevant context is the focus of inquiry surrounding current education reform. *Partnership for Twenty-First Century Skills* is a public-private consortium of leaders in education and business such as the U.S. Department of Education, *Microsoft Corporation, Apple Computer, Inc., The National Education Association,* and the *International Society for Technology in Education.* This consortium collaborates with hundreds of educators, principal research investigators and employers in the United States to define twenty-first century education. The executive summary published by this consortium examines concerns regarding the gap between current educational curriculum and instruction and the knowledge and skills that students will need in twenty-first century communities and workplaces. Authors recognize that students are living in a multifaceted, fast paced, technology driven world and that the current education system faces the threat of becoming irrelevant (Partnership for 21st Century Skills, 2007).

Current education reform efforts are focused on developing curriculum and instructional practices to support the learning and skill acquisition necessary for students to be successful in twenty-first century society. The Common Core State Standards (CCSS) is a set of educational goals and expectations, developed by the federal government and adopted by forty-three states. The CCSS delineates the knowledge and skills needed by kindergarten through twelfth grade students, in the subject areas of English-Language Arts and Mathematics, in order to be successful in 21st century society (National Governors Association Center for Best Practices, 2010). Beginning in the 2014-2015 school year, student achievement with regards to the CCSS will be measured via the Partnership for Assessment of Readiness for College and Careers Assessment

(PARCC Assessment). The PARCC Assessment will be administered within a consortium of thirteen states, including New Jersey, as a measure of high educational standards and local education agency accountability, in accordance with NCLB.

The CCSS and PARCC Assessment designs are intended to be reflective of the Universal Design for Learning principles. Federal guidance documents related to the implementation of the CCSS discuss the standards as an opportunity to improve access to rigorous academic content for students with disabilities via the continued identification of researched-based effective instructional practices. High expectations for all students are discussed as a fundamental goal of the CCSS and individual supports for students with disabilities based on the principles of UDL are identified as best practice. UDL is highlighted as instructional supports that foster student engagement by presenting material in multiple ways and allowing for diverse avenues of action and expression (National Governors Association for Best Practices, 2010b). The PARCC assessment has been universally designed to be inherently free of accessibility barriers. The PARCC is delivered in an online format, which allows for the flexibility that technology offers in the presentation of material and response modality of the student. There are several accessibility features that are available for all students, including students with disabilities, ELLs and ELLs with disabilities. These accessibility features can be pre-selected for students identified as in need of standardized assessment accommodations but are also available to all students, regardless of their learner profile, for the purpose of optimizing student performance via the principles of universal design. Examples of PARCC accessibility features include verbal clarification and redirection, a line reader tool, text-to-speech functions, audio amplification, ability for test directions to be read

aloud/repeated, and a spell check function (Partnership for the Assessment of College and Career Readiness, 2013).

The integration of technology into the schools is one of the many ways to support twenty-first century learning. However, the challenge that institutes of education face is to prepare students to function as successfully as their individual potential allows while efficiently keeping pace with modern day communication and technological advancements. The technological disconnect that has developed between educators and students may function as a barrier to effective instruction. Prensky (2001) coins the current generation of students "digital natives," as they were born into a society where the integration of technology was well established and the rapid dissemination of advancements in technology an everyday occurrence. Access to technology is a part of everyday life for most of these students as they play video games, use cell phones, and navigate the internet utilizing anything from a PC to a tablet to a smart phone. Prensky refers those not born into the digital world as "digital immigrants," which includes the generation that comprises those who are educating the digital natives. The widespread arrival of, and access to, digital technology during the end of the twentieth century and beginning of the twenty-first century has created a fundamental disconnect between the current generation and its predecessors (Prensky, 2001).

Ongoing technological advancements in society continue to define modes of information access, communication, and interconnectivity and entertainment in a digital and virtual manner. Accordingly, students are accessing information, entertainment and interconnectivity among their peers via technology at an increasing frequency & duration. In turn, the demand for digital/virtual access leads to more advancements and availability

of technology, and a more technologically advanced society. As society becomes increasingly digitally connected, its members must become and remain technologically literate in order to function to a continually re-defined level of efficiency.

The fundamental argument for ensuring technological literacy in special education is to provide the widest range of citizens with the potential to equally participate in society. Technology influences the simple daily activities of modern day society such as communicating with others, making purchases or navigating public transportation. In a world permeated by technology, individuals with or without disabilities can function more effectively if they are familiar with and have a basic understanding of technology (Pearson & Young, 2002).

The integration of flexible technology solutions into the general curriculum has the advantage to support the core content learning and multimedia navigation capabilities of a wide range of digital native learners of the current generation. School improvement planning, curriculum accommodation planning and technology planning must all align in their efforts to support twenty-first century learning and technological literacy for all students. Digital content and virtual tools remove or make more manageable many barriers imposed on the student by physical books, libraries and laboratories. The integration of technology into the core curriculum has the potential to increase the interactions that facilitate instruction and opportunities for learning for students with disabilities. The use of the technology as a facilitation device for acquiring general knowledge may prove to be its most valuable asset in the education of students with and without disabilities (Jackson, 2004).

Supporting Technology-Mediated Instruction Reflects Best Practices in Education and School Psychology

Effective instruction and classroom management must simultaneously support the myriad of educational and behavioral needs of all students in a timely manner. This factor becomes exponentially more challenging when one considers the range of possible needs that may be present in a classroom at a given time. Although students with and without disabilities may engage in a variety of challenging behaviors, the skills that are required to support students that engage in challenging behaviors are more frequently being expected from public school district employees. In fact, current fiscal trends have drastically reduced state funding to districts to support special education. Among several other cutbacks, this decrease in state funding has resulted in a reduction in staff, and the return to district of many students whose special education placement were in private, out-of-district educational facilities. These returning students often include the dually-diagnosed population of students with developmental disabilities and co-morbid psychiatric or behavioral disorders (Reiss, Levitan & Szysko, 1982). Supporting these students in-district poses particular challenges with regards to least restrictive placement and individualized accommodations. These challenges are compounded by the nature of the behaviors in which the dually diagnosed student may engage. These behaviors are often disruptive to peers and staff, and may vary in intensity and frequency.

When faced with the challenge of supporting the academic and social functioning of students who engage in severe and/or frequent challenging behaviors, academic personnel are routinely being asked to provide a level of behavioral support that potentially exceeds their expertise. The lack of professional development resources with

respect to the support of a heterogeneous classroom has proved to be influential to the inclusion of children with special needs in classrooms, and to emergent teachers regarding their confidence in such practices (Hamre & Oyler, 2004; Sindelar, Shearer, Yendol-Hoppey, & Liebert, 2006). It is often not sufficient to simply implement the typical class wide or individualized consequent-based behavior supports. Oftentimes, the supports that these students require are non-discreet antecedent variables, such as behaviorally competent staff and a behaviorally therapeutic environment (Kormann & Heimlich, 2013).

Often, an outside professional is called upon to provide support to classrooms in which there are students who engage in challenging behaviors. School psychologists are professionals that may play a consultative role in school districts to provide guidance on the development and implementation of positive behavioral supports for students whose social-emotional and/or behavioral needs are interfering with their ability to succeed academically and/or socially. The goal of the professional practice of behavioral consultation is to foster the knowledge, skills and abilities of the consultee, to increase the adaptive functioning of the client, and/or to decrease problem behaviors (Bergan & Kratochwill, 1990). Through the practice of school-based behavioral consultation, school psychologists have the opportunity to support the academic/behavioral adaptive functioning of students that are struggling to succeed in the school environment.

Professional behavioral consultation applies the principles of applied behavior analysis (ABA) to the ecological systemic approach of Positive Behavior Interventions and Supports (PBIS). Applied behavior analysis is the process of systematically applying interventions based upon the principles of learning theory to improve socially significant

behavior to a meaningful degree (Baer, Wolf, & Risley, 1968). School-based behavioral consultation applies the principles of ABA in training staff in the methods of collecting functional data while teaching them how to understand identified challenging behaviors from a comprehensive, operant learning perspective. The consultee is guided through the identification of environmental antecedent and consequential variables that are typically present during occurrences of an identified problem behavior. The consultee receives training and supervised feedback in the development and implementation of positive behavior support strategies and interventions. These interventions are grounded in the principles of ABA and take the form of manipulating naturally occurring environmental variables and contingencies, and providing positive reinforcement for the display of adaptive or pro-social behaviors in the classroom. This collaborative social problem solving process supports the consultee in the development of the skills and expertise necessary to become an effective behavior manager and to create a behaviorally therapeutic learning environment (Horner & Carr, 1997; Iwata, Wallace, Lindberg, Roscoe & Connors, 2000).

School-based behavioral consultation can be much more comprehensive in its application than simply looking for behavioral "triggers" and resulting reinforcers. In fact, when analyzed from a hierarchal, PBIS framework, behavioral data can provide the behavioral consultant with invaluable information that can lend itself to innovative interventions to support twenty-first century learning. The more recent behavior analytic literature demonstrates a focus in the field on the manipulation of antecedent variables that have been determined as being related to the occurrence/non-occurrence of a target behavior. Luiselli & Cameron (1998) brought focus to inquiry on the relationship

between antecedent factors and challenging behaviors, examining environmental variables that are in place during the occurrence/non-occurrence of a maladaptive behavior. This perspective broadens observational practices, allowing antecedent data to reflect environmental "setting events," rather than be conceptualized as behavioral "triggers." In this regard, setting events may include one or several variables that are present when a behavior is/is not displayed. Adaptive behavior, such as on-task behavior during classroom instruction, is also governed by these principles of behavior. What variables are in place when students are most likely to engage in high-levels of on-task behavior?

A discriminated operant behavior is one that occurs more frequently in the presence of a particular antecedent variable/stimulus (Cooper, Heron & Heward, 2007; Skinner, 1953). These particular variables/stimuli are referred to as exerting stimulus control over discriminated operant behavior (Cooper, Heron & Heward, 2007; Maglieri, DeLeon, Rodriguez-Catter & Sevin, 2000). Desired discriminated operant behavior in a classroom would be related to goal-directed behavior, for example, high rates of on-task behavior and low rates of off-task behavior. The question of under what conditions is it most likely that students will engage in high levels of on-task behavior can be partially answered by examining how school-aged individuals spend their free time. The "free operant" model (Ferster, 1953) refers to the behavioral activities in which an individual chooses to engage when given free access to a variety of behavioral or activity based options. An individual's behavioral choices under such free access circumstances are strong indicator as to what that individual finds rewarding and what conditions are most likely to exert stimulus control over high levels of on-task behavior.

The level of integration that technology continues to gain in the lives of students and factors associated with the frequency and duration associated with students' daily access to technology has been a topic of much inquiry. A large-scale, nationally representative, longitudinal study of technological media use reported survey data indicating that 8-18-year old individuals in the United States spend an average of 7 hours and 38 minutes (approximately 53 hours a week) utilizing technological entertainment media across a typical day. When factoring in media-multitasking (using more than one medium at a time, such as surfing the internet while listening to music on an ipod), results indicate an average of 10 hours and 45 minutes (approximately 75 hours a week) per day (Kaiser Family Foundation, 2010). Longitudinal survey results over a ten-year period observed an increasing trend in access to media, such as the presence of media equipment and services in the home, media in bedrooms, and personal and mobile media among 8-18-year olds. It is important to note that survey results were representative of use of television, video games, computers, music and movies, and did not include time spent using technological media for school or work, or time spent texting or talking on cell phones. When accounting for cell phone use, the average 8-18 year old report spending approximately 33 minutes talking on a cell phone. Approximately 46% of the age group reports utilizing text messaging, and reports sending an estimate of 118 text messages per day (Kaiser Family Foundation, 2010).

The translation of the free operant process into the classroom can provide the behavioral consultant with incredibly important information as to how one might construct the learning environment to better entice behaviorally challenged students to participate. Clearly, access to technology functions as free operant in students' behavioral

repertoires. In this regard, technological media can potentially be integrated into lesson design in such a manner that the presence of materials associated with curriculum delivery exerts stimulus control over on-task behavior by functioning as an inherent reinforcer of positive behavior.

The use of high interest educational media in the presentation of core curriculum goals is an area of growing interest in both the field of special education and behavioral support (Broek, 2001; Lin, 2003; Squire, 2005). Research in ABA has resulted in evidence that strongly supports that antecedent-based interventions can exert stimulus control over the occurrence/non-occurrence of a target behavior. In this regard, a theoretical shift in school-based behavioral consultation has focused on antecedent-based interventions (Kern, Bambara & Fogi, 2002; Kern, Choutka, & Sokol, 2002; Kern & Clemenss, 2007; Luiselli, Bastien & Putnam 1998; Luiselli & Murbach, 2002; Sigafoos, Green, Payan, O'Reilly & Lancioni, 2009; Sugai, Horner & Gresham, 2002). Intervention at the antecedent level has the potential to reduce the likelihood that an identified challenging behavior will occur and increases the likelihood that an alternate, adaptive behavior will occur. The manipulation of such antecedent variables and the resulting occurrence/non-occurrence of a target behavior demonstrate the powerful stimulus control paradigm (Cooper, Heron & Heward, 2007; Dinsmoor, 1955a, b; Michael, 2000; Shahan & Chase, 2002; Stromer, 2000). In fact, this level of intervention allows the consultant to consider the manipulation of environmental variables that may exert influence over the behavior of several students in a classroom. Further, such variables may exert influence over several different functions of behavior, or over the more

typically occurring multi-functional behavior (Kennedy, Meyer, Knowles, & Shukla, 2000; Lerman, Iwata, Smith, Zarcone & Vollmer, 1994).

The universal design for learning (UDL) paradigm underscores the value of antecedent-based interventions to increase the adaptive functioning of all students in their learning environment. When integrated strategically and effectively, technological instructional media has the potential to support access to the curriculum for the widest range of learners via the inherent flexibility in multimedia solutions. The previous discussion explored the predominance of printed text in instructional materials and assessments, and emphasized the utility of technology with navigating learning disabilities - while increasing more efficient access to the curriculum for a wide range of learners. Antecedent interventions aimed at modifying the curriculum via the integration of technology can be strategically implemented in such a manner as to be functionally related to the occurrence/non-occurrence of on-task/challenging behaviors in a wide range of learners as well. A curriculum embedded with technological options offers the advantage of inherent access to reinforcement, thus exerting stimulus control over on-task behavior.

UDL complements the natural setting model of behavioral consultation as the "problem" is conceptualized as an inherent limitation within the environment, rather than within the individual with a disability. In this regard, barriers to a student's ability to access the curriculum may be related to multiple factors in the environment that could be modified form a multifactor, systemic consultative perspective. Currently based at Rutgers, The State University of New Jersey, Project: Natural Setting Therapeutic Management (NSTM) is a behavioral consultation and training program designed to

enrich the knowledge, skills and abilities of caretakers in the natural setting in the development and maintenance of a behaviorally therapeutic environment in which to support the adaptive functioning of referred individuals (Petronko, Harris & Kormann, 1994). NSTM employs a four factor systemic approach to identify and modify variables that are related to the occurrence/non-occurrence of behaviors that interfere with an individual's ability to function adaptively in their environment. With respect to school-based consultation, the NSTM model aims to modify the classroom setting into a therapeutic milieu that can support positive behavioral change. Behavior managers (school staff) receive guidance on the acquisition of skills for the ongoing assessment and modification of variables to promote and maintain positive behavioral changes within the learning environment. The four environmental factors assessed via the NSTM school-based behavioral consultation model include: 1) the student with a disability; 2) the staff members delivering instruction and responsible for managing behaviors; 3) the environment, including the classroom/building, schedules/routines, other students, etc.; and 4) the larger system in which the student and the identified problem behavior is embedded, which include factors such as the school building, district policies/dynamics, state educational code, Common Core Standards, adequate yearly progress, etc. The identified problem behavior is conceptualized as existing embedded within the dynamics of all four factors previously discussed and depicted in Figure 1 (Petronko, 1987). As supported by the UDL model, the NSTM model broadens the analytic lens to examine interactional effects of all four contributing factors especially environmental factors that contribute to barriers in accessing the curriculum and, in turn, yields intervention strategies that not only address the short-term effect of remediating the presenting

problem, but the more important long range purpose of maintaining change over time (Kormann & Petronko, 2002).

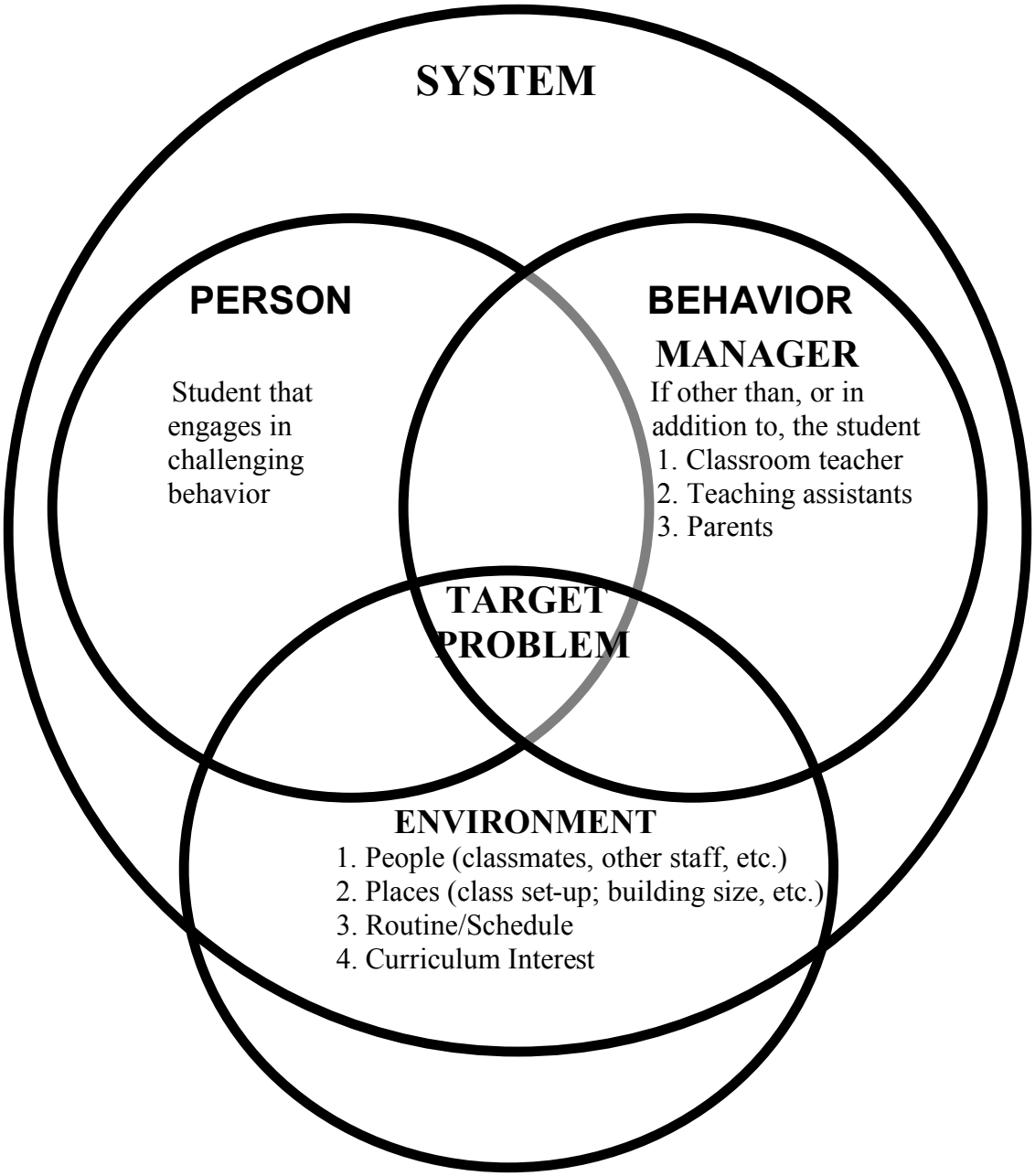

Figure 1. NSTM Four Factor Model (Petronko, 1987).

[1]SYSTEM = Global climate in which the other three factors exist. Examples include federal legislation (IDEIA, etc.); Administrative support/relationship; Staffing issues, Child study team variables; School budgets, Board of education issues, Legal proceedings; Prevailing educational philosophies.

The integration of technology into education is not only a variable currently present in each of the NSTM four factors, but also has the potential to function as antecedent stimuli that exert positive influence over adaptive functioning in each of the factors. A UDL approach to curriculum delivery embedded with technology solutions has the potential to reduce barriers to accessibility for a diverse student population via flexible material presentation and response modalities. This approach also offers dynamic stimuli through which to behaviorally engage students in learning activities by capturing and sustaining attention and motivation. As indicated previously, the amount of time that students engage with digital media items/activities demonstrates the inherently reinforcing effect classroom-based technology solutions may exert over student on-task behavior. Technology solutions offer teachers indispensable tools through which effective differentiated instruction could be developed and federally mandated technological literacy goals could be supported. Further, professional development and teacher access to digital media resources could mediate student off-task behavior by providing inherently reinforcing learning activities. Federally mandated local education agency technology plans delineate how technology is intended to be further integrated and function within the educational environment. In this regard, technology solutions have the potential to enhance the accessibility and efficiency of the educational environment. Finally, technology clearly has permeated many, if not most, aspects of society and maintains a significant presence in daily life. Technological literacy is necessary for individuals to navigate contemporary society and to be successful in the workforce. Current education reform efforts underscore this reality with federal and local

mandates supporting technological literacy and technology solutions in core curriculum delivery and standardized assessment practices.

Technology solutions have the potential to serve as valuable tools for the behavioral consultant to implement as evidence-based treatment options for managing adaptive behavior in the classroom setting. In fact, to further enhance the reinforcing value and stimulus control power of technologically mediated curriculum delivery, student preference can be assessed and integrated into lesson development. Lesson design centered on student-identified high-interest topical subjects and delivered via technology-mediated instruction has the potential to exert powerful stimulus control over the occurrence/non-occurrence of challenging behavior in the learning environment (Kormann & Heimlich, 2013; Marzano, 2010). Challenging behavior in the classroom environment is often maintained by escape/avoidance of task demands and preventative efforts are most effective when directed towards modifying antecedent aspects of instructional environments (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). The display of escape-maintained maladaptive behavior in the classroom can potentially be reduced via the practice of antecedent environmental assessment and the integration of technology mediated instruction embedded with high-interest topical content. This level of antecedent programming can function to establish inherent motivation for students to maintain their behavior in order to remain engaged in instructional activities. Identifying robust and reliable reinforcers for students with disabilities is often a challenge. Reinforcer preference is often transitory in nature and may change according to antecedent variables such as age, time of day, etc. (Carr, Nicholson & Higbee, 2000; Gottschalk, Libby & Graff, 2000). High-interest technologically mediated behavioral and

educational programming is an essential avenue of psycho-educational inquiry to be explored. School psychologists can serve as advocates for the continued widening of the analytic lens to examine environmental factors from an antecedent, UDL perspective to support the academic and behavioral needs for a diverse student population.

Educators Could Benefit From a User-Friendly Digital Media Index to Utilize When Developing Common Core Lesson Plans

Professional educators skillfully manipulate a myriad of variables to achieve effective classroom instruction. How effective classroom instruction is defined may vary according to the dominant trend of systemic factors relevant to a specified time and region. Individual state educational standards and the more recent nationwide Common Core State Standards (CCSS) have been developed to comprehensively delineate the knowledge and skills that have been determined as necessary for student future success in college and the workforce. The most current determinants of effective classroom instruction place emphasis on student achievement outcomes as determined by nationwide standardized test scores and local benchmarks. These measures are designed to assess academic progress according to the standards that have been adopted in a particular region. Such outcomes are closely monitored at the state and local levels - with district, school and individual teacher accountability at the forefront of current political agendas.

These external pressures exert great influence over academic instruction and classroom dynamics. The ecological systems model provides an organizing framework to discuss the pressures and dynamics that exert bi-directional influence over student achievement (Bronfenbrenner, 1989; Petronko, 1987). The powerful demands placed on

teachers and students to perform to pre-determined standards are accompanied by budget and time constraints in which to operate. In this regard, the high-stakes art of teaching calls upon the educator to navigate a multitude of significant systemic factors, all of which exert bi-directional influence over outcomes at each level. Lesson plans must be created in a manner that is both comprehensive and specific to outcome-based measures of achievement. Curriculum delivery of goals and objectives, reflective of the standards to which student test scores will be held accountable, is a challenge that is made even greater when one considers the various learning styles and individual needs of students in a given classroom. In this regard, lesson plans must be developed to simultaneously meet a range of educational and behavioral needs, in a comprehensive and timely manner. To further challenge the classroom teacher, these tasks must be accomplished in the midst of significant professional and political pressure, with limited resources, and for a low to moderate salary.

The challenging task of developing comprehensive, yet differentiated lesson plans only speaks to selected systemic factors associated with preparation for instruction. The desired end result, for instruction to be associated with positive outcome-based assessment results, occurs on the microlevel of individual student achievement. For learning to take place, and specifically for measurable student achievement to be observable, students must engage in instruction in the manner intended according to lesson development. This essential factor further challenges the professional educator to develop lessons and deliver curriculum in a manner that not only captures student interest, but also sustains engagement of this elusive construct in the subject matter and/or related classroom activity.

The presence of multimedia technology in a classroom, cannot in and of itself, increase student motivation and engagement in the learning process. In fact, the further that technology is embedded into a universally designed curriculum, the more indispensable effective teachers become (Ertmer, 2005; McCombs, 2000; Kozma, 1994; Roblyer & Knezek, 2003). The level of engagement in core curriculum content remains dependent upon the lesson development and delivery orchestrated by the teacher. Student disengagement during instruction poses a significant barrier to acquisition of knowledge. High-interest multimedia instructional materials, when integrated effectively, have the potential to remove such barriers and increase universal accessibility to the curriculum for students with and without disabilities.

Accessible Instructional Materials (AIM), are referred to as materials that are integrated into design and lesson delivery which remove the barriers associated with the developmental characteristics relevant to students with disabilities (Zabala & Carl, 2010). The potential for technology-based instruction to be an effective outcome-based mediator of curriculum delivery has been well supported in the special education literature. With multi-media integrated lesson delivery, the performance of students with high-incidence disabilities has been observed to be consistent with that of same age typically developing peers (Bottge, Rueda, Serlin, Hung, & Kwon, 2007). Students with disabilities have also reported an increase in motivation to learn utilizing multi-media solutions (Heo, 2007) and have demonstrated an increase in high-level questioning during instruction (Reith, Kinzer & Colburn, 2008) and advanced critical thinking skills (Hur, 2001). The effective integration of high-interest multimedia technology to deliver core curriculum content has the potential to function as Accessible Instructional Materials

(AIM), which remove the barriers associated with challenges such as processing written text experienced by students with disabilities (Zabala & Carl, 2010). For example, multi-media anchored instruction utilizes video as a central AIM to contextualize learning and enhance the learning process (Bransford, Derry, Berlinger Hammerness & Beckett, 2005). Through small group activities centered on the video, students have the opportunity to review clips multiple times and to deconstruct and analyze material and enhance critical thinking skills (Bottge Rueda, Serlin, Hung & Kwon, 2007; Reith, Bryant, Kinzer, Colburn, Hur, & Hartman, 2003). An educator's strategic selection of videos and integration of additional technological supplements such as hyperlinked information or digital activities can allow the learning process to be anchored to a high-interest, realistic and authentic context for students. The use of multimedia technology in curriculum delivery can foster the integration of Universal Design for Learning to allow access for the broad continuum of learner profiles (Center for Applied Special Technologies, 2011). In fact, video-based anchored instruction has been associated with positive outcomes in preschool through college students (Bottge, et al., 2007; Johnson, 1987; PT3 Group at Vanderbilt, 2003) and within a variety of subject matter (Ferreti, MacArthur, & Okolo, 2001; Gersten, Baker, Smith-Johnson, Diminio & Petersen, 2006; Hasselbring, Lott & Zydney, 2006; Johnson, 1987; Xin & Rieth, 2001).

A critical systemic challenge in education is the gap between evidence-based research and practice (Burns & Ysseldyke, 2009). It is important to emphasize that universal access to curriculum content pertains to access to *learning* rather than merely increased access to *information*. Educators must strategically integrate technology in such a manner as to support established learning goals. The support educators receive in identifying and

incorporating multimedia technology solutions into instructional practices is limited (Atkins, Bennett, Brown, Chopra, Dede, & Fishman, 2010; Smolin & Lawless, 2011). In order to support all students in reaching and exceeding state standards, educators need support to integrate evidence-based practices into instruction (Cook & Cook, 2011; Kretlow & Bartholomew, 2010). Lack of administrative support, limited access to resources as well as limited time to learn how to navigate and integrate resources can serve as barriers to the integration of evidence-based practices (Kretlow & Blatz, 2011). These factors are laden with implications for administrators as teachers' efforts to adopt and adapt new technologies to achieve new levels of productivity and achievement must be supported. A critical factor in this equation is user-friendly teacher access to high-interest technological media that can be utilized to meet core curriculum standards. Providing teachers with multimedia resources and consultative professional development support are factors associated with substantial changes to teacher instructional behaviors and improved outcomes for students (Borko, 2004; Thomas, Hassaram, Rieth, Raghavan, Kinzer, & Mulloy, 2012). Teachers would benefit from efficient access to multimedia resources that can be used to enhance the curriculum in order to prepare a diverse student population to be successful in twenty-first century society. In this regard, this dissertation included the development of a digital media index to be utilized to support Common Core instruction.

Chapter II

Review of the Literature

Ecological Systems Theory

Schools as a System

One of the many challenges in preparing students to be productive members of society is for educational practices to remain current to the cultural demands into which graduating students will enter, while also meeting the state and local benchmark requirements. Twenty-first century students are functioning in a society that is in many ways defined by ongoing rapid advancements in technology and values related to providing faster more efficient ways to access and disseminate information. While the ability to skillfully navigate technology has become a pre-requisite skill to access information, students are still practicing handwriting and educators are still often using a piece of chalk to disseminate information. Although the value in integrating technology into the classroom is easily apparent, there are many systemic barriers to consider, including funding, staff training, and teacher and administrator buy-in. Despite the bi-directional influence of systemic dynamics, there exists an inequitable distribution of power within these systems. Shared decision-making regarding the goals and values of stakeholders is not common practice in the education system, yet efforts at supporting observable outcomes of student success are most often implemented by stakeholders who possess the least decision-making power. The upcoming technology generation and the

generation who is educating them are facing a host of systemic complexities related to twenty-first century learning and measurable success.

Student achievement and adaptive behavior are constructs that are open to interpretation depending on the context in which they are embedded. Observable variations in each of these constructs can occur on the individual or group level, and are influenced by a range of significant factors. In this regard, it is important to consider the various contexts in which students exist and the interrelatedness of factors that may exert influence at several systemic levels.

The ecological systems model provides an organizing framework to discuss the pressures and dynamics that exert bi-directional influence over student achievement and behavior (Bronfenbrenner, 1979). The perceptions and behaviors of any member of a social system may influence and shape the resulting perceptions and interactions of other members of a system. In this regard, intrapersonal dynamics and observable behavior of all stakeholders within a social system are the result of the reciprocal determinism of factors related to the behavioral, cognitive and environmental influences of its members (Bandura, 1978). The value of student achievement is defined and communicated to students both directly and indirectly within the multi-level ecological system in which the student is embedded. Concurrently, the value of access to and integration of technology is also defined and communicated at each of these levels.

Ecological systems theory posits that none of the contexts in which students exist operate independently, and that child development is shaped by bi-directional influences between and within several environmental systems. These influences are the result of the environmental factors influencing the values defined by societal groups at a given point

in time. The individual child physically occupies several microsystems, which include social groups that have a direct impact upon the child's development such as the neighborhood, family, school, and peer groups. The interconnectedness and relationships between the microsystems occupied by a student are referred to as the mesosytem in which the student functions. For example, in terms of behavior, a child's interactions and experience with their parents and siblings may be related to their expectations interactions with teachers and peers. When one considers the range of individual differences in terms of academic and behavioral needs, a complex set of phenomena with regard to relationships and interactions may be observed at these levels.

The exosystem provides a link between social settings in which the student may not have an active role, such as parent work environments, school administrative and board of education decision-making and local politics. However, circumstances relevant to the exosystemic level have an effect on the students' immediate contexts. For example, local government, board of education or administrative initiatives have a direct impact on the students' experience in their classroom. Conversely, is important to take into account the reciprocal determinative effects that student behavior has on organizational decision-making. In particular, measurable outcomes of academic performance, as the result of student engagement in curriculum, exert a significant influence on organizational/administrative responding. The exosystemic level also links students to industrial society and mass media. The outermost layer of this nested model is the macrosystem, which includes the overall attitudes, values and ideologies of a culture at a given time. Ideological and trending shifts in these outermost layers define the culture of the current generation of students.

Within and between these systemic levels, student achievement and technology integration into daily life can be defined with significant variation. This variation can be effected by socioeconomic variables. According to most recent census results, one in five of children in the United States under the age of 18 live in poverty (U.S. Bureau of Labor Statistics, 2010). This translates to approximately 16 million children that may not have adequate access to nutrition and healthcare and that may experience higher incidences of stressful living conditions and violence in their communities. These factors have been observed to have a significant impact on student development and engagement in education as compared to students not living under poverty conditions (Bash, 2001; Evans, Kim, Ting, Tesher & Shannis, 2007; Taki et al., 2010; Yazie-Minz, 2007). With regards to access to technology, approximately 65% of households in the United States have access to the internet. However, internet access drops to approximately 50% of Hispanic households, approximately 40% of African American households and approximately 40% of households with a net annual income of less than $20,000 (Federal Communications Commission, 2013).

At the instructional level, teachers report the integration of multimedia technology instruction as related to an increase in performance efficacy for themselves and their students (National Center for Education Statistic, 2000). In fact, teachers from low-socioeconomic districts have reported higher endorsements of strongly agreeing about the value and efficacy of multimedia instructional technology (National Education Association, NEA-AFT, 2008a). It has been speculated that these higher endorsements may be associated with the utility of multimedia solutions as engaging assistive-learning tools, and in consideration of the fact that students in lower socioeconomic districts are

less likely to have access to technology outside of school (NEA-AFT, 2008).

Positive educator perceptions regarding the efficacy of technology-infused instruction have been substantiated via observable outcome-based measures of student achievement in a variety of core content subject material, as well as higher levels of student engagement and quality of work (Murphy, Penuel, Means, Korbak, Whaley, & Allen, 2002; O'Dwyler, Russell, Bebell & Tucker-Seeley, 2005). Despite these factors, access to computers for instructional purposes remains a barrier to multimedia integration. A national count of computers in public schools yielded a 3.8:1 ratio for the number of students sharing an instructional computer with internet access (Wells & Lewis, 2006). However, it is unclear whether these computers are located in the classrooms and readily accessible to be integrated into daily instruction, or if they are housed in a technology lab with scheduled access. Further, many educators do not feel adequately trained with regards to the availability or integration of multimedia technology into lesson design - a perception that increases among educators in low socioeconomic districts (NEA-AFT, 2008a).

While it is apparent that students must learn how to fluently navigate a globalized society defined in many ways via continuous advancements in technological media, risk factors associated with time spent utilizing technology have raised concern regarding the impact that such media may have upon youth. Correlational relationships between access/time spent engaged with technology and risk factors such as youth obesity, sleep problems, social, emotional and attention problems, educational problems and violent behavior have been demonstrated in the literature. While acknowledging the concerns that have been raised with regards to an increase in frequency & duration of youth

accessing technology, it is important to remain mindful to the bidirectional dynamics that are highlighted via ecological systems theory. Guidelines for caregivers have been offered to offset the potential negative effects of excessive technology use, including supervised access, limited access times, "technology free" weekends and restricted access to mature rated content (American Academy of Pediatrics Council on Communications and Media, 2009; Borzekowski, Hancox & Zimmerman, 2005; Foley, Maddison, Jiang, Mrash, Olds & Ridley, 2013; Lillard & Peterson, 2011; Strasburger, Jordan, & Donnerstein, 2010). Accordingly, current twenty-first century values and ideologies pave the pathways of student experience both within and beyond the classroom.

Increased access to digital multimedia educational resources as well as consultative professional support for the integration of technology to capture student engagement and motivation could contribute to positive outcomes for educators and students. However, systemic change requires the participation and collaboration of many stakeholders over time. Seymour Sarason discusses school systems as having a culture unto themselves, which defines how people within the schools function (Sarason, 1971). Individual schools are thus systems within systems which manifest a culture of their own, but which are influenced by and influence the larger system in which they exist. As in larger cultures, success and failure are measured according to cultural norms. Goals, expectations, and the tolerance level of members of the culture define acceptable social behavior. Sarason posits that the norms and practices within the culture of schools operate in a manner parallel to the subconscious of the system. Stakeholders within the system do not usually remain salient to or acknowledge these cultural dynamics, but instead subconsciously function to sustain the culture of the system as a whole. This

psychological systems theory identifies power differentials among stakeholders as one factor that sustains the culture of the system. In this regard, reform efforts are often hindered by inherent obstacles, the existence of which allows the system to continue to function in a manner that preserves its cultural dynamics as status quo (Sarason, 1971).

Every ecological system has unique defining characteristics and dynamics that must be considered when implementing strategies to effect change. In this regard, the universal design for learning (UDL) paradigm offers a valuable framework through which technology could be effectively integrated. This framework offers guidance to districts in consideration of all stakeholders including students, parents, teachers, administrators and governing bodies involved in systemic change (CAST, 2011). School psychologists can participate in many capacities as change agents, including providing behavioral consultation support. The NSTM four-factor model previously discussed highlights the ecological systems model of behavioral consultation with the goal of improving adaptive and educational outcomes for all learners. The four systemic factors consider the bidirectional dynamics that exist environmentally and between all stakeholders and can be employed to support UDL and technology solutions to improve adaptive outcomes for students, teachers, school districts and, in turn, contemporary society.

Pedagogical Variables

The value of high-quality teaching cannot be understated. John Dewey emphasized the knowledge and experience of the teacher as vital in creating learning opportunities for diverse learner profiles to best prepare students to navigate progressive society. Dewey identified the systematic observation of student experience and

subsequent hands-on, real world design of curriculum delivery as pedagogical best practice to optimize learning in a diverse student population (Dewey, 1938). Maria Montessori also highlighted the importance of observing students in their learning environment in order to determine what can be translated behaviorally as free operants that occasion learning. Students are more likely to engage with learning tools that are customized for their learning needs and provide multi-sensory learning experiences (Montessori, 1965). Robert Marzano further underscores teacher decision making as integral in designing and delivering high yield instruction (Marzano, 2001). The integration of multi-sensory technology delivered instruction has been observed to increase student motivation and engagement and affords teachers an indispensable tool through which high yield teaching strategies can be implemented across content areas and diverse learner profiles (Marzano, 2010).

Student motivation and engagement are antecedent variables to outcome-based learning that educators consider when designing lesson plans and delivering instruction. To foster student engagement, effective classroom instruction decisions are guided by considering student interest in curriculum topics as well as individual student interest and prior knowledge. These factors will determine the level of importance students attribute to information presented to them and the level of working memory that they will allocate towards instruction (Marzano, 2010). The educational literature includes an examination of individual and situational interest arising as students interact with their environment.

Individual interest is specified as topical or activity specific and is conceptualized as a factor that develops over time and becomes relatively stable. Individual interest is associated with personal significance, positive emotions, high value and increased

knowledge regarding the topic/activity of interest (Wade, 1992). Lessons including topics or activities related to students' established individual interests could provide a context in which student motivation to engage in the curriculum is more likely to occur (Renninger, 2000). In comparison, situational interest has been discussed as an observational state occurring during an activity, as antecedently related to environmental conditions and as characterized by behavioral engagement (Hidi, 1990; Krapp, Hidi, & Renninger, 1992). Environmental conditions in the classroom can set the stage for situational interest to be captured and sustained, which may lead to student motivation to engage in the curriculum and individual interest to develop (Hidi and Harackiewicz, 2000). In this regard, given the right environmental circumstances, particularly a creative and innovative lesson plan, situational interest could occur in the absence of a pre-existing individual interest regarding a topic or activity. The construct of situational interest has been discussed in the educational literature as a motivational model of teaching. This model focuses on classroom events, stimulus control opportunities and on the immediate, observational effect on student behavior. Theorists pose that a situational interest model of teaching would greatly complement the constructivist model of teaching by focusing on interest as a source of motivation throughout various learning opportunities (Palmer, 2005).

The applied behavioral literature complements the motivational model as related to situational interest discussed previously. Antecedent stimulus conditions become more relevant, or "interesting" to the learner when they are paired, even temporarily, with reinforcement. An antecedent stimulus of this relational nature is referred to in the behavioral literature as a discriminative stimulus, or S^D. Under these "situational" circumstances, these antecedent events are more likely to evoke behaviors that access

reinforcement. The S^Ds become correlated with the availability of reinforcement when a learner engages in a particular behavior, thus establishing a contingency under which there is an increase in the likelihood the behavior will occur - referred to as operant conditioning (Cooper et al., 2007; Mazur, 2006; Skinner, 1963). In this regard, assuming that the environmental conditions associated with a classroom activity are reinforcing to a student at a given moment, there is a higher likelihood that the student will behaviorally engage in the activity. The emphasis of this association falls upon the assumption that there are environmental conditions that are currently reinforcing to the student. The behavioral literature discusses learner motivation to engage in an activity as related to the current value of a particular environmental stimulus as a reinforcer of behavior. Referred to as motivating operations, or MOs, a student may or may not desire a particular stimulus at a given moment, thus either increasing or decreasing the likelihood that they will engage in behaviors previously associated with gaining access to the stimulus (Michael, 2004).

Since the value of reinforcement, or situational interest, can be such a transient occurrence, in order for a teacher to maximize student behavioral engagement in instructional objectives, several sources of interest, motivation and reinforcement need to be embedded throughout a learning activity. In this regard, one must revisit the concept of the free operant – given free access to a variety of stimuli, under what conditions, or with what materials are learners most likely to engage in behaviors that could lead to social and/or learning opportunities? It is important to consider the social milieu in which students exist and the history of contingent reinforcement to which the student has been exposed.

The current generation of students is accustomed to accessing and transmitting information instantly in a digital society rich in graphical content and interconnectivity. In this regard, students' brains are continuously exposed to parallel processing of information and multitasking in the context of instant gratification and frequent rewards (Prensky, 2001). The fact remains that the current generation of students not only values technology, but their socialization as a generation has in many ways been defined via graphic rich digital interconnectivity with random access to information, inherent multitasking and high rates of reinforcement.

Is there a difference in the thought processes of the current generation of students as the result of their twenty-first century socialization? Current neuroscience research discusses the organization of neuronal connections as malleable and constantly changing based on the input received from a learner's environment. This neuroplasticity is related to patterns of thinking that arise out of a learner's social experience and interactions (Richards et al., 2000). A learner selectively focuses attention by filtering out irrelevant stimuli and allocating working memory to select stimuli. Selective attention, or 'interest,' is regulated by dopamine activity, and is enhanced via motivational states, choice making and social interaction (Alcaro et al., 2007; Alcaro, Huber & Pariksepp, 2007; Niv, 2007; Roesh, Calu & Schoenbaum, 2007). To revisit the concept of the "digital native," one must consider how the frequency, type and quality of exposure to technology-based stimulation have influenced the neuro-cognitive structure of the brains of the current generation (Prensky, 2001). Theorists have posed that digital natives structurally think differently than their digital immigrant predecessors – that their thought processes resemble hypertext in nature and "leap around" in a parallel rather than sequential

manner (Moore, 1997). It is important to consider how and under what conditions students process information in order to present academic material in a manner that maximizes retention potential.

Children's Television Workshop (CTW) has established a comprehensive body of research to support the educational television show, *Sesame Street.* More than 1,000 studies have examined the efficacy of *Sesame Street* on supporting the development of literacy, number skills, pro-social behavior and factors associated with capturing and sustaining children's attention, making it the most heavily researched series in the history of television (Fisch & Truglio, 2001). CTW integrated educational curriculum into television production via formative and ongoing evaluative research. Behaviorism was a prominent movement in psychology at the start of formative research for *Sesame Street*. The emphasis on observable behavior as a primary source of data informed the methodology of CTW inquiry with regards to attention, engagement and comprehension in pre-school age children (Mielke, 1972; Palmer, Chen, & Lesser 1976; Skinner, 1971; Sproull, 1973). The research methodology of *Sesame Street* considered competing items/activities in a child's environment to which attention may be allocated to in the presence of the television program, such as coloring, playing with toys, siblings, etc. (Anderson, Field, Collins Lorch & Nathan, 1985; Fisch & McCann, 1993). In this regard, a central goal of *Sesame Street* was to embed educational content into contexts that are preferred, familiar and relevant in children's lives. The resulting merge of education and entertainment was based on the interaction of attraction and comprehension of content via short, highly engaging video segments (Fisch & Truglio, 2001). These segments were strategically sequenced and condensed into highly engaging video clips that included

varied repetition of concepts to increase generalization of knowledge (Ball & Bogatz, 1970). This cornerstone approach of CTW fosters the ability of students to process educational content and to build comprehension of new academic material (Fisch, 2000; Inhelder & Piaget, 1958; Newcomb & Collis, 1979).

The integration of digital technology-based resources into lesson delivery has immense instructional potential. The culmination of literature discussed above with regards to environmental variables associated with student interest, engagement, motivation, cognitive processing supports the utility of interactive technology based multimedia presentations rather than lengthy presentation of material in one format. Dewey, Montessori and Marzano emphasize teacher observation of student behavior as the key source of data to inform selection of high yield instructional strategies. In consideration of the digital native student, such strategies would clearly include the integration digital technology multi-sensory learning tools. The educational and behavioral literature on interest and motivation as related to antecedent environmental factors further substantiates the value in resourcing curricula to meet twenty-first century technology learning objectives and standards. Digital-based multimedia instruction has been correlated with improvements in learning and retention as compared with traditional lecture-based instruction and materials (Bagui, 1998; Fletcher, 2003; Kozma, 2003; Mayer, 2001). An increase in behaviorally observable motivation as well as knowledge, skills and positive attitudes towards learning has also been observed in students engaged in technology-infused multimedia lesson designs (Egenfeldt-Nielsen, 2005; Rebetez & Betrancourt, 2007). Improvements in these dimensions of learning could be attributed to the visual, auditory and kinetic multi-coding of information (Clark & Paivio, 1991;

Mayer & Moreno, 1998). These factors cannot be emphasized enough as teachers implement the best practice of observing student behavior to determine student learning needs and high yield teaching strategies to implement (Dewey, 1938; Marzano, 2001; Montessori, 1965). When brought into the learning environment, these technologies have the potential to support student learning in a manner that cognitively captures their interest and motivation.

However, one challenge that still remains is that every student has different interests and skill levels. It is not enough to integrate cutting-edge multi-sensory and/or multimedia technology into the classroom to engage students in learning. Instruction must be designed and delivered in a manner that motivates students to engage in learning that will prepare them to navigate a technology supported, globalized and knowledge-centered society. In order to maximize motivation and engagement to support optimal learning, instruction must be designed and delivered in a manner that ensures every child is being appropriately challenged and that learning opportunities are matched to students' diverse needs and abilities. A 'one size fits all' approach is highly ineffective in classrooms with students of various backgrounds, skills and learning histories (Rose & Meyers, 2002). To support all learners in meeting their academic and social potentials, educators must provide opportunities for learning that are matched to students' needs and capacities. In this regard, the expertise and pedagogical practices of the teacher are indispensable resources. When instruction is effectively differentiated to support varied readiness levels, students are able to operate within their zone of proximal development, thus maximizing the potential for learning to take place (Vygotsky, 1978). The challenge faced by educators is to maximize the learning potential of an increasingly diverse

student population including English language learners, students that engage in challenging behaviors, general education students struggling to meet grade level expectations as well as special education students.

At its most fundamental definition, special education is specially designed instruction. The provision of appropriate accommodations and supplementary aides must be implemented in the least restrictive environment that will allow students with disabilities to access the curriculum and to be integrated with non-disabled peers to the maximum extent possible. Federal legislation mandates that districts provide educational programming that is individualized to meet the unique needs of each student with disabilities, and that is structured and delivered in a manner that allows for each student to benefit from their learning environment. State educational codes mandate the implementation of specific and individualized accommodations to remove barriers to access to curriculum for students with disabilities (Librera, Eyck, Doolan, Brady & Aviss-Speding, 2004; Special Education New Jersey Administrative Code, 2006). Joint legislation defines twenty-first century educational goals to ensure that students become technologically literate by eighth grade, and universal access to technology mediated instruction.

The Universal Design for Learning paradigm discussed previously is conceptualized to ensure curriculum access for the broad continuum of backgrounds, learning styles, abilities and disabilities of all learners (Center for Applied Special Technologies [CAST], 2011). True universal design is the practice of designing the environment and products/materials within the environment in a manner that can be utilized by individuals with or without disabilities to increase opportunities for the widest

possible range of users. Universal designs are engineered in a flexible manner to allow accessibility for a community of varied consumers. In order to maximize accessibility, needs for alternatives, options and adaptations are anticipated and accounted for in design. In this regard, universal designs are often variable and malleable rather than individualized. These conceptualized designs are universal and inclusive, accommodating diversity (Rose, Hasslebring, Stahl & Zabala, 2004). Digital technology-based resources have great differentiated instructional potential. Educators can have the opportunity to prudently select the content and types of activities through which learning objectives are presented to students – including audio recordings, videos, games, etc. The manner in which information is presented to students and type of support they receive can also be differentiated via computer-based technology (i.e.: text and/or background color, word-by-word or line-by-line read-aloud text options). The manner in which students navigate content and respond to assessment items can also be adapted via speech-to-text or other assistive technology devices (Hickey-Shultz, 2008; Stromer, Kimball, Kinney & Taylor, 2006).

The Office of Special Education Programs (OSEP) recommends several instructional strategies to maintain student engagement in academic tasks including a) communicating clear lesson objectives, b) delivering content in a highly interactive manner while using clear and concise language, c) teaching students cognitive strategies, d) providing timely positive reinforcement for desired behavior, e) utilizing materials that are relevant and authentic to student experience, f) minimizing competing stimuli and g) utilizing audio-visual aides that capture student interest (Quinn, Osher, Wagner, Hanley, Bader, & Hoffman, 2000). The integration of twenty-first century digital technology

learning tools can be reflective of many of these best practices via a format a) that provides the opportunity to intersperse high interest materials and content in academic tasks of immense variability, b) that provides opportunities for highly interactive learning, both collaboratively in real time and via hyperlinked access to information that supports parallel processing of information, c) that captures twenty-first century relevant and authentic content, d) is conducive to clear mapping of instructional objectives and clear, concise language, e) through which content can be accessed over time, can be accessed repetitively, and f) through which instructional activities can broken down into manageable components and delivered at different paces (Mayer & Leone, 2002).

Classroom environments that are designed to support the needs of diverse learner profiles allow students' to work at varied readiness levels (Teele, 2004; Tomlinson & Eidson, 2003). The potential for technology-based instruction to be an effective outcome-based mediator of curriculum delivery has been well supported in the special education literature. With digital media integrated lesson delivery, the performance of students with high-incidence disabilities has been observed to be consistent with that of same age typically developing peers (Bottge, et al., 2007). Students with disabilities have also reported an increase in motivation to learn utilizing digital media solutions (Heo, 2007) and have demonstrated an increase in high-level questioning during instruction (Reith et al., 2008) and advanced critical thinking skills (Hur, 2001). The effective integration of high-interest digital multimedia technology to deliver core curriculum content has the potential to function as Accessible Instructional Materials (AIM), which remove the barriers associated with challenges such as processing written text experienced by students with disabilities (Zabala & Carl, 2010). An educator's strategic selection and

integration of technological supplements such as hyperlinked information or digital activities can allow for the learning process to be anchored to a universally designed, high-interest, realistic and authentic context for students with and without disabilities.

Positive Behavior Interventions & Supports (PBIS)

Multilevel Behavioral Support in the Natural Setting

School-based Positive Behavior Interventions & Supports (PBIS) is an evidence-based, data-driven prevention model that applies principles of learning theory at a systemic level to prevent the development of negative behaviors and to support positive behavior change by teaching adaptive, replacement behaviors. School-based PBIS is a multi-tiered prevention system based on the public health model, which can be implemented in school systems as a continuum of positive behavior supports (Sugai & Horner, 2002). Accordingly, as a prevention model, PBIS practices are proactive, as opposed to reactive, with a significant emphasis on antecedent strategies. Primary level, school-wide PBIS programming may include the integration of social-emotional learning objectives via large assemblies and/or smaller classroom lessons, posting visual aids which include positive social-emotional "language" used in a school, and the delivery of via tangible rewards and/or public recognition of students who meet the behavioral expectations of the school community. Secondary level PBIS targets students who have been identified as "at-risk" for engaging in chronic problem behavior and may include counseling groups or simple individual behavior plans. Tertiary level PBIS are individualized for students who exhibit patterns of problem behaviors that are interfering with their ability to benefit academically and/or socially from their educational environment. Such interventions often include functional assessments of targeted

behavior(s) and a continuum of data-driven individualized supports to make problem behavior less effective, efficient and relevant and desired behavior more functional (Eber, Sugai, Smith, & Scott, 2002; Lewis & Sugai, 1999).

The Role of the Behavioral Consultant

School psychologists have the potential to be vital supporters in the ongoing endeavor to include students with disabilities and/or students who have a history of engaging in challenging behaviors in general education classrooms. School psychologists have been trained and have experience in collaborative consultation, behavioral and academic intervention design, curriculum adaptation, modification of learning environments, program evaluation, and other specialties through which they may assist in developing and sustaining effective inclusion programs. Through the practice of school-based behavioral consultation, school psychologists have the opportunity to model data-based decision making as best practice in supporting academic/behavioral adaptive functioning and can support schools to become reflective learning organizations which have the capacity to develop and maintain sustainable change (Howes, Frankham, Ainscow, & Farrell, 2004). The National Association of School Psychologists is in strong support of the continuation and strengthening of the mandates associated with IDEA and promotes the practice of school psychology in fostering the development of inclusive schools (NASP, 2007).

As mentioned previously, effective instruction and classroom management must simultaneously support a range of educational and behavioral needs in a timely manner. Further, there are several challenges that districts face when implementing federal legislation and state code requirements to support the educational needs of students with

disabilities. One such challenge is to provide appropriate accommodations and supplementary aides in the least restrictive environment that will allow students with disabilities to be integrated with non-disabled peers to the maximum extent possible. Another is the provision of funding to support placement, and adequate staffing with regards to number and expertise. In fact, current fiscal trends have drastically reduced state funding to districts to support special education. Among several other cutbacks, this decrease in state funding has resulted in a reduction in staff, and the return to district of many students whose special education placement were in private, out-of-district educational facilities. These returning students often include those who have a history of engaging in challenging behaviors. Supporting these students in-district poses particular challenges with regards to least restrictive placement and individualized accommodations.

As previously stated, student achievement and challenging behavior are constructs that are defined according to the interpretations of stakeholders within the systems in which students are embedded. Accordingly, challenging behavior is further defined as behaviors that interfere with the attainment of outcome measures of student academic and social success within the culture of a particular system (Cooper, Heron & Heward, 2007). The behavioral consultation model fosters sustainability, as it supports consultees in the development of knowledge, skills and abilities to effect change in many students in an ongoing and cost-effective manner. Professional behavioral consultation is an efficient and cost effective means to improve academic functioning, and has overall positive effects on the client (Reddy, Barboza, Files & Rubel, 2000).

Antecedent Control

Behavioral consultants must consider the systemic factors discussed above as setting events that may exert some influence on both the presence of target behaviors and the success of interventions. Not only must the influence that systemic factors may have upon behaviors be considered, but interventions should be designed to control for these factors. However, it is often systemic factors that prove to be the variables that interfere with the success of interventions. The phenomenon of reciprocal determinism speaks to the challenges associated with the implementation of positive behavior supports in the classroom (Bandura, 1978). The theory of reciprocal determinism suggests that an individual's behavior is influenced by and influences the social environment. From an operant learning perspective, student behavior is shaped via the conditioning effects that environmental factors exert on behavioral responses (Skinner, 1963). A student's social milieu is, in part, created via the student's perceptions of environmental circumstances and their behavioral interactions within social contexts. However, it is also critical to highlight the effect that student behavior has upon the environment. Social learning theory underscores the bi-directional relationships and intrapersonal effects that shape behavior. In this regard, the behavior of the individual and the behavior of others are conditioned. For example, consider the student who engages in aggressive behavior in the classroom. The consequence of engaging in aggression may be removal from the classroom. Depending on the frequency, intensity and/or duration of episodes of aggression, the student may be suspended from school. In this regard, staff may inadvertently reduce the frequency of social interaction or delivery of demands upon the student to avoid further episodes of aggression. Further, other students may begin to

avoid social interaction with the student. These dynamics may serve to increase or decrease the likelihood that episodes of aggression will continue to occur, depending on what has been determined to be the function of the behavior. If the function of aggressive behavior is escape from demands/attention, aggression may continue to occur when attention and/or demands are presented, as escape has been reinforced in the past via removal from the classroom/school. A behavioral consultant may, under these circumstances, recommend that escape be provided on a schedule, so that a functional means through which escape can be accessed can be trained, and/or that escape be utilized contingently. They may also recommend that when escape is attempted via aggression, that access is blocked/prevented. However, systemic dynamics, such as those related to school code of conduct or tolerance of classroom routine disruption, might hinder these strategies from being implemented effectively and with fidelity. Escape via aggression may be reinforced on an intermittent schedule, thus highly increasing the likelihood that the behavior will continue to occur. In this regard, the practice of school-based behavioral consultation is certainly not immune to the systemic influences and constraints previously discussed. While differential reinforcement of appropriate requests for escape and blocked access to escape via engaging in aggressive behavior may be best clinical practice to reduce the likelihood of future escape-maintained episodes of aggression, fidelity of plan implementation may interfere with attainment of behavioral goals. In this regard, the vital clinical question pertains to identifying and manipulating environmental factors that would make escape less desirable. From an antecedent control programming perspective, the therapeutic goal is to make the classroom environment and

activities within it so desirable that students will engage in behaviors that maximize access to learning opportunities.

Traditional behavior support programs in schools typically involve consequent-based strategies. These strategies often do not consider vital antecedent variables that can be manipulated to decrease the likelihood of future occurrences of the target behavior. Functional assessment data can be collected to develop individualized behavior intervention plans, but this phase of behavioral consultation is implemented *after* several occurrences of a behavior that has been determined to interfere with a student's academic or social functioning. The FBA process is lengthy, costly, and is designed to effect change in an individual students' behavior. Overall, behavior management strategies are implemented in an attempt to shape classroom behavior with the desired end result as the student remaining interested or attentive to/engaged in the curriculum, rather than engaging in challenging behavior. A focus on student-centered variables, including interest and the constructs of attention, motivation and engagement, further defines and supports a closer examination of antecedent-based strategies to be explored in positive behavior support practices. This perspective offers student interest as the means, not the ends, through which effective classroom management and instructional delivery occur. It is of important clinical interest to examine the potential for lesson development to integrate preferred, high-interest media as a vital antecedent behavioral support strategy to circumvent disengagement, capture attention, and prevent behavioral problems in the classroom environment. The implications of the value in considering interest, attention, motivation, and engagement in lesson development and curriculum delivery transcends

disability and speaks to best practices in education and school-based behavioral consultation.

Summary of the Problem to be Investigated

Federal and state educational policies delineate twenty-first century standards with regards to knowledge, skills and student access to technology. Ecological systems theory and the UDL environmental planning model recognize limitations to student engagement as limitations in the environment. Dewey, Montessori and Marzano discuss educator observation of student behavior as a vital source of data to inform the identification and integration of high yield instructional strategies and learning tools that will maximize student access to the curriculum. The NSTM behavioral consultation and operant learning model integrates the goals of these illustrious standards. Assessment from a four factor environmental perspective informs behavioral therapeutic programming by identifying variables that can be manipulated to influence student behavior for the purpose of maximizing learning. It is evident that technology functions not only as a free radical among the current generation of digital natives, but also has the potential to support the needs of a wide range of learning via the inherent flexibility in presenting curricular material.

Current educational practices, bound by political requirements to demonstrate quantifiable progress via standardized assessments, operate from a mastery model of academic skills, with an emphasis on literacy and mathematics. As such, pedagogical methods that have been established and verified as effective by stakeholders are often held onto as tried and true practices. In this regard, Howard Gardner refers to schools as conservators of our culture. He notes that the practices associated with institutes of

education have been established via trial and error over long periods of time, and thus data based decision-making has informed the current conservative model of education. While Gardner acknowledges that the conservative model of institutional decision-making lends itself to a very slow process of change, he commends the practice for preventing the sacrifice of the intellectual and moral health of the next generation to the latest trending fad in modern day society.

Gardner speaks to the valuable pedagogical methods and procedures that have been developed over time to develop academic skills in students with and without disabilities. However, Gardner also speaks to the significance of the globalization of modern day society, and emphasizes the need for institutes of education to recognize the importance of interdisciplinary instruction and of supporting multiple intelligences. Although Gardner recognizes conservative practices as justified, he emphasizes the importance of institutes of education adapting to a globalized, knowledge-centered contemporary society (Gardner, 2004). School psychologists can accelerate this adaptation by supporting educators in identifying and manipulating variables to maximize student interest, engagement and twenty-first century learning.

It is apparent that technology has immense instructional potential when integrated effectively by educators (Dani & Koenig, 2008; Lei & Zhao, 2007; Russell, Lucas & McRobbie, 2003; Schroeder, Scott, Tolson, Huang & Lee, 2007; Songer, 2007). However, there are many constraints that educators face when attempting to apply research to practice (Burns & Ysseldyke, 2009). In order to support all students in reaching and exceeding state standards, educators need support to integrate evidence-based practices into instruction (Cook & Cook, 2011; Kretlow & Bartholomew, 2010).

The support educators receive in identifying and incorporating multimedia technology solutions into instructional practices is limited (Atkins, et al., 2010; Smolin & Lawless, 2011). Lack of administrative support, limited efficient access to resources as well as limited time to learn how to navigate and integrate resources can serve as barriers to the integration of evidence-based practices (Kretlow & Blatz, 2011).

Efforts in educational standards reform are often focused on addressing issues pertaining to alignment. Standardized state assessments must align with state educational standards, which in turn must align with district standards, district curriculum and classroom-based instructional practices. Local administrators are responsible for "mapping" local practices and resources over the framework of their respective state's curriculum to identify gaps and misalignments. This practice functions to maximize the opportunities for students to learn the knowledge and skills indicated in Common Core subject areas and assessed via high stakes state testing. Twenty-first century curriculum resources that are readily transformable into universally accessible media at the point of instruction have the potential to support the needs of all learners – with and without disabilities (Jackson, 2004).

District websites are often resourced with a wide range of digital media that have the potential to support core content learning objectives and prepare a diverse student population for success in twenty-first century society. However, to support the integration of twenty-first century technology into classroom lesson plans, teachers would benefit from user-friendly and efficient categorized access to digital media resources aligned with local curriculum (Jackson 2004; Kirriemuir & McFarlane, 2004; Rebetez & Betrancourt, 2007). In this regard, it would be beneficial to establish a process for

identifying and locating digital media that align with state and local standards. This practice can obviate many of the barriers and challenges related to the integration of technology resources that align with state and district standards, that are likely to capture student interest and engagement in learning, and that can support a wide range of student educational needs (Jackson, 2004).

Providing teachers with multimedia technology resources and consultative professional development support are factors associated with substantial changes to teacher instructional behaviors and improved outcomes for students (Borko, 2004; Thomas, Hassaram, Rieth, Raghavan, Kinzer, & Mulloy, 2012). The local curriculum can be indexed with highly engaging, flexible and universally accessible digital content that can be integrated by teachers into lesson plans to maximize student engagement in Common Core instruction. School psychologists can provide consultation services to teachers to maximize the instructional potential of technology by analyzing student behavior from an operant learning perspective as well as assessing student preference and learning needs. This dissertation will culminate in the development of a Common Core Digital Media Index to be utilized for this purpose.

Research Questions

Teachers

1) What are the current teacher perceptions and state of practice regarding the use of digital media technology in Common Core instruction in elementary schools in New Jersey?

    a. How frequently do teachers currently integrate digital media technology into Common Core lesson plans?

    b. What percentage of teachers wants to integrate digital media into Common Core lesson plans more frequently?

    c. What are the most important characteristics of digital media technology that teachers identify as useful in supporting Common Core differentiated instruction?

    d. To what extent do teachers believe that the integration of digital media into Common Core lesson plans offers the potential to support student engagement, motivation and on-task behavior?

    e. What do teachers identify as the most significant barriers that interfere with more frequent integration of digital media into Common Core lesson plans?

2) What percentage of teachers believe that the Common Core Digital Media Index offers the potential to serve as a practical resource to support more frequent integration of digital media into lesson plans?

Behavioral Consultants

3) What are the current behavioral consultant perceptions and state of practice that are relevant to the use of digital media in Common Core instruction in elementary schools in New Jersey?
    a. How often are increases in on-task behavior, student engagement in curriculum and motivation to learn identified as goals by educators in referrals for classroom based behavioral consultation?
    b. What are the most important factors that interfere with classroom-based positive behavior support strategies recommended by behavioral consultants?
    c. What are the most important characteristics of digital media technology that behavioral consultants identify as useful in supporting Common Core differentiated instruction?
    d. To what extent do behavioral consultants believe that the integration of digital media into Common Core lesson plans offers the potential to function as an antecedent behavioral support strategy to support student engagement, motivation and on-task behavior?
    e. What percentage of behavioral consultants want to offer support to teachers with regards to integrating digital media into Common Core lesson plans as an antecedent behavioral support strategy?
4) What percentage of behavioral consultants believe that the Common Core Digital Media Index offers the potential to serve as a practical resource to support more frequent integration of digital media into lesson plans?

Chapter III

Method

Pilot Survey Participants

Teachers

A sub-sample of professionals (n=5) that are currently or previously employed as kindergarten through fifth grade elementary school teachers in New Jersey was selected via purposive expert elicitation sampling. The purpose of expert elicitation is to glean knowledge from individuals that have expertise in an area of scientific interest to the researcher (Meyer & Booker, 2001). Teachers that completed the pilot survey were selected from a convenience sample via existing professional relationships with The Graduate School of Applied and Professional Psychology (GSAPP) and the principal investigator (PI). This pilot design was implemented to serve the purpose of gathering feedback regarding the length of time required to complete the survey and the content and format of the survey (Meyer & Booker, 2001; Patton, 2002). This feedback was used to develop the final version of the survey and to increase the validity of the survey instrument. The teachers that completed the pilot survey were not included in the sample of teachers that completed the final version as to reduce biased responding and contamination of final survey data (Patton, 2002). Table 1 illustrates the relevant demographics of expert teacher pilot participants.

Table 1
Demographics of expert teacher pilot participants (*n*=5)

Participant	Teaching certification(s)	Years teaching	Current educational placement	Current grade level
01	K-5	4	general	3
02	K-3 general ed K-12 special ed	13	administrative	K-3
03	special ed	24	self-contained	1-3
04	K-5 general ed K-12 special ed	7	self-contained	K
05	K-8 general ed	12	general	8

Behavioral Consultants

A sub-sample of professionals (n=3) between the ages of 18-65 that are currently or previously employed as behavioral consultants in New Jersey were selected via purposive expert elicitation sampling. The purpose of expert elicitation is to glean knowledge from individuals that have expertise in an area of scientific interest to the researcher (Meyer & Booker, 2001). Behavioral Consultants completing the pilot survey were selected from a convenience sample via existing professional relationships with GSAPP and the principal investigator (PI). This pilot design served the purpose of gathering feedback regarding the length of time required to complete the survey and the content and format of the survey (Meyer & Booker, 2001; Patton, 2002). Feedback was used to develop the final version of the survey and to increase the validity of the survey instrument. The behavioral consultants that completed the pilot survey were not included in the sample of behavioral consultants that completed the final version as to reduce biased responding and contamination of final survey data (Patton, 2002). Table 2 illustrates the relevant demographics of expert behavioral consultant pilot participants.

Table 2
Demographics of expert behavioral consultant pilot participants (*n*=3)

Participant	Years consulting	Current educational placement	Current grade level
01	4	General and special ed	4-5
02	4	General and special ed	K-3
03	12	Special ed	K-3

Final Survey Participants

Teachers

A sample of kindergarten through fifth grade general and special education New Jersey public school teachers was surveyed using a purposive homogenous and self-selection sampling design. Homogenous sampling is based on researcher judgment and is used to select participants with similar characteristics that are of scientific interest to the principal investigator (PI) and to generalize within the homogenous characteristics of the sample being examined. (Patton, 2002; Shadish, Cook, & Campbell, 2002). Self-selection sampling allows individuals to self-identify as members of the homogenous sample and to voluntarily participate in the study by opting to complete the survey.

Teachers were recruited to participate in the survey via the New Jersey Education Association (NJEA) professional community affiliated social media websites. Current members of the NJEA are able to access the NJEA website member-to-member message board and request to join the Facebook NJEA webpage. Requests to join these social media communities are approved by website moderators that grant membership access. The survey instrument associated with this dissertation was posted on these websites, and explicitly invited kindergarten through fifth grade general and special education teachers to participate.

The NJEA member-to-member message board has 239 users and the NJEA Facebook page has 5,107 members, according to membership information posted on respective social media pages (NJEA, 2014). The NJEA consists of teachers, educational support specialists and student members, which represents the 239 member-to-member message board members. The NJEA Facebook page is representative of NJEA members and their family members. The survey posting and informed consent explicitly invited only kindergarten through fifth grade general and special education teachers to self-select to participate in the survey.

A total of twenty-three (23) surveys were completed. An additional forty-six (46) surveys were begun, but not completed. Only completed surveys were included in the sample as the parameters of the informed consent ensured subjects the ability to exit the survey and withdraw participation in the study without their responses being included in the data set.

The desired number of teacher survey respondents was *at least* between twelve and thirty (12-30) respondents and up to two hundred (200) respondents. Between 12-30 responses was considered the minimal range of respondents for analysis. This research design includes relatively homogeneous participants and narrow objectives. Consensus theory speaks to purposive sampling designs of this nature and discusses that as long as participants possess a certain degree of expertise regarding the domain of inquiry, small sample sizes are sufficient in providing complete and accurate information (Guest, Arwen & Johnson, 2006; Romney, Weller, & Batchelder 1986). An extensive literature review conducted by Guest, Arwen & Johnson (2006) revealed discussions across multidisciplinary scholarly research including between five to thirty (5-30) participants as

sufficient in homogenous purposive sampling designs. In consideration of these homogenous characteristics, results from this dissertation could only be generalized to groups with similar characteristics. Table 3 illustrates the relevant demographics of final survey teacher participants.

Behavioral Consultants

A sample of behavioral consultants in New Jersey was surveyed using purposive homogenous sampling. Homogenous sampling is based on researcher judgment and is used to select participants with similar characteristics that are of scientific interest to the researcher and to generalize within the homogenous characteristics of the sample being examined. (Patton, 2002; Shadish, Cook, & Campbell, 2002). Behavioral consultants completing the survey were recruited via a convenience sample of employees of Project: Natural Setting Therapeutic Management, Rutgers, The State University of New Jersey. The whole population (n=5) of NSTM behavioral consultants that were not advising this dissertation was recruited via email to participate in this study. The entire population (n = 5) as defined completed the survey. Two (n=2) additional NSTM staff members were chair and co-chair of this dissertation, and thus not included in the population to be surveyed nor did they discuss any aspect of this research with the 5 NSTM staff members mentioned above.

The ecological applied behavioral analysis consultation model implemented by NSTM and previously discussed is relevant to the research questions being explored via this dissertation. It is necessary for participants to have an understanding of this clinical model when responding to survey questions based on theoretical assumptions of behavior. In this regard, participants were homogenous with regards to profession,

employment demographics and this professional behavioral consultation practice model. In consideration of these homogenous characteristics, results from this dissertation could only be generalized to groups with similar characteristics. Groups to which the findings of this dissertation could be applied include behavioral consultants that implement a comparable professional behavioral consultation practice model and who have similar employment demographics as compared to participants that completed the survey.

Table 3 illustrates relevant demographic information about survey participants. Table 3 includes the breakdown of survey participants by years in practice, current grade level(s) served, and current educational placement(s) served. Teachers and behavioral consultants reported an average of 12.8 years and 8.1 years in practice, respectively. With regards to teachers, a breakdown of teaching certifications held is also included. It is noted that five (n=5) teachers hold multiple teaching certifications and thus belong to multiple categories in Table 3.

Table 3
Final survey participant demographic data

	Teachers (n=23)	Behavioral Consultants (n=5)
Certification(s)/Grade Level		
General education (K-8)	19	n/a
Special education (K-12)	7[a]	n/a
High school subject area (9-12)	1	n/a
World language (K-12)	1	n/a
Years in practice		
1-5	4	1
6-10	7	3
11-15	7	1
15+	5	0
Average years in practice	M = 12.8	M = 8.1
Current grade levels served		
K-5	18	3
6-8	3	3
9-12	2	5[b]
Current educational placement served		
General education	14	4
Special education (self-contained)	4	5[c]
In-class support	5	5

[a] Five (n=5) teachers hold a dual-certification in general and special education.
[b] Three (n=3) behavioral consultants currently serve K-12, while two (n=2) currently serve 9-12 only.
[c] Four (n=4) behavioral consultants currently serve general education, special education (self-contained) as well as in-class support placements, while one (n=1) serves self-contained special education placements only.

Teacher and Behavioral Consultant Personal Technology Use

Survey items #19 and #17 on the final teacher and behavioral consultant surveys, respectively, assess respondent personal use of technology by frequency of use and by type or purpose of technology. All teachers and behavioral consultants (100%) reported using a smart phone and the internet more than once a day. Both teachers and behavioral consultants most often endorsed using social media more than once a day (73.9% teachers; 40% consultants), online shopping once a week (30.4% teachers; 40% consultants), and online bill pay once a month (34.8% teachers; 60% consultants). The

responses to survey item #19 on the final teacher survey and item #18 on the final behavioral consultant survey are summarized in Table 4.

Table 4. Technology personal use by frequency and type/purpose of technology

Respondent Type/purpose	Categorical frequency percent (%)							
	More than once a day	Once a day	2-3 times a week	Once a week	Once a month	Once every few months	Once a year	Never
Teachers								
Smart phone	100	--	--	--	--	--	--	--
Internet	100	--	--	--	--	--	--	--
Social media	73.9	8.7	8.7	8.7	--	--	--	
Online shopping	--	--	26.1	30.4	17.4	21.7	4.4	--
Online bill pay	--	4.4	21.7	30.4	34.8	4.4	--	4.4
Behavioral Consultants								
Smart phone	100	--	--	--	--	--	--	--
Internet	100	--	--	--	--	--	--	--
Social media	40	20	40	--	--	--	--	--
Online shopping	--	--	20	40	20	20	--	--
Online bill pay	--	--	20	20	60	--	--	--

Procedure

This research design included cross-sectional survey methodology and two versions of a pilot tested survey instrument and website database developed by the principal investigator (PI). Information gathered was examined with regard to the research questions indicated above. Pilot and final versions of surveys were developed via QuestionPro, a firewall secured web-based software for developing and distributing surveys. Item number one in the survey was designed in such a manner that respondents had to read and provide informed consent by checking off a box via the online interactive format in order to access the survey. Responding to item number one served as informed consent. If individuals did not wish to participate, they simply did not initially follow the link to the survey, or they did not respond to item number one and thus were not permitted to access the survey.

There was minimal risk associated with participation in this research. Surveys were distributed via QuestionPro. QuestionPro software has been reviewed by an independent third party to ensure transparency and accountability with regards to QuestionPro's privacy practices, policies and/or procedures which are designed to comply with any and all applicable international, country specific, US Federal, state and/or local laws, codes, regulations, and requirements (QuestionPro, 2014). All data is owned and accessed only by the survey creator (PI) who must provide a username and password to gain access.

Additional security features were upgraded on the PI's Question Pro account including Secure Socket Layer Security and Question Pro's "Respondent Anonymity Assurance." Secure Sockets Layer (SSL), is described by Question Pro as follows: "a cryptographic protocol that provides communication security over the Internet…In practice, this provides a reasonable guarantee that one is communicating with precisely the web site

that one intended to communicate with (as opposed to an impostor), as well as ensuring that the contents of communications between the user and site cannot be read or forged by any third party" (Question Pro, 2014). Survey responses were collected anonymously via QuestionPro's "*Anonymous Respondents"* function, and were not linked to participants' email or IP addresses. Random generated participant numbers were utilized in place of email addresses, but were not linked to email addresses as to ensure confidentiality of respondents. Respondent Anonymity Assurance is described by Question Pro as follows: "The Respondent Anonymity Assurance (RAA) asserts that once it is enabled on a survey, although computer generated identification numbers for individuals will be generated, the survey researcher will not have access to both the respondent's email address as well as the response data at the same time" (Question Pro, 2014). Once this dissertation was completed, email addresses were deleted from QuestionPro. All email addresses were kept confidential and utilized only for the purposes of email messages related to the survey and survey link distribution.

There are potential benefits to respondents for their participation in the survey. As part of the online survey, respondents were provided with hyperlinked access to the CCDMI, a resource that has been designed for the purpose of providing teachers and behavioral consultants with user-friendly access to digital media resources that are indexed according to Common Core State Standards. These resources may be used for the purpose of supporting Common Core instruction in general and special education classrooms. The Common Core State Standards are designed to prepare students for 21st century colleges and careers. Further, as society becomes increasingly digitally connected, its members must become and remain technologically literate in order to function to a continually re-defined level of efficiency. In a world permeated by technology, individuals with or without disabilities can

function more effectively if they are familiar with and have a basic understanding of technology (Pearson & Young, 2002).

Pilot Survey

Participants were emailed a link to the online self-report pilot survey, which included consent procedures and instructions on completing the survey and providing feedback. Teachers and behavioral consultants participated in the pilot project one time at a self-selected time that was convenient for them. Participants were asked to respond to the final survey within a two-week period. Follow-up reminder emails were sent to all participants after one week and at the end of the two-week period asking those who may have not responded yet to do so within an additional one week period. The emails were sent to participant professional/work email addresses via QuestionPro, a firewall secured web-based software for developing and distributing surveys. Pilot participant email addresses were already available to the PI via exiting professional relationships, and were publicly posted.

Pilot data was analyzed qualitatively to inform the wording, structure and format of the final version of the survey. Quantitative analysis of survey items, including factors such as rate of response to each item and skipped items, was also examined to inform the final version of the survey. Since the total (n) of pilot participants was small, all feedback was examined and considered individually. Both individual and consensus feedback trends influenced modifications to the final survey. Any data extracted from QuestionPro for the purpose of data analysis was verified for 100% accuracy and will be kept on a password protected computer file that is protected with a firewall for a minimum of three years. Upon the completion of this dissertation, data was removed from QuestionPro.

Final survey

Modifications to the pilot surveys were made based on pilot participant feedback and are reflected in the final surveys. Teachers were recruited to participate in the final survey via the New Jersey Education Association (NJEA) professional community affiliated social media websites. Current members of the NJEA are able to access the NJEA website member-to-member message board and request to join the Facebook NJEA webpage. Requests to join these social media communities are approved by website moderators that grant membership access. The survey instrument associated with this dissertation was posted on these websites, and explicitly invited kindergarten through fifth grade general and special education teachers to participate. Teachers were provided the option to voluntarily choose to complete the survey anonymously by following the link to the survey posted on these sites. Representative staff from the Communications Department of the NJEA confirmed that there was no formal approval process related to posting the survey to these social media sites, and that the PI, as a NJEA member, was free to post the survey to the sites.

Email addresses for NSTM behavioral consultants were publicly posted on the Rutgers website. Participants were emailed a link to the online self-report final survey. All email addresses were kept confidential and utilized only for the purposes of email messages related to the survey and survey link distribution. Electronic or hard copies of email addresses were destroyed after input to QuestionPro. Once this dissertation was completed, email addresses were deleted from QuestionPro.

Instruments

Common Core Digital Media Index

School district websites in the State of New Jersey/Middlesex County were viewed and searched for hyperlinked digital resources that were posted by website administrators for the assumed purpose of reinforcing and/or complementing curriculum standards. These hyperlinked resources were divided into World Wide Websites and mobile device applications, indexed according to suggested alignment with grade level Common Core State Standards (CCSS), compiled into the *Common Core Digital Media Index* (CCDMI) and published publicly as an Internet site on the World Wide Web (Heimlich, 2014). Upon analysis of pilot survey results, the CCDMI website was modified to increase the utility of the website for its intended users. Based on participant feedback, grades and subject areas were color-coded on the homepage of the CCDMI website to add to ease of user navigation.

Information posted on district websites is accessible to the public. Secondary data analysis of publicly available data is a common research method. The term '*publicly available'* refers to the fact that the general public can obtain the data. It is assumed that hyperlinked resources posted by district website administrators have been predetermined to contain relevant and appropriate content for the student population and to have educational value. Although the hyperlinked resources that were compiled are limited to those posted by New Jersey/Middlesex County school districts, all states must align their local curricula with the CCSS, and resources compiled have been indexed accordingly. In consideration of the variability of hyperlinked resources that may exist on school district websites in other counties in the State of New Jersey, it is important to note that the resources included in the CCDMI are not exhaustive of available educational digital media resources and may not be

representative of hyperlinked resources available on all district websites in New Jersey.

The CCDMI homepage includes grade level Common Core subject area hyperlinked sub-pages to digital media resources and mobile device applications. These sub-pages each consist of a spreadsheet that alphabetically indexes the digital media/mobile device application, a description of the resource, hyperlinked access to the resource and suggested grade levels and Common Core State Standards to which they may apply. The CCDMI website was developed using Google Sites, a webpage creation tool offered by Google as part of the Google Apps productivity suite. Google Apps has been reviewed by an independent third party to ensure transparency and accountability with regards to privacy practices, policies and/or procedures which are designed to comply with any and all applicable international, country specific, US Federal, state and/or local laws, codes, regulations, and requirements (Heimlich, 2014). The CCDMI website has been shared publicly as to not require respondents to login or create a Google account.

Prior to the development of the CCDMI, electronic searches were performed in Google using the following keyword phrases: *"free common core digital resources;" "free common core digital media;"* and *"free common core digital media resources."* Results on the first three pages of each search yielded several websites that consisted predominantly of: 1) advertisements for paid access to digital resources, 2) lists of hyperlinks to other websites through which the user would be required to search and navigate to determine educational relevance and 3) sites that consisted of lists of lesson plans and/or other downloadable documents.

Hyperlinked resources included in the CCDMI are limited to digital media resources that were posted by a Middlesex County district-wide/departmental website administrator

(not individual teacher web pages) are free (at the time of development of the CCDMI) and do not require an individual or district paid subscription to access. Resources included in the CCDMI are also limited to primary digital media resources and do not include: 1) sites that are designed as lists of or advertisements for other sites that users must search through to gain access to resources or 2) consist solely or predominantly of lists of lesson plans or informational/downloadable material. In summary, all resources included in the CCDMI will be accessible via primary hyperlinked access through the CCDMI Google Sites website. These limitations were established to serve the stated purposes of this dissertation, which include providing a user-friendly digital media technology resource for teachers and behavioral consultants.

Three websites were identified during the internet searches discussed above that consisted of digital resources indexed according to suggested alignment with the Common Core State Standards. These websites included: 1) Common Core Explorer, a sub page of the Commonsense Media website, 2) Itunes U – a website that contains lists of paid and free applications and videos – many of which are indexed according to suggested Common Core State Standards and 3) Federal Registry for Educational Excellence. The distinguishing factor between the CCDMI and these websites is that the resources included in the CCDMI solely consist of those posted by school districts in Middlesex County, New Jersey, with the assumption that included resources have been determined by the local education agencies as educationally relevant and suitable for students.

To ensure transparency and accountability safeguards associated with the development and usage of the CCDMI website, the following information is posted on the CCDMI homepage, along with the most current date that the site has been updated:

"The sites/resources included as links within this webpage have been gathered only from the home pages of public school districts in Middlesex County, New Jersey. The Common Core Digital Media Index (CCDMI) has compiled and catalogued these 21st century digital resources to reflect the suggested Common Core State Standard(s) to which they may apply. The CCDMI has been developed for the purpose of serving as a user-friendly site to support educators in gathering 21st century digital resources to support Common Core instruction. This indexed system is not exclusive as linked resources can be applied to support instruction in content area other than those specified via the CCDMI system. The owner of this webpage does not guarantee, approve or endorse the information or products available on sites that are accessed via the links provided." (Heimlich, 2014)

Pilot Survey

A review of the literature did not yield a specific instrument to address the information sought from this dissertation. In this regard, two versions of a self-report online survey were developed by the PI and posted on QuestionPro, a secure domain within a public website that is available exclusively for survey and data gathering activities as previously discussed. Survey questions were developed based on areas of concern identified via the literature review, which led to the development of the research questions that were explored via this dissertation. Although the two versions of the survey have not been empirically established as reliable and valid instruments, the face validity of items was assessed via the pilot survey to offer support to the validity of the content of the survey. The final survey version was developed based on feedback gathered from the pilot survey.

The teacher and behavioral consultant versions of the pilot survey had forty (40) and thirty-eight (38) question items, respectively. These items consisted of each survey item followed by a feedback item(s). Item number one in the surveys was designed in such a manner that respondents had to read and provide informed consent by checking off a box via the online interactive format in order to access the survey. Responding to item number one served as informed consent. If individuals did not wish to participate, they simply did not initially follow the link to the survey, or they did not respond to item number one and thus

were not permitted to access the survey. Item number two consisted of a description of the purpose of the survey and logistical instructions with regards to completing the survey. Item number three provided the following three terms as defined for the purposes of the survey and related references:

Common Core State Standards - a clear set of shared goals and expectations with regards to college and career-ready standards of knowledge and skills in English language arts/literacy and mathematics for kindergarten through 12th grade students (National Governors Association, 2010).

Digital media technology/resource - Websites that primarily consist of videos, audio recordings, games, interactive quizzes or other activities and/or mobile device applications.

Differentiated Instruction - Teaching best practice based on the principle that instructional approaches and presentation of material should be flexible and adapted to meet the needs of individual and diverse students in classrooms (Tomlinson, 2001).

Lesson Plan –A detailed description and guide of daily classroom-based instruction, developed by a teacher, that outlines goals and objectives regarding the knowledge and skills that students will acquire during instruction.

The remainder of the teacher pilot survey items included ten (10) multiple choice format questions, three (3) rank-ordering format questions and one (1) item that provided instructions and a link for viewing the CCDMI. Also included were five (5) open-ended format employment demographic questions with regards to grade level, area of education (general/special education), educational placement (when applicable to special education teachers) and years taught, average number of students assigned to the teacher each year and teaching related certifications held by the respondent. To ensure choice in level of anonymity, the demographic questions were formatted in a manner that did not require the

participant to respond in order to continue to complete the survey. Open-ended format question feedback items were included after each survey item for a total of (18) feedback items. Survey items broadly covered the following topics: 1) Current practices with regards to the integration of digital media resources into Common Core instruction; 2) Perceptions with regards to the utility of digital media resources to support Common Core instruction; 3) Barriers that create challenges with regards to the integration of digital media into Common Core instruction; and 4) Perceptions with regards to the utility of the CCDMI as a resource to identify digital media resources to support Common Core instruction.

The remainder of the behavioral consultant survey items include ten (10) multiple choice format questions, two (2) rank-ordering format questions and an item that provides instructions and a link for viewing the CCDMI. Also included are four (4) open-ended format employment demographic questions with regards to years practicing as a behavioral consultant and grade level(s), area(s) of education (general/special education), educational placement(s) (when applicable to special education) to which services are provided. To ensure choice in level of anonymity, the demographic questions were formatted in a manner that did not require the participant to respond in order to continue to complete the survey. Open-ended format question feedback items are included after each survey item for a total of (17) feedback items. Survey items broadly covered the following topics: 1) Current practices with regards to behavioral consultation; 2) Barriers that create challenges with regards to the implementation of classroom-based positive behavior supports; 3) Perceptions with regards to the utility of digital media resources to support Common Core instruction; and 4) Perceptions with regards to the utility of the CCDMI as a resource to identify digital media resources to support positive behavior and Common Core instruction.

Demographic information collected was limited to employment history, and did not include any identifying information. To ensure choice in level of anonymity, the demographic questions were formatted in a manner that does not require the participant to respond in order to continue to complete the survey. To ensure choice in responding to all survey items, participants were not required to respond to any item to continue to complete the survey (except for informed consent related items) and had the option to skip items by selecting the "continue" button after each item. Participants had the option to select to return to previously endorsed items by selecting the "back" option available throughout their participation in the survey. Participants were also able to choose to "save & continue" the survey at a later time. Further, participants had the option to exit the survey and withdraw from participation at any time by selecting the "exit survey" option available throughout their participation in the survey. The survey settings were designed in such a manner that allowed for all responses from participants that may have chosen to exit the survey (instead of choosing the save & continue option) to be filtered out and deleted prior to data analysis, under the assumption that individuals decided to withdraw their participation. None of the pilot survey participants exited the survey, thus all data was retained for analysis.

Final Survey

Feedback data gathered via the pilot survey was analyzed qualitatively to inform the wording, structure and format of the final version of the survey. Quantitative analysis of survey items, including factors such as rate of response to each item and skipped items, also informed the final version of the survey. Since the total (n) of pilot participants was small, all feedback was examined and considered individually. Both individual and consensus feedback trends influenced modifications to the final surveys. Microsoft Word Versions of

the final teacher and behavioral consultant surveys can be found in Appendices C & D, respectively.

With regards to general aspects of the survey design, the time that it would take for participants to complete the final survey was estimated to be 10 minutes. Pilot survey participants noted difficulty utilizing Question Pro to complete the survey from a mobile device such as a smart phone or iPad. The estimated time to complete the survey, the necessity to complete the final survey using a laptop or desktop PC and a warning not to complete the final survey using a mobile device was included: 1) In the social media postings and emails inviting and reminding participants to complete the final survey, 2) In the final version of the informed consent and 3) in the first instructional survey item that describes the structure and purpose of the final survey. A copy of the informed consent for the anonymous final teacher survey can be found in Appendix A.

Based on the feedback gathered from teacher pilot survey results, the following modifications to final survey items were made: 1) Instructions were included in item #5 indicating that the participant can choose more than one response ('Check all that apply'), 2) Item #6 was reworded to be stated more clearly (changed from 'How useful do you feel digital media technology to be in the preparation of differentiated Common Core lesson plans,' to 'Do you feel that it is useful to integrate digital media technology into your differentiated Common Core lesson plans?'), 3) In item #7, the ranked-ordered response choice, 'Captures 21st Century relevant and authentic context' was changed to 'Technology-mediated instruction supports the development of students' digital literacy skills.') to be stated more clearly, and 4) In Item # 10, the ranked-order response choice, 'I do not want to integrate digital media technology more frequently into my lesson plans,' was removed as an

option since a) it was reported by participants as not closely related to the survey item and as b) this information is more appropriately assessed via another existing survey item.

Based on the feedback gathered from participants via the pilot teacher survey, the following modifications to behavioral consultant survey items were made for consistency: 1) Item #8 was reworded to be stated more clearly (changed from 'How potentially useful do you feel digital media technology to be in the preparation of differentiated Common Core lesson plans developed by teachers,' to 'Do you feel that it could be potentially useful for teachers to integrate digital media technology when preparing differentiated Common Core lesson plans?'), and 2) In item #9, the ranked-ordered response choice, 'Captures 21st Century relevant and authentic context' was changed to 'Technology-mediated instruction supports the development of students' digital literacy skills,' to be stated more clearly. A copy of the informed consent for the confidential final behavioral consultant survey can be found in Appendix B.

Data Analysis

Quantitative descriptive statistical analyses were utilized to examine trends in teacher/behavioral consultant practices and perceptions relevant to the use of digital media in Common Core instruction. These response rates provided information to address research questions 1a through 1e and 3a through 3e. Descriptive analyses were also utilized to examine teacher/behavioral consultant perceptions of the potential of the Common Core Digital Media Index (CCDMI) to serve as a practical resource to support more frequent integration of digital media into lesson plans. These response rates provided information to address research questions 2 and 4.

All twenty-three (23) respondents answered all survey items. Aggregated frequency distributions and measures of central tendencies were calculated to determine response rates to survey item endorsements. These response rates provided information with regards to current teacher and behavioral consultant practices and perceptions. Demographic data collected was aggregated and analyzed in terms of frequency distributions and measures of central tendencies for the purpose of describing the samples.

Descriptive statistics are commonly utilized to summarize data in behavioral science research. These data analysis methods are implemented to describe characteristics of the sample and determine response rate to survey endorsements for the purpose of informing research conclusions (Stangor, C. 2011; Thompson, C.B. 2009). Limitations associated with descriptive statistical analysis include the inability to infer relationships between variables of interest, however, this limitation provides the opportunity for further avenues of scholarly inquiry. An additional relevant limitation of descriptive analysis pertains to generalizability of findings. However, as previously discussed with regards to purposive homogenous sampling, results from this dissertation could only be generalized to groups with similar characteristics. Groups to which the findings of this dissertation could be applied include elementary school teachers that have similar employment demographics as compared to participants that completed the survey and behavioral consultants that implement a comparable professional behavioral consultation practice model and who have similar employment demographics as compared to participants that completed the survey.

Spearman rank-order correlations were performed to explore the strength and direction of associations between final teacher survey items. These analyses were performed to determine which teacher perceptions, practices and demographics are associated with

regards to the integration of digital media in supporting Common Core instruction and the potential of the CCDMI to support such integration. Items that required teachers to respond *yes/no* were reverse coded to allow for positive endorsements to correlate positively with ranked survey items. Results from these correlational analyses were analyzed for the purpose of providing more information about teacher perceptions and practices related to research questions 1c through 1e and research question 2. Significant results are discussed collectively, as analyses span several research questions. Correlational analyses were not performed with regards to behavioral consultant final survey results as the sample is very small ($n = 5$) and descriptive analyses were more appropriate to employ.

Spearman rank-order correlations are valuable to utilize when determining the presence of associations between ordinal data, as included in the final teacher survey. Further, Spearman's rho (r_s) is effective in determining the presence and direction of a relationship between variables when the sample size is small, when data may not present as distributed normally and/or when the relationship between variables is monotonic. A monotonic relationship occurs between variables when 1) as the value of one variable increase, so does the value of the other variable, or 2) when the value of one variable increases, the value of the other variable decreases. However, these trends may not vary linearly in a consistent fashion, thus adding to the value of the Spearman test to detect associations between such variables.

Chapter IV

Results

A total of twenty-three (23) online surveys were completed by teachers. Quantitative analyses of survey data included frequency counts and Spearman (rho / r_s) rank-order correlations. For each survey item, frequency counts were calculated to determine rate of endorsements per answer choice. These frequency data provided information about teacher perceptions and state of practice with regards to integrating digital media into Common Core instruction. Spearman's rho statistics were calculated to identify statistically significant relationships between survey item endorsements. These correlations were performed to provide more information with regards to the relationships between teacher perceptions and practice. The strength and direction of these relationships provided more information with regards to which teacher perceptions, practices and demographics may be associated with the integration of digital media in supporting Common Core instruction and the potential of the CCDMI to support such integration.

Teacher Perceptions and State of Practice

Research Question 1a: How frequently do teachers currently integrate digital media technology into Common Core lesson plans?

For teacher final survey item #4, teachers endorsed responses consistent with how frequently they use digital media during Common Core instruction. Responses indicated the range of frequency with which teachers integrate digital media into Common Core

instruction. Of the 23 teachers, 14.7% reported that they integrate digital media technology less than once a week, while 23.5% reported digital media integration 1-3 times per week. The most frequently endorsed integration of digital media, reported by 35.3% of teachers, is 3-5 times per week, while 26.5% of teachers reported digital media integration more than 5 times per week.

Survey item #5 allowed teachers to endorse the types of digital media technology that they utilize during Common Core instruction. Teachers had the option to endorse multiple types of digital media and to enter text in an "other" category to communicate digital media utilized that were not included among endorsement options. Responses indicated a variety of digital media technology currently being utilized to support Common Core instruction. The most frequently endorsed digital media, endorsed by all 23 teachers, was video, while 18 teachers endorsed games, 16 endorsed interactive quizzes/learning activities, 15 endorsed whiteboard applications, 12 endorsed audio recordings and 7 endorsed mobile device applications (iPad, iPod, tablet, etc.). Six (6) teachers endorsed "other" digital media technology and included "websites" and "online magazines." These endorsements may more broadly include many of the digital media types already covered in the other endorsement options for this survey item. Interestingly four (4) of the teachers that endorsed the "other" category included "Hovercam®" as their entry. A Hovercam® is a document scanner that allows scanned images to be projected onto a screen. The device also functions as a camera and allows video to be recorded and/or projected. However, for the purpose of this research project, digital media technology is defined as: *websites that primarily consist of videos, audio recordings, games, interactive quizzes or other activities and/or mobile device applications.* While the Hovercam® is a potentially useful device to utilize during curriculum

instruction, it is more accurately categorized as technological hardware and is thus not considered a digital media resource for the purpose of this research project. The responses to item #4 and item #5 are summarized in Tables 5 and 6, respectively.

Table 5
Current integration of digital media by teachers during Common Core instruction

Frequency of integration	% Reporting frequency
Less than once a week	14.7
1-3 times per week	23.5
3-5 times per week	35.3
More than 5 times per week	26.5

Table 6
Types of digital media technology integrated by teachers during Common Core instruction

Type of digital media	Frequency count of endorsement
Video	23
Games	18
Interactive quizzes/learning activities	16
Whiteboard applications	15
Audio recording	12
Mobile device application (iPad, iPod, tablet, etc.)	7
Other digital media technology	6

Research Question 1b: What percentage of teachers want to integrate digital media into Common Core lesson plans more frequently?

For survey item #9, teachers reported if they would or would not like to integrate digital media technology more frequently into Common Core lesson plans, by responding "yes," or "no," to the survey item. The most frequently endorsed response was "yes," with 85.2% of teachers indicating that they would like to integrate digital media technology more

frequently into Common Core lesson plans and 14.8% indicating that they would not like to do so. The responses to survey item #9 are summarized in Table 7.

Table 7
Teacher interest in integrating digital media into Common Core lesson plans more frequently

Endorsement	% Teachers that endorsed
Would like to integrate more frequently ("*yes*")	85.2
Would not like to integrate more frequently ("*no*")	14.8

Research Question 1c: What are the most important characteristics of digital media technology that teachers identify as useful in supporting Common Core differentiated instruction?

For survey item #6, teachers were asked to report their perception of the utility in integrating digital media technology into differentiated Common Core lesson plans. The most frequently endorsed response was "*very useful,*" with 38.7% of teachers indicating this perception of the integration of digital media into differentiated Common Core lesson plans. There were 29% of teachers that perceived the integration of digital media to be "*useful*," while 16.1% of teachers endorsed "*extremely useful*' and also "*somewhat useful*."

Survey item #7 allowed teachers to rank order the most important characteristics that make digital media technology useful in differentiating Common Core instruction. Responses indicate "*Highly interactive learning*" as the highest ranked characteristic followed by "*Teacher can select content and types of activities through which learning objectives are presented (video, audio recording, games)*." Table 8 summarizes all rank ordered responses, in order of most to least important characteristics. The ranks selected by teachers were averaged to determine the mean rank of each characteristics. Table 8 includes mean rankings

as well as ordinal numbered rankings for the purpose of simplicity, with 1*st* indicating the most important characteristic and 7th indicating the least important, based on averaged rankings of endorsements.

Table 8
Most to least ranked important characteristics of digital media technology

Ordinal Ranking	Mean ranking	Characteristic
1st	3.3	Highly interactive learning
2nd	3.4	Teacher can select content and types of activities through which learning objectives are presented (video, audio recording, games)
3rd	3.7	Student interest and preference can be incorporated into lesson design
4th	3.9	Content can be delivered at different paces and/or repetitively
5th	4.0	Content presentation can be differentiated (word-by-word/line-by-line read-aloud, text/background color)
6th	4.5	Content can be broken down into manageable components
7th	5.0	Technology-mediated instruction supports the development of students' digital literacy skills

Research Question 1d: To what extent do teachers believe that the integration of digital media into Common Core lesson plans offers the potential to support student engagement, motivation and on-task behavior?

Survey item #8 assessed teacher perceptions with regards to the utility of digital media technology to support each of the following factors: 1) student engagement; 2) student motivation to learn; and 3) student on-task behavior. Likert scale endorsement options ranged from "*Not useful at all,*" "*Somewhat useful*," "*Useful*," "*Very useful*" and "*Extremely useful*." The most frequently endorsed responses were that teachers believe digital media to be "*Very useful*" and "*Extremely useful"* in supporting each of these student factors. The most

frequently endorsed response was "*Very useful*" for each of the student factors. The responses to survey item #8 are summarized in Table 9.

Table 9
Teacher perceptions of the utility of digital media to support student factors

Student factor	Percent (%) endorsement of utility				
	Not useful	Somewhat useful	Useful	Very useful	Extremely useful
Student engagement	-	7.1	14.3	42.9	35.7
Student motivation to learn	3.6	-	25.0	39.2	32.1
Student on-task behavior	3.6	10.7	28.6	35.7	21.4

Research Question 1e: What do teachers identify as the most significant barriers that interfere with more frequent integration of digital media into Common Core lesson plans?

Survey item #10 allowed teachers to rank order the most significant barriers that interfere with more frequent integration of digital media into Common Core lesson plans. Responses indicate "*Time to identify, navigate and integrate digital media resources to support Common Core instruction*" as the highest ranked barrier followed by "*Access to hardware (computer, whiteboard, projector)*." Table 10 summarizes all rank ordered responses, in order of most to least significant barriers. The ranks selected by teachers were averaged to determine the mean rank of each barrier. Table 10 includes mean rankings as well as ordinal numbered rankings for the purpose of simplicity, with 1st indicating the most significant barrier and 7th indicating the least significant, based on averaged rankings of endorsements.

Table 10
Most to least averaged ranked significant barriers to integrate digital media

Ordinal ranking	Mean ranking	Barrier
1st	1.9	Time to identify, navigate and integrate digital media resources to support Common Core instruction
2nd	2.0	Access to hardware (computer, whiteboard, projector)
3rd	2.7	Need for professional development regarding how to identify, navigate and integrate digital media resources to support Common Core instruction
4th	3.4	Administrative support

Survey item #11 allowed teachers to rank order the period of time during which they are most likely to search for digital media resources and write lesson plans. Teachers most often ranked "*After work hours off-site (home, etc.) during my personal time"* as the time period during which they are most likely to engage in this activity (63.0%), followed by "*before/after work at job site*," during "*scheduled prep/flex time*," "*during my lunch break*," and lastly, during "*scheduled professional development days."* Ranks were coded during data entry in such a manner as to reflect least to most intrusion upon teacher personal time. The ranks selected by teachers were averaged to determine the mean rank of each time period. Table 11 includes mean rankings as well as ordinal numbered rankings for the purpose of simplicity, with 1st indicating the time period teachers are most likely to search for digital media for lesson plans and 7th indicating the least likely time period, based on averaged rankings of endorsements.

Table 11
Most to least averaged ranked time periods teachers search for digital media for lesson plans

Ordinal ranking	Mean ranking	Time period
1st	1.9	After work hours off-site (home, etc.) during personal time
2nd	2.4	Before/after work at job site
3rd	2.8	Scheduled prep/flex time
4th	3.9	During lunch break
5th	4.1	Scheduled professional development days

Utility of the Common Core Digital Media Index (CCDMI)

Research Question 2: What percentage of teachers believe that the Common Core Digital Media Index offers the potential to serve as a practical resource to support more frequent integration of digital media into lesson plans?

After having the opportunity to view and browse the CCDMI, teachers were presented with survey items designed to assess their perceptions of the potential for the website to serve as a practical resource to support more frequent integration of digital media into lesson plans. For survey item #13, teachers reported if perceived the CCDMI to be a useful resource to identify digital media technology to *integrate into their Common Core lesson plans*, by responding "yes," or "no," to the survey item. The most frequently endorsed response was "yes," with 82.6% of teachers indicating that did perceive the CCDMI to be useful for this intended purpose and 17.4% indicating that they did not. For survey item #15 teachers reported if perceived the CCDMI to be a useful resource for the purpose of *differentiating instruction*, by responding "*yes*," or "*no*," to the survey item. The most frequently endorsed response was "*yes*," with 68.2% of teachers indicating that did perceive the CCDMI to be

useful for this intended purpose and 31.8% indicating that they did not. The responses to survey items #13 and 15 are summarized in Table 12.

Table 12
Teacher perceived utility of the CCDMI for its intended purpose

Intended purpose of CCDMI	% Teacher endorsement of perceived utility	
	Yes	No
Identify digital media to integrate into Common Core lesson plans	82.6	17.4
Identify digital media for differentiating Instruction	68.2	31.8

Survey items #14 and #16 assessed the reported likelihood that teachers would use the CCDMI as a resource for the intended purposes of: 1) identifying digital media technology to integrate into Common Core lesson plans and 2) differentiate instruction, respectively. Likert scale endorsement options ranged from "*Not at all likely,*" "*Somewhat likely*," "*Likely*," "*Very likely*" to "*Extremely likely*." The most frequently endorsed response was that teachers reported to be "*Likely*" to utilize the CCDMI for both of these intended purposes. Teachers reported a likelihood of 43.5% that they would utilize the CCDMI to identify digital media to integrate into Common Core lesson plans and a likelihood of 39.1% that they would use it to identify digital media resources for the purpose of differentiating instruction. Survey item #17 assessed the reported likelihood that teachers would recommend the CCDMI to other colleagues. Utilizing the same Likert scale format responses, the most frequently endorsed response was that teachers are *"Likely*" (30.4%) to recommend the CCDMI to other colleagues. The responses to survey items #14, #16 and #17 are summarized in Table 13.

Table 13
Teacher reported likelihood and purposes for which to utilize the CCDMI

Purpose	Percent (%) likelihood to utilize				
	Not at all likely	Somewhat likely	Likely	Very likely	Extremely likely
Integrate digital media into Common Core lesson plans	4.4	34.8	43.5	8.8	8.8
Integrate digital media to differentiate instruction	26.1	21.7	39.1	13.0	-
Recommend to colleagues	21.7	21.7	30.4	17.4	8.8

Correlational Analyses

Spearman rank-order correlations were performed to explore the strength and direction of associations between final teacher survey items. These analyses were performed to determine which teacher perceptions, practices and demographics are associated with regards to the integration of digital media in supporting Common Core instruction and the potential of the CCDMI to support such integration. Results from these correlational analyses were analyzed for the purpose of providing more information about teacher perceptions and practices related to research questions 1c through 1e and research question 2.

Spearman's r_s tests were conducted to investigate the relationships between responses to survey item #6, which assessed teacher perceptions of the utility in integrating digital media technology into differentiated Common Core lesson plans, and survey items #8, #14, #17 and #18, respectively. Survey item #8 assessed teacher perceptions with regards to the utility of digital media technology to support student engagement, motivation to learn and on-task behavior. A significant and positive correlation was observed between perceived utility in integrating digital media into Common Core lesson plans and perceived utility of digital media to support student engagement, r_s (21) = .535, p = .004, motivation to learn,

r_s (21) = .750, p = .001, and on-task behavior r_s (21) = .602, p = .001. According to Cohen (1992), these are moderate effect sizes. These results suggest that the reason why teachers perceive digital media to be useful may be related to their perception that digital media is effective in supporting these important student factors.

Survey item #14 assessed the reported likelihood that teachers would use the CCDMI as a resource for the intended purpose identifying digital media technology to integrate into Common Core lesson plans. A significant and positive correlation was found between perceived utility in integrating digital media into Common Core lesson plans and reported likelihood to use the CCDMI for this purpose r_s (21) = .492, p = .009. According to Cohen (1992), this is a small effect size. These results suggest that the teachers that perceive digital media to be useful in supporting Common Core may be more likely to utilize the CCDMI for its intended purpose.

Survey item #17 assessed the reported likelihood that teachers would recommend the CCDMI to other colleagues. A significant and positive correlation was found between perceived utility in integrating digital media into Common Core lesson plans and reported likelihood to recommend the CCDMI, r_s (21) = .622, p = .001. According to Cohen (1992), this is a moderate effect size. These results suggest that the teachers that perceive digital media to be useful in supporting Common Core may be more likely to recommend the CCDMI to colleagues.

Survey item #18 included employment demographic data, including educational placement. Educational placement was coded according to restrictiveness of environment, with general education being the least restrictive and self-contained being the most restrictive. A significant and positive correlation was found between perceived utility in

integrating digital media into Common Core lesson plans and educational placement, r_s (21) = .382, p = .036. According to Cohen (1992), this is a small effect size. These results suggest that teachers in more restrictive environments may be more likely to perceive digital media to be useful in supporting Common Core instruction.

Spearman's r_s tests were conducted to investigate the relationships between responses to survey item #8, which assessed teacher perceptions with regards to the utility of digital media technology to support student engagement, motivation to learn and on-task behavior and survey items #14 and #17. Items #14 and #17 assess the reported likelihood that teachers would use the CCDMI as a resource for the intended purpose identifying digital media technology to integrate into Common Core lesson plans and that teachers would recommend the CCDMI to other colleagues, respectively. Significant and positive correlations were found between perceptions with regards to the utility of digital media technology to support student motivation to learn and the reported likelihood that teachers would use the CCDMI as to identify digital media technology to integrate into Common Core lesson plans, r_s (21) = .546, p = .004, as well as the likelihood to recommend to colleagues, r_s (21) = .472, p = .012. According to Cohen, these are moderate and small effect sizes, respectively. These results suggest that the likelihoods of teachers utilizing the CCDMI to identify digital media to integrate into Common Core instruction and teachers recommending the CCDMI to colleagues may be related to their perceptions that digital media technology is useful in supporting student motivation to learn.

A significant positive relationship was also found between perceptions with regards to the utility of digital media technology to support student motivation to learn and educational placement, r_s (21) = .370, p = .041. According to Cohen (1992), this is a small effect size.

These results suggest that teachers in more restrictive environments may be more likely to identify digital media as useful in supporting student motivation to learn.

Responses to item #10 were examined in relation to responses to item #14 and #18. Item #10 allowed teachers to rank order the most significant barriers that interfere with more frequent integration of digital media into Common Core lesson plans. Rank ordered responses were disaggregated to include only the highest ranked barrier for each respondent in analysis. These barriers were then coded on a scale of 1 through 4 to reflect a continuum of workplace to personal barriers so that workplace related barriers (administration, access) were coded with a lower number and personal barriers (need for professional development, time) were coded with a higher number. The relationship between this item and #13, which assessed to what degree teachers perceived the CCDMI to be a useful resource to identify digital media technology to integrate into their Common Core lesson plans, was observed to correlate significantly and positively, r_s (21) = .390, p = .033. There was also a significant and positive relationship between rank order of barriers and grade, r_s (21) = .419, p = .023. According to Cohen (1992), both of these results are reflective of small effect sizes. These results suggest that teachers in higher grade level, and those that identify the CCDMI to be a useful resource may also identify personal barriers, such as the need for professional development and more time, as the most significant in preventing more frequent integration of digital media into Common Core instruction. In fact, this finding is underscored by a significant and positive relationship that was also observed between items #11 &14, r_s (21) = .399, p = .007, suggesting that teachers that identify higher levels of personal use of time used to search for and identify digital media to support Common Core report to be more likely to use the CCDMI for this purpose. According to Cohen, this is also a small effect size.

Spearman's r_s tests were conducted to investigate the relationships between responses to survey item #17 and survey items #11, #13 and #14, respectively. Survey item #17 assessed the reported likelihood that teachers would recommend the CCDMI to other colleagues. Significant and positive correlations were observed between this item and item #12, r_s (21) = .503, p = .009 and item #15, r_s (21) =.772, p = .001, with moderate effect sizes, according to Cohen (1992). A significant and positive relationship was found between item #17 and item #13, r_s (21) = .402, p = .029. This is a small effect size (Cohen, 1992). These results suggest that teachers that report to be more likely to recommend the CCDMI to colleagues) may also be teachers that are more likely to have been using higher levels of personal time to identify digital media, 2) were more likely to identify the CCDMI as a useful resource for identifying digital media, and 3) reported a higher likelihood that they would use the CCDMI for this intended purpose.

It is important to note that according to Cohen's power table (1992), to have sufficient power to detect a small, moderate and large effect size with an alpha level of .01, at least 1,163, 125 and 41 subjects are needed in the sample, respectively. To detect a small, moderate and large effect size with an alpha level of .05, at least 783, 85 and 28 subjects are needed in the sample, respectively. The sample size was not adequate to provide sufficient power to detect a small or moderate effect size at alpha levels .01 or .05. However, significant correlations were detected, thus supporting a trend. Therefore, further research employing sufficient power may result in data that provide additional strength in these correlations.

Behavioral Consultant Perceptions and State of Practice

Research Question 3a: How often are increases in on-task behavior, student engagement in curriculum and motivation to learn identified as goals by educators in referrals for classroom based behavioral consultation?

Behavioral consultant final survey item #4 assessed the frequency with which referrals for school-based consultation are received for the following goals: 1) increase student engagement in curriculum; 2) increase student motivation to learn; and 3) increase student on-task behavior. Likert scale endorsement options ranged from "*Never,*" "*Sometimes*," "*Often*," "*Almost always*," to "*Always*." To follow, the most frequently endorsed response options are reported, as well as the frequency of endorsements, in consideration of the small population size. Sixty percent (60%) of behavioral consultants reported that they "*almost always* (*n*=3)" and "*sometimes* (*n*=3)"" receive referrals for the goals of increasing student engagement in curriculum and increasing student motivation to learn, respectively. Forty percent (40%) of behavioral consultants endorsed that they "*often* (*n*=2)" and "*always* (*n*=2)" receive referrals for the goal of increasing student on-task behavior. Table 14 summarizes responses to behavioral consultant final survey item #4.

Table 14
Goals identified in school-based behavioral consultation referrals (*n*=5)

Goal	Categorical frequency percent (%)				
	Never	Sometimes	Often	Almost always	Always
Increase student engagement in curriculum	-	40	-	60	-
n		*2*		*3*	
Increase student motivation	-	60	-	40	-
n		*3*		*2*	
Increase student on-task behavior	-	-	40	20	20
n			*2*	*1*	*2*

Research Question 3b: What are the most important factors that interfere with classroom-based positive behavior support strategies recommended by behavioral consultants?

Survey item #5 inquired about perceptions of the level of importance of assessing several key factors when behavioral consultants are developing classroom-based positive behavior supports. Likert scale response options ranged from "*Not important at all*," "*Somewhat important*," "*Important*," "*Very important*," and "*Extremely important*." All consultants (100%; *n*=5) reported that *Teacher instructional strategies* is a "*Very important*' factor to assess. *Curricular goals/objectives* was endorsed by 80.0% of respondents (*n*=4) also as a "*Very important*" factor to assess. Consultants most frequently endorsed that they perceive it to be "*Extremely important*" to assess *student preference* (80.0% of respondents; *n*=4), *items/activities that function as reinforcers of desired behavior* (100% of respondents; *n*=5), and *teacher buy-in/burn out* (80.0% of consultants; *n*=4). *Administrative support* was endorsed as an equally "*Important* (40% of respondents; *n*=2)" and "*Extremely important* (40% of respondents; *n*=2)" factor to assess. *Teacher access to existing resources* was most

frequently endorsed as a "*Very important* (60% of respondents; *n*=3)" factor to assess. Table 15 summarizes responses to survey item #5.

Table 15
Level of importance of assessing key factors in classroom-based behavioral consultation (*n*=5)

Factor	Categorical frequency percent (%)				
	Not important at all	Somewhat important	Important	Very important	Extremely important
Teacher instructional strategies	-	--	--	100	--
n				*5*	
Curricular goals/objectives	--	20	--	80	--
n		*1*		*4*	
Student interest/preference	--	--	--	20	80
n				*1*	*4*
Items/activities that function as reinforcers of desired behavior	--	--	--	--	100
n					*5*
Teacher buy-in/burn out	--	--	--	20	80
n				*1*	*4*
Administrative support	--	--	40	20	20
n			*2*	*1*	*2*
Teacher access to existing resources	--	--	--	60	40
n				*3*	*2*

Survey item #6 allowed consultants to rank order the most significant factors (from 1st to 7th) that interfere with the fidelity of implementation of the strategies that they recommend to consultees. Rank-ordered responses indicate *Teacher buy-in* as the factor that most often interferes with fidelity of implementation. However, upon closer examination of the distribution of rank-ordered responses and in consideration of the small population size, it is most accurate to report that consultants ranked the factors with inconsistent variability. The ranks selected by respondents were averaged to determine the mean rank of each factor.

Table 16 summarizes mean rankings by factors that interfere with fidelity of implementation of classroom-based positive behavior support strategies.

Table 16
Factors that interfere with fidelity of implementation

Mean ranking	Factor
2.0	Teacher buy-in
3.6	Student buy-in
3.6	Inconsistent reinforcement of desired behavior
3.8	Intermittent reinforcement of problem behavior
4.6	Administrator buy-in
4.8	Classroom demands are absent of factors that are inherently reinforcing of desired student behavior
5.6	Items/activities identified as rewards do not have a robust or consistent reinforcing effect on desired student behavior

Research Question 3c: What are the most important characteristics of digital media technology that behavioral consultants identify as useful in supporting Common Core differentiated instruction?

For survey item #8, behavioral consultants were asked to report their perception of the utility in integrating digital media technology into differentiated Common Core lesson plans. The most frequently endorsed response was "*Very useful,*" with 80.0% of consultants (*n*=4) indicating this perception, while one (*n*=1) consultant endorsed "*Extremely useful.*"

Survey item #9 allowed consultants to rank order the most important characteristics that make digital media technology useful in differentiating Common Core instruction. Consultant responses indicated "*Student interest and preference can be incorporated into lesson design*" as the highest ranked useful characteristic of digital media. However, upon closer examination of the distribution of rank-ordered responses and in

consideration of the small population size, it is most accurate to report that consultants ranked useful characteristics of digital media with inconsistent variability. The ranks selected by consultants were averaged to determine the mean rank of each factor. Table 17 summarizes mean rankings by characteristics that make digital media useful in differentiating Common Core instruction.

Table 17
Characteristics that make digital media useful in differentiating instruction – Behavioral consultants

Mean ranking	Characteristic
2.0	Student interest and preference can be incorporated into lesson design
3.6	Content can be broken down into manageable components
3.6	Content can be delivered at different paces and/or repetitively
3.8	Teacher can select content and types of activities through which learning objectives are presented (video, audio recording, games)
4.0	Highly interactive learning
4.6	Content presentation can be differentiated (word-by-word/line-by-line read-aloud, text/background color)
6.4	Technology-mediated instruction supports the development of students' digital literacy skills

Research Question 3d: To what extent do behavioral consultants believe that the integration of digital media into Common Core lesson plans offers the potential to function as an antecedent behavioral support strategy to support student engagement, motivation and on-task behavior?

Survey item #7 assessed behavioral consultant perceptions with regards to the utility of digital media technology to function as an antecedent behavioral support strategy for each of the following factors: 1) student engagement; 2) student motivation to learn; and 3) student

on-task behavior. Likert scale endorsement options ranged from "*Not useful at all,*" "*Somewhat useful*," "*Useful*," "*Very useful*" and "*Extremely useful*." Behavioral consultants most often reported to believe digital media to be "*Very useful*" in supporting student engagement and on-task behavior and "*Extremely useful"* in supporting student motivation to learn. The responses to survey item #7 are summarized in Table 18.

Table 18
Behavioral consultant perceptions of the utility of digital media to support student factors (*n*=5)

Student factor	Percent (%) endorsement of utility				
	Not useful	Somewhat useful	Useful	Very useful	Extremely useful
Student engagement	-	-	-	60.0	40.0
n				*3*	*2*
Student motivation to learn	-	-	20.0	20	60.0
n			*1*	*1*	*3*
Student on-task behavior	-	-	-	60.0	40.0
n				*3*	*2*

Research Question 3e: What percentage of behavioral consultants want to offer support to teachers with regards to integrating digital media into Common Core lesson plans as an antecedent behavioral support strategy?

For survey item #10, behavioral consultants reported if they would find it valuable to be able to offer support to teachers with regards to integrating digital media into Common Core lesson plans, as an antecedent behavioral and academic support strategy, by responding "yes," or "no," to the survey item. All behavioral consultants surveyed (100%; *n*=5) reported that they would find it valuable to be able to offer such support to teachers.

Utility of the Common Core Digital Media Index (CCDMI)

Research Question 4: What percentage of behavioral consultants believe that the Common Core Digital Media Index offers the potential to serve as a practical resource to support more frequent integration of digital media into lesson plans?

After having the opportunity to view and browse the CCDMI, behavioral consultants were presented with survey items designed to assess their perceptions of the potential for the website to serve as a practical resource to support more frequent integration of digital media into lesson plans. For survey item #12, consultants reported if they perceived the CCDMI to be a useful resource to identify digital media technology to *integrate into teacher developed Common Core lesson plans*, by responding "yes," or "no," to the survey item. All behavioral consultants surveyed (100%; *n*=5) reported that they did perceive the CCDMI to be useful for this intended purpose. For survey item #14 consultants reported if perceived the CCDMI to be a useful resource for the purpose of *differentiating instruction*, by responding "*yes*," or "*no*," to the survey item. The most frequently endorsed response was "*yes*," with 80.0% (*n*=4) of consultants indicating that they did perceive the CCDMI to be useful for this intended purpose and 20.0% (*n*=1) indicating that they did not. The responses to survey items #12 and 14 are summarized in Table 19.

Table 19
Behavioral consultant perceived utility of the CCDMI for its intended purpose

Intended purpose of CCDMI	% Consultant endorsement of perceived utility	
	Yes	No
Identify digital media to integrate into Common Core lesson plans	100	--
Identify digital media for differentiating Instruction	80.0	20.0

Survey items #13 and #15 assessed the reported likelihood that behavioral consultants would reference the CCDMI during consultation with classroom teachers as a resource for the intended purposes of: 1) identifying digital media technology to integrate into Common Core lesson plans and 2) differentiate instruction, respectively. Likert scale endorsement options ranged from "*Not at all likely,*" "*Somewhat likely*," "*Likely*," "*Very likely*" to "*Extremely likely*." The most frequently endorsed response was that consultants reported to be "*Very likely*" to reference the CCDMI for both of these intended purposes. Forty percent (40%; *n*=2) of consultants reported to be "*very likely*" to reference the CCDMI to help teachers identify digital media technology to integrate into Common Core lesson plans. Eighty percent (80% *n*=4) of consultants reported to be "*very likely*" to reference the CCDMI to help teachers identify digital media to differentiate instruction. Survey item #16 assessed the reported likelihood that consultants would recommend the CCDMI to other colleagues. Utilizing the same Likert scale format responses, the most frequently endorsed response was that behavioral consultants are "*Very likely*" (80%) to recommend the CCDMI to other colleagues. The responses to survey items #13, #15 and #16 are summarized in Table 20.

Table 20
Consultant reported likelihood and purposes for which to reference the CCDMI (*n*=5)

Purpose	Percent (%) likelihood to reference				
	Not at all likely	Somewhat likely	Likely	Very likely	Extremely likely
Support teachers to integrate digital media into Common Core lesson plans	20.0	20.0	--	40.0	20.0
n	*1*	*1*		*2*	*1*
Support teachers to integrate digital media to differentiate instruction	20.0	20.0	--	60.0	--
n	*1*	*1*		*3*	
Recommend to colleagues	20.0	--	--	80.0	--
n	*1*			*4*	

Chapter V

Discussion

Interpretation of Findings

The objectives of this dissertation were focused on examining teacher and behavioral consultant perceptions and practices relevant to the use of digital media technology to support Common Core instruction. These perceptions and practices were assessed in terms of relevant student and teacher factors, the current state of digital media integration and barriers that prevent more frequent integration into Common Core instruction. The perceptions and practices of behavioral consultants were also assessed with regards to the utility of digital media to support important student factors related to referrals and the barriers that interfere with effective consultation. Teacher and behavioral consultant perceptions of the utility of the Common Core Digital Media Index (CCDMI) were also assessed. The CCDMI is a website designed to serve as a practical resource to support digital media integration into Common Core instruction. The CCDMI was designed for the purpose of supporting student engagement, motivation and on-task behavior by reducing potential barriers to digital media integration into Common Core instruction.

Frequency of Digital Media Integration

Teacher survey results indicated that about 35% of teachers currently integrate digital media technology during Common Core instruction 3-5 times per week and about 27% integrate digital media more than 5 times per week. Although the small sample size may be related to low response rates per endorsement option, about 85% of teachers report that they

would like to integrate digital media into Common Core instruction more frequently and 100% of behavioral consultants surveyed reported that they would find it valuable to offer teachers support in this regard.

The use of high interest educational media in the presentation of core curriculum goals is an area of growing interest in both the field of education and behavioral support (Broek, 2001; Lin, 2003; Squire, 2005). Current scholarly literature indicates that students ages 8-18 years old spend an average of approximately 53 hours per week utilizing technological entertainment media outside of academic instruction (Kaiser Family Foundation, 2010). To revisit the concept of the "digital native," one must consider how the frequency, type and quality of exposure to technology-based stimulation have influenced the neuro-cognitive structure of the brains of the current generation (Prensky, 2001). Theorists have posed that digital natives structurally think differently than their digital immigrant predecessors – that their thought processes resemble hypertext in nature and "leap around" in a parallel rather than sequential manner (Moore, 1997). It is important to consider how and under what conditions students process information in order to present academic material in a manner that maximizes retention potential. In this regard, teachers and behavioral consultants are identifying the integration of digital media into Common Core instruction as having the potential to support student progress towards academic goals. It is important to examine this prospect and provide comprehensive information and resources to support this pedagogical and positive behavioral support practice.

Instructional and Student Factors Supported by Digital Media Integration

Teacher and behavioral consultant survey results yielded important information regarding the characteristics of digital media technology that are perceived to support

Common Core instruction. These findings were relevant to both instructional and student factors. The highest ranked instructional characteristics identified by teachers and behavioral consultants that make digital media technology useful in differentiating Common Core instruction were: *Highly interactive learning* and *Student interest and preference can be incorporated into lesson design*, respectively. The utility of digital media to support these identified characteristics is underscored in the educational and applied behavioral literature. Effective classroom instruction decisions are guided by considering student interest in curriculum topics as well as individual student interest and prior knowledge. These factors will determine the level of importance students attribute to information presented to them and the level of working memory that they will allocate towards instruction (Marzano, 2010). Lessons including topics or activities related to students' established individual interests provide a context in which student motivation to engage in the curriculum is more likely to occur (Renninger, 2000). Lesson design centered on student-identified high-interest topical subjects and delivered via technology-mediated instruction has the potential to exert powerful stimulus control over the occurrence/non-occurrence of on-task behavior (Kormann & Heimlich, 2013; Marzano, 2010). This theoretical practice is reflective of the cornerstone approach of the Children's Television Workshop. The approach of the highly successful and comprehensively researched *Sesame Street* was to embed educational content into contexts that are preferred, familiar and relevant in children's lives. The resulting merge of education and entertainment was based on the interaction of attraction and comprehension of content via highly engaging video clips, that were strategically sequenced and condensed, and that included varied repetition of concepts to increase generalization of knowledge (Ball & Bogatz, 1970; Fisch & Truglio, 2001).

Teachers most frequently identified digital media as *Very useful* in supporting student engagement (43% of teachers surveyed), motivation to learn (39% of teachers surveyed) and on-task behavior (36% of teachers surveyed). Digital media was identified by 60% of behavioral consultants as *Very useful* in supporting student engagement and on-task behavior and by 60% of behavioral consultants as *Extremely useful* in supporting motivation to learn.

Correlational analyses reveal a significant positive relationship between teachers that identify digital media to be useful in supporting Common Core instruction and teachers that identify digital media to be useful in supporting student engagement, motivation to learn and on-task behavior. Based on these results, it is plausible to suggest that the reasons why teachers perceive digital media to be useful may be related to their perceptions that digital media is effective in supporting these important student factors. Positive educator perceptions regarding the efficacy of technology-infused instruction have been substantiated via observable outcome-based measures of student achievement in a variety of core content subject material, as well as higher levels of student engagement and quality of work (Murphy, Penuel, Means, Korbak, Whaley, & Allen, 2002; O'Dwyler, Russell, Bebell & Tucker-Seeley, 2005). An increase in behaviorally observable motivation as well as knowledge, skills and positive attitudes towards learning has also been observed in students engaged in technology-infused multimedia lesson designs (Egenfeldt-Nielsen, 2005; Rebetez & Betrancourt, 2007). Survey results underscore the potential for technological media to be integrated into lesson design in such a manner that the presence of materials associated with curriculum delivery exerts stimulus control over student engagement, motivation to learn and on-task behavior by functioning as an inherent reinforcer of positive behavior.

Further analyses reveal positive significant relationships between restrictiveness of the educational environment in which teachers currently work and the likelihood of teachers to perceive digital media as useful in supporting Common Core instruction and student motivation to learn. The integration of technology into the core curriculum has the potential to increase the interactions that facilitate instruction and opportunities for learning, which is a valuable asset in the education of students with and without disabilities (Jackson, 2004). Nonetheless, it is important to note that survey results are substantiated by evidence that students with disabilities have reported an increase in motivation to learn utilizing digital media solutions (Heo, 2007) and have demonstrated an increase in high-level questioning during technology-infused instruction (Reith et al., 2008).

The versatility of technology solutions allows for a more differentiated and comprehensive instructional approach. Educational media can often be transformed from one medium to another such as from text to video or audio, the appearance of information can be modified within a medium, instant access to multifaceted information about a topic is readily accessible via hyperlinks to allow for deeper exploration of content. The Universal Design for Learning paradigm utilizes modern technology to develop curriculum and design environments that inherently lack traditional barriers to learning and are inherently flexible to adjust to the needs of individual learners (Myller & Tschantz, 2003).

The relationships observed in survey data analyses underscore the utility of digital media in supporting differentiated instruction and functioning as an antecedent positive behavioral support strategy. Challenging behavior in the classroom environment is often maintained by escape/avoidance of task demands and preventative efforts are most effective when directed towards modifying antecedent aspects of instructional environments (Iwata, Dorsey, Slifer,

Bauman, & Richman, 1994). The implications of the value in considering interest, attention, motivation, and engagement in lesson development and curriculum delivery transcends disability and speaks to best practices in education and school-based behavioral consultation.

Barriers to Integrating Digital Media to Support Instruction

Based on survey results, teachers indicate the most significant barrier to integrating digital media into Common Core instruction as: *Time to identify, navigate and integrate digital media resources to support Common Core instruction.* Teachers also most frequently identified the period of time during which they are most likely to search for digital media resources and write lesson plans as: "*After work hours off-site (home, etc.) during my personal time."* A significant and positive correlation was observed between teachers that most frequently spend personal time identifying digital media for Common Core instruction and teachers that identify the CCDMI to be a useful resource. Further, a significant and positive relationship was also observed between teachers that identify higher levels of personal use of time used to search for digital media and teachers that reported to be more likely to use the CCDMI for this purpose. These findings highlight the potential for teachers to benefit from having efficient access to digital media resources that could be easily integrated into Common Core instruction. It was or this purpose that the CCDMI was developed.

The powerful demands placed on teachers and students to perform to pre-determined standards are accompanied by budget and time constraints in which to operate. Lesson plans must be developed to simultaneously meet a range of educational and behavioral needs, in a comprehensive and timely manner. To further challenge the classroom teacher, these tasks

must be accomplished in the midst of significant professional and political pressure, with limited resources, and for a conservative salary.

The presence of multimedia technology in a classroom, cannot in and of itself, increase student motivation and engagement in the learning process. In fact, the further that technology is embedded into a universally designed curriculum, the more indispensable effective teachers become (McCombs, 2000; Ertmer, 2005; Kozma, 1994; Roblyer & Knezek, 2003).

The support educators receive in identifying and incorporating multimedia technology solutions into instructional practices is limited (Atkins, et al., 2010; Smolin & Lawless, 2011). In order to support all students in reaching and exceeding state standards, educators need support to integrate evidence-based practices into instruction (Cook & Cook, 2011; Kretlow & Bartholomew, 2010). Lack of administrative support, limited access to resources as well as limited time to learn how to navigate and integrate resources can serve as barriers to the integration of evidence-based practices (Kretlow & Blatz, 2011). These factors are laden with implications for administrators as teachers' efforts to adopt and adapt new technologies to achieve new levels of productivity and achievement must be supported. A critical factor in this equation is user-friendly teacher access to high-interest technological media that can be utilized to meet core curriculum standards. Providing teachers with multimedia resources and consultative professional development support are factors associated with substantial changes to teacher instructional behaviors and improved outcomes for students (Borko, 2004; Thomas, et al., 2012).

The CCDMI as a Practical Resource to Support Common Core Instruction

Survey results suggest that the majority of teachers perceive the CCDMI to be a useful resource to identify digital media technology to integrate into their Common Core lesson plans and for the purpose of differentiating instruction (83% and 68% of teachers surveyed, respectively). Results from behavioral consultant survey data substantiate these results, with 100% of consultants perceiving the CCDMI to be a useful resource for teachers to identify digital media technology to integrate into their Common Core lesson plans and 80% of consultants perceiving the CCDMI to be a useful resource for the purpose of differentiating instruction. In addition to perceiving the potential utility of the CCDMI, teachers most frequently endorsed as *Likely* to utilize the CCDMI for its intended purposes of supporting Common Core instruction (43% of teachers surveyed) and differentiating instruction (39% of teachers surveyed). Behavioral consultants also corroborated these results with *very likely* most frequently endorsed to reference the CCDMI to help teachers identify digital media technology to integrate into Common Core lesson plans (40% of behavioral consultants) and to reference the CCDMI to help teachers identify digital media to differentiate instruction (80% of behavioral consultants). Further, teachers and behavioral consultants most frequently endorsed that they were *likely* and *very likely* to recommend the CCDMI to colleagues, respectively.

Significant and positive correlations were observed between teachers that reported to perceive digital media to be useful in supporting Common Core instruction and teachers that reported: 1) as more likely to utilize the CCDMI for its intended purposes, and 2) as more likely to recommend the CCDMI to colleagues. Additional positive correlations were

observed between teacher perceptions of the utility of digital media to support student motivation to learn and the intent to use and recommend the CCDMI to colleagues.

Student motivation and engagement are antecedent variables to outcome-based learning that educators consider when designing lesson plans and delivering instruction. A focus on student-centered variables, including interest and the constructs of attention, motivation and engagement, further defines and supports a closer examination of antecedent-based strategies to be explored in positive behavior support practices. This perspective offers student interest as the means, not the ends, through which effective classroom management and instructional delivery occur. It is of important clinical interest to continue to guide and support teachers in integrating preferred, high-interest media as a vital pedagogical and antecedent behavioral support strategy to circumvent disengagement, capture attention, and improve academic outcomes for students with and without disabilities.

Limitations

Sample Size

Twenty-three (23) completed teacher surveys were utilizable for this study. An additional forty-six (46) surveys were started, but not completed. Only completed surveys were included in the sample as the parameters of the informed consent ensured subjects the ability to exit the survey and withdraw participation in the study without their responses being included in the data set. Between 12-30 responses was considered the minimal range of respondents for analysis. This research design includes relatively homogeneous participants and narrow objectives. Consensus theory speaks to purposive sampling designs of this nature and discusses that as long as participants possess a certain degree of expertise regarding the domain of inquiry, small sample sizes are sufficient in providing complete and accurate

information (Romney, Weller, & Batchelder, 1986; Guest, Arwen & Johnson, 2006). An extensive literature review conducted by Guest, Arwen & Johnson (2006) revealed discussions across multidisciplinary scholarly research including between five to thirty (5-30) participants as sufficient in homogenous purposive sampling designs.

The 23 utilizable surveys provided an adequate sample for statistically significant findings. However, according to Cohen's power table (1992), to have sufficient power to detect a small, moderate and large effect size with an alpha level of .01, at least 1,163, 125 and 41 subjects are needed in the sample, respectively. To detect a small, moderate and large effect size with an alpha level of .05, at least 783, 85 and 28 subjects are needed in the sample, respectively. The sample size was not adequate to provide sufficient power to detect a small or moderate effect size at alpha levels .01 or .05. Although significant correlations were detected, some effects may not have been observable due to the small sample size.

The sample size of behavioral consultants was considerably small. To analyze behavioral consultant survey results, descriptive analyses were most appropriate to employ and the most frequently endorsed response options were reported. In this regard, correlational analyses were not performed, and thus statistically significant results could not be determined.

Participants

Teachers were recruited to participate in the survey via the New Jersey Education Association (NJEA) professional community affiliated social media websites. Current members of the NJEA are able to access the NJEA website member-to-member message board and request to join the Facebook NJEA webpage. Requests to join these social media communities are approved by website moderators that grant membership access. The survey

instrument associated with this dissertation was posted on these websites, and explicitly invited kindergarten through fifth grade general and special education teachers to participate.

The NJEA member-to-member message board has 239 users and the NJEA FaceBook page has 5,107 members, according to membership information posted on respective social media pages (NJEA, 2014). The NJEA consists of teachers, educational support specialists and student members, which represents the 239 member-to-member message board members. The NJEA Facebook page is representative of NJEA members and their family members (NJEA, 2014). The survey posting and informed consent explicitly invited only kindergarten through fifth grade general and special education teachers to self-select to participate in the survey.

In this regard, the sample of survey participants was limited to teachers that have opted to join the NJEA, who have Internet access and who visit affiliated social media websites. Although these factors limit and define the sample in these regards, this sampling methodology is preferred as the topic of the dissertation is focused on the practices and opinions of teachers with regard to digital media accessible via the Internet. Further, the online administration of the survey requires Internet access. Due to budget and time constraints associated with this dissertation, mass direct sampling of teachers via public school districts was not possible.

Only forty-six (46) teachers opted to begin the survey and twenty-three (23) completed the survey. There may be additional factors unique to the 23 teachers that prompted them to provide utilizable surveys, as well as those who opted out. To complete the surveys, teachers needed to have some prior knowledge about the Common Core State Standards, digital media and the potential for its utility as a pedagogical resource. There may

be additional unique and unidentifiable characteristics of teachers that completed the survey that may differ from those who did not choose to complete the survey in its entirety or to participate at all. These differences may be related to the individual participants or other related factors that cannot be assessed at this time. The possibility of such differences suggests caution in generalizing results to all New Jersey public school teachers. In retrospect, it might be instructive for future researchers using this survey format to explore how to understand the circumstances surrounding how/why teachers chose not to complete the survey. These issues may provide meaningful information regarding how to approach a future cohort.

The whole population (n=5) of NSTM behavioral consultants that were not advising this dissertation were was recruited via email to participate in this study. The entire population (n = 5) as defined completed the survey. Two (n=2) additional NSTM staff members were chair and co-chair of this dissertation, and thus not included in the population to be surveyed.

The ecological applied behavioral analysis consultation model implemented by NSTM is relevant to the research questions being explored via this dissertation. It is necessary for participants to have an understanding of this clinical model when responding to survey questions based on theoretical assumptions of behavior. In this regard, participants were homogenous with regards to profession, employment demographics and this professional behavioral consultation practice model. In consideration of these homogenous characteristics, results from this dissertation may not be generalizable to the general population of behavioral consultants. Groups to which the findings of this dissertation could be applied include behavioral consultants that implement a comparable professional

behavioral consultation practice model and who have similar employment demographics as compared to participants that completed the survey.

Methodology

A review of the literature did not yield a specific instrument to address the information sought from this dissertation. In this regard, two versions of a self-report online survey were developed. Survey questions were developed based on areas of concern identified via the literature review, which led to the development of the research questions that were explored via this dissertation. Although the two versions of the survey have not been empirically established as reliable and valid instruments, the face validity of items was assessed via the pilot survey to offer support to the validity of the content of the survey. The final survey version was developed based on feedback gathered from the pilot survey.

The survey items utilized in this study broadly covered teacher and behavioral consultant perceptions and practices regarding the integration of digital media into Common Core instruction and the potential utility of the CCDMI to support such integration. While this wide scope allowed for information to be gathered regarding pedagogical and consultative perceptions and practices regarding digital media, variations may exist with regards to specific types of digital media that were not able to be determined through this study. For example, a more narrowly focused study on the integration of video may reveal different practices and perceptions across subject material, student factors or other variables. Consequently, the broad scope of this dissertation limited the specificity of findings.

All resources included in the CCDMI are primary digital media resources and are accessible via primary hyperlinked access through the CCDMI Google Site's website. The CCDMI was developed secondary to a comprehensive internet search to find similar websites

that provide hyperlinked resources that *are*: 1) catalogued according to related Common Core State Standards, and 2) do not require an individual or district paid subscription to access. In addition, the hyperlinked resources *are not*: 1) sites that are designed as lists of or advertisements for other sites that users must search through to gain access to resources, or 2) solely or predominantly lists of lesson plans or informational/downloadable material. These limitations were established to serve the stated purposes of this dissertation, which include providing a user-friendly digital media technology resource for teachers and behavioral consultants. Results from this internet search were limited. However, these limitations may have influenced survey results with regards to the perceived potential for the CCDMI to serve as a support to integrate digital media into Common Core instruction. For example, websites that offer digital resources via paid subscription may include features that greatly support instruction and user-friendly access to digital media. Further, many teachers may perceive downloadable lesson plans a valuable tool in supporting digital multimedia Common Core instruction.

It is also important to note that the digital media resources included in the CCDMI consist solely of those posted by school districts in Middlesex County, New Jersey, with the assumption that included resources have been determined by the local education agencies as educationally relevant and suitable for students. In this regard, the representation of digital media resources is not representative of those identified by all school districts in New Jersey, or in other states. There may be regional differences in the perceived value of particular types of digital media that could not be assessed in this study. These differences may influence both the types of resources districts choose to post on their websites and those perceived as useful by teachers and consultants. To ensure transparency and accountability safeguards

associated with the development and usage of the CCDMI website, the following information is posted on the CCDMI homepage, along with the most current date that the site has been updated:

> *"The sites/resources included as links within this webpage have been gathered only from the home pages of public school districts in Middlesex County, New Jersey. The Common Core Digital Media Index (CCDMI) has compiled and catalogued these 21st century digital resources to reflect the suggested Common Core State Standard(s) to which they may apply. The CCDMI has been developed for the purpose of serving as a user-friendly site to support educators in gathering 21st century digital resources to support Common Core instruction. This indexed system is not exclusive as linked resources can be applied to support instruction in content area other than those specified via the CCDMI system. The owner of this webpage does not guarantee, approve or endorse the information or products available on sites that are accessed via the links provided."* (Heimlich, 2014)

As this study was an investigation into current perceptions and practices rather than an investigation of hypotheses via the manipulation of variables, conclusions regarding causation cannot be determined. Further, since surveys were conducted online to offer participants flexibility with when they responded and the investigator an efficient means through which to collect data, there may be additional limitations with regards to the data that was collected. For example, since the investigator was not present during survey administration, clarifying questions that participants may have had were not able to be answered. In addition, self-report surveys do not allow verbal or non-verbal information to be communicated to the investigator, as would a face-to-face interview. Lastly, although posting the survey to social media websites visited by teachers provided the opportunity for anonymous participation, the survey may not have reached additional respondents that could provide valuable information to inform the research questions associated with this dissertation. However, the characteristics of purposive homogenous sampling and expert elicitation has been observed to yield consistent results and the budget and time restraints associated with this dissertation did not allow for mass direct sampling of teachers via public

school districts (Romney, Weller, & Batchelder, 1986; Guest, Arwen & Johnson, 2006).

Implications

The findings of this dissertation provide insight into the current pedagogical and consultative perceptions and practices of teachers and behavioral consultants, respectively. These findings suggest important implications for the fields of education and school psychology. The majority of teachers (85%) report that they want to integrate digital media into Common Core instruction more frequently and an overwhelming majority (100%) of behavioral consultants report that they want to be able to provide support to teachers in doing so. However, teachers identify having limited time to identify, navigate and integrate digital media resources, as the most significant barrier to them doing so. This time constraint was followed by them having limited access to hardware such as computers, whiteboards, and projectors. Lastly, they indicated a need for professional development in the use of these products. To this end, school administrators could provide professional development opportunities to support teachers in identifying, navigating and integrating digital media resources into Common Core instruction. These professional development opportunities could include direct guidance as well as time allocated for organization and integration of resources into lesson plans. Additional professional development opportunities could include consultative observation and coaching of teacher practices with regards to digital multimedia Common Core instruction. Further, similar to the CCDMI, districts could provide direct resources to teachers to support digital media integration, including paid and unpaid subscription-based resources, along with professional development on how to utilize them the most effectively.

Behavioral consultants identify teacher and student buy-in, respectively, as the two factors that most frequently interfere with the fidelity of intervention implementation. In addition to desiring to support the more frequent integration of digital media technology into Common Core instruction, teachers and behavioral consultants both reported digital media to be useful in supporting student engagement, motivation to learn and on-task behavior. These factors complement each other, as teachers may be more likely to utilize antecedent strategies that support overall teaching goals and objectives and that result in decreases in off-task behavior. In this regard, the integration of digital media into instruction has the potential to serve as a powerful antecedent behavioral support strategy and effective pedagogical practice.

Access to technology may function as a powerful free operant in students' behavioral repertoires (Ferster, 1953; Kaiser Family Foundation, 2010). In this regard, student behavior may be shaped more efficiently via a curriculum embedded with technological options that offer the advantage of inherent access to reinforcement, thus exerting stimulus control over on-task behavior. The manipulation of such antecedent variables and the resulting occurrence/non-occurrence of a target behavior demonstrate the powerful stimulus control paradigm (Cooper, Heron & Heward, 2007; Dinsmoor, 1955a,b; Michael, 2000; Shahan & Chase, 2002; Stromer, 2000). In fact, this level of intervention allows the consultant to consider the manipulation of environmental variables that may exert influence over the behavior of several students in a classroom. Further, such variables may exert influence over several different functions of behavior, or over the more typically occurring multi-functional behavior (Kennedy, Meyer, Knowles, & Shukla, 2000; Lerman, Iwata, Smith, Zarcone & Vollmer, 1994). Accordingly, it is advisable that school psychologists that provide behavioral

consultation services consider digital media as both a potentially powerful reinforcer and as an antecedent variable to support on-task behavior in the classroom.

It is essential for educators and school psychologists to remain informed as to the technology resources that are available to support student growth and to be able to access and integrate these resources efficiently and effectively. A catalogued resource such as the CCDMI may assist these professionals in maintaining this knowledge and access to resources. The universal design for learning (UDL) paradigm underscores the value of technology-mediated antecedent-based interventions to increase the adaptive functioning of all students in their learning environment (Hitchcock & Stahl, 2003; Kamil, Intrator & Kim, 2000; Rose, Hasslebring, Stahl & Zabala, 2004; Rose & Meyer, 2002) In this regard, supporting technology-mediated instruction reflects best practices in education and school psychology. Universal access to the curriculum and instructional technology must be ensured for all students (ADA, 1990; EAHCA, 1975, 1994; IDEIA, 2004; NCLB, 2002; NJDOE, 2007; Rehabilitation Act Section 508, 1973; Twenty-First Century Communications and Video Accessibility Act, 2010). School Psychologists have the potential to be vital supporters in the ongoing endeavor to include students with disabilities and/or students who have a history of engaging in challenging behaviors in general education classrooms. School psychologists have been trained and have experience in collaborative consultation, behavioral and academic intervention design, curriculum adaptation, modification of learning environments, program evaluation, and other specialties through which they may assist in developing and sustaining effective inclusion programs. When integrated strategically and effectively, technological instructional media has the potential to increase the interactions

that facilitate instruction and learning opportunities to support the needs of a wide range of learners via the inherent flexibility in presenting curricular material.

Summary and Future Directions

The objective of this dissertation was to assess the current practices and perceptions of teachers and behavioral consultants with regards to the use of digital media technology to support Common Core instruction. Barriers to digital media integration in Common Core lesson plans were explored. This dissertation also explored the potential utility of the CCDMI, a webpage designed to provide user-friendly access to digital media resources to support instruction that are catalogued according to the Common Core standards and grade levels to which they may apply. This information was used to provide training and practice recommendations for teachers and school psychologists.

The findings of this dissertation indicate that teachers would like to integrate digital media into Common Core lesson plans and instruction more frequently, but that barriers related to time available to research and navigate resources for this purpose interfere with implementation. Teachers and behavioral consultants identify the benefits of digital media infused instruction as providing highly interactive learning opportunities and the ability to include student preference and interests into instructional content. These professionals also recognize student engagement, motivation to learn and on-task behavior as important factors that can be supported by technology infused instruction. These findings are underscored by the significant positive relationship observed between teachers that identify digital media to be useful in supporting instruction and teachers that identify digital media to be useful in supporting these important student factors. Further, behavioral consultants reported that they want to be able to support teachers in integrating digital media into instruction more

frequently. With respect to these findings, further research is warranted to better understand how teachers and behavioral consultants can utilize technology options to work together towards these pedagogical and student outcome-based academic and behavioral goals.

Correlational findings in this study also point to significant relationships between restrictiveness of the educational environment in which teachers currently work and the likelihood of teachers to perceive digital media as useful in supporting Common Core instruction and student motivation to learn. Such relationships demand further investigation as Universal Design for Learning and special education law and educational code underscore the use of technology to ensure access to curriculum for students with disabilities. More narrowly defined studies assessing type of technology utilized during instruction and student outcomes would be beneficial to inform school districts as to the focus of professional development opportunities for staff and monetary investments into technology programs and equipment.

Results from this study suggest the Common Core Digital Media Index (CCDMI) to be a potentially useful tool through which teachers can efficiently identify digital media resources to support instruction. Correlational findings highlight teacher time and student motivation to learn as significant factors potentially supported via the use of the CCDMI for its intended purposes. Further inquiry into continued development of the CCDMI, as well as its implementation by teachers and behavioral consultants, would be beneficial to inform best practices in technology-mediated instruction and student academic and behavioral support.

Based on the findings of this dissertation, the principal investigator made recommendations for school districts. For teachers to be able to integrate technology more often into Common Core instruction and utilize digital media to differentiate instruction,

more professional development and allocated time need to be provided by administration. Teachers would benefit from instructional workshops as well as consultative support designed to assist in identifying and integrating digital media technology most effectively. Teachers would also benefit from allocated time to independently develop lesson plans and practice navigating digital media options. Further examination into the relationships between school district provided professional development opportunities and subsequent teacher integration of digital media options and student outcomes would provide valuable information to support these recommendations.

Recommendations were also offered for school psychologists that provide behavioral consultation to teachers. Digital media technology has the potential to function as a clinically powerful antecedent variable as well as a reinforcer to support student behavior that facilitates learning. It is important to consider that teachers as consultees are under immense pressure to demonstrate meaningful student learning outcomes, based on Common Core standards. In this regard, it would be useful for behavioral consultants to integrate digital media technology options into classroom-based behavioral support strategies via consultation focused on lesson plan development. For this practice to be the most effective, behavioral consultants would benefit from professional development opportunities designed to inform them of Common Core design and implementation, as well as digital media options that are available to support instruction. To offer the most potentially clinically powerful technology-infused lesson plan, student interest and preference could be assessed and utilized as the focal point through which to identify digital media options. This convergence offers valuable avenues for future research including clinical procedures through which to assess student

preference and related available digital media, as well as clinical outcomes related to interventions developed and academic and behavioral results.

It would be advantageous to employ a larger scale, nationally representative study focused on the practices and perceptions of teachers and behavioral consultants with regards to the use of digital media to support Common Core instruction. The limitations of this dissertation did not allow for such a representative sample to be studied. It would be valuable to explore differences in the perceptions and practices of teachers across educational placement, grade level, school districts, and geographic locations. It would also be valuable to explore perceptions and practices with regards to digital media as an antecedent behavioral support strategy across behavioral consultation theoretical frameworks employed by school psychologists in different educational settings and geographic locations. Further, the limitations of this dissertation did not allow the opportunity to survey teachers and behavioral consultants that do not frequently utilize or feel confident navigating online resources, such as Question Pro, which was utilized to collect survey data. This population may also include teachers and behavioral consultants that may not have computer and/or internet access. These individuals may be significantly underrepresented as potentially desiring to integrate digital media into their practice more frequently and as requiring professional development and support in doing so. Future research including methods through which to assess the perceptions and practices of this potentially underrepresented population would be valuable to both the fields of education and school psychology.

This dissertation provides insight into student academic and behavioral factors that have the potential to be supported by more frequent integration of digital media into Common Core instruction. This study also offers important information regarding the

potential for digital media to support differentiated instruction and Universal Design for Learning, as well as the barriers that may prevent teachers and behavioral consultants from utilizing digital media in their practice and for these purposes more frequently. The Common Core Digital Media Index is a promising resource that could function to reduce these barriers. The training and practice recommendations are intended to provide school districts, teachers and behavioral consultants insight as to the knowledge, skills and resources that could assist them in supporting student academic and behavioral outcomes. The efforts of this dissertation resulted in providing a user-friendly online resource through which teachers and behavioral consultants can efficiently access digital media resources aligned with Common Core standards. The intentions of this dissertation are to inform best practices in education and school psychology, to provide information to improve professional development opportunities for teachers and behavioral consultants and ultimately to support universally designed learning and behavioral outcomes associated with the adaptive functioning of diverse learners.

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Appendix A

Copy of Online Informed Consent – Anonymous Teacher Final Survey

You are invited to participate in a research study that is being conducted by Laura Heimlich, who is a doctoral candidate in the Graduate School of Applied and Professional Psychology at Rutgers University. The purpose of this research is to determine 1) professional teacher and behavioral consultant perceptions and practices regarding the integration of digital media technology into classroom-based instruction, and 2) the potential utility of the Common Core Digital Media (CCDMI) website as a resource for professional educators and behavioral consultants**.**

Approximately 200 subjects will participate in the study, and each individual's participation will last approximately 10 minutes. Participation in this study will involve the following: providing online informed consent, responding to online survey items, viewing a website, and completing further survey items regarding the website and employment demographic information.

Your responses to survey items will be anonymous. We will NOT know your IP address when you respond to the Internet survey. The survey software you will be using includes a Secure Socket Layer (SSL). SSL is a cryptographic protocol that provides communication security over the Internet. SSL provides a reasonable guarantee that one is communicating with precisely the web site that one intended to communicate with (as opposed to an impostor), as well as ensuring that the contents of communications between the user and site cannot be read or forged by any third party.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for a minimum of three years.

There are no foreseeable risks to participate in this study. If you feel uncomfortable with a survey item, you can skip that item or withdraw from the study altogether by using the "exit survey" option. If you decide to quit at any time before you have finished the survey, your answers will NOT be recorded.

There are potential benefits from your participation in this study. You will be provided with hyperlinked access to the Common Core Digital Media Index (CCDMI), a resource that has been designed for the purpose of providing teachers and behavioral consultants with user-friendly access to digital media resources that are indexed according to Common Core State Standards. These resources may be used for the purpose of supporting Common Core instruction in general and special education classrooms.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact myself at **LauraHeimlich@gmail.com or (732)445-5384.**

You may also contact my faculty advisor, Dr. Michael Petronko, at:

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If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:
Rutgers University, the State University of New Jersey
Institutional Review Board for the Protection of Human Subjects
Office of Research and Regulatory Affairs
3 Rutgers Plaza
New Brunswick, NJ 08901-8559
Telephone: 848-932-0150
Email: humansubjects@orsp.rutgers.edu

Additionally, if you are interested, you can be provided with the results of this study. If you would like to receive the results of this study, please email your request to LauraHeimlich@gmail.com.

You may print a copy of this consent page for your records.

By beginning the survey, you acknowledge that you have read this information and agree to participate in this study, with the knowledge that you are free to withdraw your participation at any time without penalty.

Please click the "I Agree" box and then "Continue" if you agree to participate in this study.

Appendix B

Copy of Online Informed Consent – Confidential Behavioral Consultant Final Survey

You are invited to participate in a research study that is being conducted by Laura Heimlich, who is a doctoral candidate in the Graduate School of Applied and Professional Psychology at Rutgers University. The purpose of this research is to determine 1) professional teacher and behavioral consultant perceptions and practices regarding the integration of digital media technology into classroom-based instruction, and 2) the potential utility of the Common Core Digital Media (CCDMI) website as a resource for professional educators and behavioral consultants**.**

Approximately 200 subjects will participate in the study, and each individual's participation will last approximately 10 minutes. Participation in this study will involve the following: providing online informed consent, responding to online survey items, viewing a website, and completing further survey items regarding the website and employment demographic information.

This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner as to protect your privacy. Some of the information collected about you includes your professional email address and employment demographics. Your responses to survey items will be completely confidential. We will NOT know your IP address when you respond to the Internet survey. Your name and email address will **not** be stored with data from your survey. The researchers will not be able to link your professional email address to your individual survey responses and the results. Instead, you will be assigned a computer generated participant number. This number will be kept securely by the research team only until study completion. Once this research project is complete, your professional e-mail address will be shredded and no link between the survey data and identity will exist. The survey software you will be using includes a Secure Socket Layer (SSL). SSL is a cryptographic protocol that provides communication security over the Internet. SSL provides a reasonable guarantee that one is communicating with precisely the web site that one intended to communicate with (as opposed to an impostor), as well as ensuring that the contents of communications between the user and site cannot be read or forged by any third party.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for a minimum of three years.

There are no foreseeable risks to participation except for the remote possibility that your professional email address would be inadvertently disclosed. However, the principal investigator has put in place adequate protections for your privacy in that all information provided will be kept confidential by using a randomly generated number code in place of your email address. If you feel uncomfortable with a survey item, you can skip that item or

withdraw from the study altogether by using the "exit survey" option. If you decide to quit at any time before you have finished the survey, your answers will NOT be recorded.

There are potential benefits from your participation in this study. You will be provided with hyperlinked access to the Common Core Digital Media Index (CCDMI), a resource that has been designed for the purpose of providing teachers and behavioral consultants with user-friendly access to digital media resources that are indexed according to Common Core State Standards. These resources may be used for the purpose of supporting Common Core instruction in general and special education classrooms.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact myself at **LauraHeimlich@gmail.com or (732)445-5384.**

You may also contact my faculty advisor, Dr. Michael Petronko, at:

The Graduate School of Applied and Professional Psychology
Rutgers, The State University of New Jersey
797 Hoes Lane West
Piscataway, NJ 08854
(732)445-2181
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If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:
Rutgers University, the State University of New Jersey
Institutional Review Board for the Protection of Human Subjects
Office of Research and Regulatory Affairs
3 Rutgers Plaza
New Brunswick, NJ 08901-8559
Telephone: 848-932-0150
Email: humansubjects@orsp.rutgers.edu

Additionally, if you are interested, you can be provided with the results of this study. If you would like to receive the results of this study, please email your request to LauraHeimlich@gmail.com.

You may print a copy of this consent page for your records.

By beginning the survey, you acknowledge that you have read this information and agree to participate in this study, with the knowledge that you are free to withdraw your participation at any time without penalty.

Please click the "I Agree" box and then "Continue" if you agree to participate in this study.

Appendix C

Microsoft Word Version of Online Final Survey – TEACHER VERSION

Intro item) **Please complete this survey on a laptop or desktop. Do not complete this survey on a mobile device, such as a smart phone or tablet, as formatting errors will occur.**

1) **(instructional/consent):** INFORMED CONSENT TO PARTICIPATE IN AN ONLINE SURVEY (also included as Amendment 1a)

2) **(instructional):** THANK YOU FOR YOUR TIME TODAY!

THE PURPOSES OF THE **SURVEY QUESTIONS** ARE:
a) To assess how often and for what purposes teachers integrate digital media technology into Common Core lesson instruction.
b) To assess what factors/challenges prevent teachers from integrating digital media technology into Common Core instruction more frequently
c) To present teachers with the Common Core Digital Media Index (CCDMI) - a website designed to provide educators and behavioral consultants with user-friendly access to digital media resources that may be used to support Common Core instruction
d) To assess the opinions of teachers regarding the utility of the CCDMI

TO TAKE THIS SURVEY:
a) Please answer each question
b) Press the Continue button

3) **(instructional):** For the purpose of completing this survey, **the following terms** will be defined and referenced as follows:
a) **Common Core State Standards:** a clear set of shared goals and expectations with regards to college and career-ready standards of knowledge and skills in English language arts/literacy and mathematics for kindergarten through 12th grade students (National Governors Association, 2010)
b) **Digital media technology/resource:** websites that primarily consist of videos, audio recordings, games, interactive quizzes or other activities and/or mobile device applications
c) **Differentiated instruction:** teaching best practice based on the principle that instructional approaches and presentation of material should be flexible and adapted to meet the needs of individual and diverse students in a classroom (Tomlinson, 2001)
d) **Lesson Plan:** a detailed description and guide of daily classroom-based instruction, developed by a teacher, that outlines goals and objectives regarding the knowledge and skills that students will acquire during instruction

4)How often do you currently use digital media technology during common core instruction?

1. Less than once a week
2. 1-3 times a week
3. 3-5 times a week
4. More than 5 times a week

5) What types of digital media technology do you use during Common Core Instruction (check all that apply)?

1. Video
2. Audio recording
3. Games
4. Interactive Quizzes/Learning activities
5. Whiteboard applications
6. Mobile Device Applications (iPad, iPod, tablet, etc.)
7. Other (please list) _____

6) Do you feel that it is useful to integrate digital media technology into your differentiated Common Core lesson plans?

1. Not useful at all
2. Somewhat useful
3. Useful
4. Very useful
5. Extremely useful

7) Please drag and rank the following in order of the most important characteristics that make digital media technology useful in differentiating Common Core content.

- Content can be broken down into manageable components _____
- Content can be delivered at different paces and/or repetitively _____
- Technology-mediated instruction supports the development of students' digital literacy skills _____
- Teacher can select content and types of activities through which learning objectives are presented (video, audio recording, games) _____
- Highly interactive learning _____
- Student interest and preference can be incorporated into lesson design _____
- Content presentation can be differentiated (word-by-word/line-by-line read-aloud, text/background color) _____

8) How useful do you feel the integration of digital technology into Common Core instruction to be in supporting EACH OF the following student factors:

	Not useful at all	Somewhat useful	Useful	Very useful	Extremely useful
a) Student engagement in curriculum	❑	❑	❑	❑	❑
b) Student motivation to learn	❑	❑	❑	❑	❑
c) On-task behavior	❑	❑	❑	❑	❑

9) Would you like to integrate digital media technology into your Common Core lesson plans more frequently?

1. Yes
2. No

10) What are the most significant barriers that interfere with integrating digital media technology into your lesson plans more frequently? Please drag and rank the following in order of most significant barriers:

- Administrative support _____
- Access to hardware (computer, whiteboard, projector) _____
- Need for professional development regarding how to identify, navigate and integrate digital media resources to support Common Core instruction _____
- Time to identify, navigate and integrate digital media resources to support Common Core instruction _____

11) During what time of your day are you most likely to search for digital media resources and write your lesson plans? Please drag and rank the following in order of the time of day you are most likely to engage in these professional activities:

- Scheduled prep/flex time _____
- Before/after work at job site _____
- Scheduled professional development days _____
- During my lunch break _____
- After work hours off-site (home, etc.) during my personal time _____

12) Before answering the next questions, please take 5 minutes to VISIT and NAVIGATE the Common Core Digital Media Index (CCDMI) website by clicking the link below. Your answers to the questions to follow will be related to your opinion regarding the website. Click Here for the CCDMI website:
https://sites.google.com/site/commoncoredigitalmediaindex/

13) Do you feel that the CCDMI is a useful resource to identify digital media technology to integrate into your Common Core Lesson plans?

1. Yes
2. No

14) How likely are you to use the CCDMI as a resource to identify digital media technology to integrate into your Common Core lesson plans?

1. Not at all likely
2. Somewhat likely
3. Likely
4. Very likely
5. Extremely likely

15) Do you feel that the CCDMI is a useful resource to identify digital media technology for the purpose of differentiating instruction?

1. Yes
2. No

16) How likely are you to use the CCDMI as a resource to identify digital media technology to differentiate instruction?

1. Not at all likely
2. Somewhat likely
3. Likely
4. Very likely
5. Extremely likely

17) How likely are you to recommend the CCDMI to other colleagues?

1. Not at all likely
2. Somewhat likely
3. Likely
4. Very likely
5. Extremely likely

THANK YOU FOR YOUR TIME TODAY! To finish, please answer the following brief demographic questions

18) a) What grade level(s) do you teach?
b) Do you teach general education, special education or both? If you teach special education, in what placement(s) do you teach (self-contained, in-class support, etc.)
c) How many students are typically in your class per year?
d) What is/are your teaching-related certification(s)?
e) How many years have you been teaching?

19) How often do you use each of the following?

	More than once a day	Once a day	2-3 times a week	Once a week	Once a month	Once every few months	Once a year	Never
Smart phone	❑	❑	❑	❑	❑	❑	❑	❑
Internet	❑	❑	❑	❑	❑	❑	❑	❑
Social media	❑	❑	❑	❑	❑	❑	❑	❑
Online shopping	❑	❑	❑	❑	❑	❑	❑	❑
Online bill pay	❑	❑	❑	❑	❑	❑	❑	❑

Appendix D

Microsoft Word Version of Online Final Survey – BEHAVIORAL CONSULTANT VERSION

Intro item) **Please complete this survey on a laptop or desktop. Do not complete this survey on a mobile device, such as a smart phone or tablet, as formatting errors will occur.**

1) INFORMED CONSENT TO PARTICIPATE IN AN ONLINE SURVEY – (also included as Amendment 1b)

2) **(instructional)**: THANK YOU FOR YOUR TIME TODAY!

THE PURPOSES OF THE **SURVEY QUESTIONS** ARE

a)To assess the potential for the presence of digital media technology during classroom-based instruction to function as a clinically useful antecedent variable to support adaptive student behavior
b) To present behavioral consultants with the Common Core Digital Media Index (CCDMI) - a website designed to provide educators and behavioral consultants with user-friendly access to digital media resources that may be used to support Common Core instruction
c) To assess the opinions of behavioral consultants regarding the utility of the CCDMI

TO TAKE THIS SURVEY:
a) Please answer each question
b) Press the Continue button

3) **(instructional):** For the purpose of completing this survey, **the following terms** will be defined and referenced as follows:
a) **Common Core State Standards:** a clear set of shared goals and expectations with regards to college and career-ready standards of knowledge and skills in English language arts/literacy and mathematics for kindergarten through 12th grade students (National Governors Association, 2010)
b) **Digital media technology/resource:** websites that primarily consist of videos, audio recordings, games, interactive quizzes or other activities and/or mobile device applications
c) **Differentiated instruction:** teaching best practice based on the principle that instructional approaches and presentation of material should be flexible and adapted to meet the needs of individual and diverse students in a classroom (Tomlinson, 2001)
d) **Lesson Plan:** a detailed description and guide of daily classroom-based instruction, developed by a teacher, that outlines goals and objectives regarding the knowledge and skills that students will acquire during instruction.

4) How often are EACH OF the following goals identified by educators as the reason for referral for school-based behavioral consultation?

	Never	Sometimes	Often	Almost always	Always
a) Increase student engagement in curriculum	❑	❑	❑	❑	❑
b) Increase student motivation to learn	❑	❑	❑	❑	❑
c) Increase student on-task behavior	❑	❑	❑	❑	❑

5) Please rate how important you feel that it is to assess EACH OF the following factors when developing classroom-based positive behavior supports.

	Not important at all	Somewhat important	Important	Very important	Extremely important
a) Teacher instructional strategies	❑	❑	❑	❑	❑
b) Curricular goals/objectives	❑	❑	❑	❑	❑
c) Student interest/preference	❑	❑	❑	❑	❑
d) Items/activities that function as reinforcers of desired behavior	❑	❑	❑	❑	❑
e) Teacher buy-in/burn-out	❑	❑	❑	❑	❑
f) Administrative support	❑	❑	❑	❑	❑
g) Teacher access to existing resources	❑	❑	❑	❑	❑

6) What factors MOST OFTEN interfere with fidelity of implementation of the positive behavior support strategies that you recommend to consultees during school-based behavioral consultation? Please drag and rank the following in order of factors (1st to 7th) that MOST often interfere with fidelity:

- Administrator buy-in _____
- Teacher buy-in _____
- Student buy-in _____
- Items/activities identified as rewards do not have a robust or consistent reinforcing effect on desired behavior _____
- Intermittent reinforcement of problem behavior _____
- Inconsistent reinforcement of desired behavior _____
- Classroom demands are absent of factors that are inherently reinforcing of desired student behavior _____

7) How potentially useful do you feel the integration of digital media technology into Common Core instruction to be as an antecedent intervention to support EACH OF the following student factors:

	Not useful at all	Somewhat useful	Useful	Very useful	Extremely useful
a) Student engagement in curriculum	❑	❑	❑	❑	❑
b) Student motivation to learn	❑	❑	❑	❑	❑
c) On-task behavior	❑	❑	❑	❑	❑

8) Do you feel that it could be potentially useful for teachers to integrate digital media technology when preparing differentiated Common Core lesson plans?

1. Not useful at all
2. Somewhat useful
3. Useful
4. Very useful
5. Extremely useful

9) Please drag and rank the following in order (1st to 7th) of the most important characteristics that make digital media technology potentially useful in differentiating Common Core content.

- Content can be broken down into manageable components _____
- Content can be delivered at different paces and/or repetitively _____
- Technology-mediated instruction supports the development of students' digital literacy skills _____
- Teacher can select content and types of activities through which learning objectives are presented (video, audio recording, games) _____
- Highly interactive learning _____
- Student interest and preference can be incorporated into lesson design _____
- Content presentation can be differentiated (word-by-word/line-by-line read-aloud, text/background color) _____

10) Would you find it valuable to be able to offer teachers support regarding the integration of digital media technology into Common Core instruction as an antecedent behavioral and academic support strategy?

1. Yes
2. No

11) **(instructional):** Before answering the next questions, please take 5 minutes to visit and navigate the Common Core Digital Media Index (CCDMI) website by clicking the link below. Your answers to the questions to follow will be related to your opinion regarding the website. Click Here for the CCDMI website:
https://sites.google.com/site/commoncoredigitalmediaindex/

12) Do you feel that the CCDMI is a useful resource to identify digital media technology to integrate into teacher developed Common Core Lesson plans?

1. Yes
2. No

13) How likely are you to reference the CCDMI during consultation with classroom teachers for the purpose of identifying digital media technology to integrate into Common Core lesson plans?

1. Not at all likely
2. Somewhat likely
3. Likely
4. Very likely
5. Extremely likely

14) Do you feel that the CCDMI is a useful resource to identify digital media technology for the purpose of differentiating instruction?

1. Yes
2. No

15) How likely are you to reference the CCDMI during consultation with classroom teachers for the purpose of identifying digital media technology to differentiate instruction?

1. Not at all likely
2. Somewhat likely
3. Likely
4. Very likely
5. Extremely likely

16) How likely are you to recommend the CCDMI to other colleagues?

1. Not at all likely
2. Somewhat likely
3. Likely
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17) How often do you use each of the following?

	More than once a day	Once a day	2-3 times a week	Once a week	Once a month	Once every few months	Once a year	Never
Smart phone	❑	❑	❑	❑	❑	❑	❑	❑
Internet	❑	❑	❑	❑	❑	❑	❑	❑
Social media	❑	❑	❑	❑	❑	❑	❑	❑
Online shopping	❑	❑	❑	❑	❑	❑	❑	❑
Online bill pay	❑	❑	❑	❑	❑	❑	❑	❑

THANK YOU FOR YOUR TIME TODAY! To finish, please answer the following brief demographic questions

18) a) To what grade levels do you provide behavioral consultation services?
b) Do you provide behavioral consultation services to general education, special education or both?
c) To what special education placements to you provide behavioral consultation services (self-contained, in class support, etc.)
d) How many years have you been providing behavioral consultation in schools?