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PERCEPTIONS OF U.S. TEACHERS OF THE VISUALLY IMPAIRED ON
COMMERCIALY-PRODUCED, DESCRIBED VIDEO WITHIN EDUCATIONAL
MULTIMEDIA

By

Lori Greenlee Johnson
B.A. , Bellarmine University, 1991
M.A.T., University of Louisville, 1999

A Dissertation
Submitted to the Faculty of the
College of Education and Human Development of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

Department of Teaching and Learning
University of Louisville
Louisville, Kentucky

August 2013

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A Dissertation Approved on

August 9, 2013

by the following Dissertation Committee:

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Dr. William Penrod

Dr. Jeff Valentine

DEDICATION

This dissertation is dedicated to my sons, Drew and Trent Johnson, who were my
inspiration for persevering through my doctoral program
and
to Dr. William and Loretta Greenlee, my parents, who have always modeled high
standards for me in education and in life.

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This dissertation was completed with the continual patience and support of my committee, colleagues, friends and family. A special thank you is extended to my committee members: Drs. Debra Bauder, Thomas Simmons, Diane Kyle, William Penrod and Jeff Valentine. They believed in me, my research and professional goals.

More thanks are given to my many colleagues in the field of visual impairment and blindness. I am extremely lucky to have a network of supportive colleagues who provide so much care and optimism. My sincere appreciation is expressed for Dr. David Hume's guidance and advice during my program. Furthermore, my gratitude goes out to the National Center for Leadership in Visual Impairment (NCLVI) and the U.S. Department of Education, Office of Special Education Programs (OSEP) Cooperative Agreement H325U040001 that provided funding and support during my doctoral fellowship program. Special appreciation goes to Dr. Glinda Hill, Dr. Lou Danielson, Dr. Kathleen Huebner, Dr. Diane Wormsley, Dr. Missy Garber, Tina Fitzpatrick, university consortium members, PAC members and all of the NCLVI fellows.

Finally, I'd like thank my friends and family who stood by me during the whole process. My program and research wouldn't have been possible without their love and support.

ABSTRACT

PERCEPTIONS OF U.S. TEACHERS OF THE VISUALLY IMPAIRED ON COMMERCIALLY-PRODUCED, DESCRIBED VIDEO WITHIN EDUCATIONAL MULTIMEDIA

Lori Greenlee Johnson

August 9, 2013

A nationwide survey was conducted to gain insight into how Teachers of the Visually Impaired (TVIs) perceive commercially-produced, described video within educational multimedia for students with visual impairments and blindness. Of the 490 TVIs who responded, 374 were included in the study based upon its inclusion requirements of being a certified TVIs employed in a K-12, school work setting in the U.S.

Data were collected pertaining to the TVIs' levels of knowledge, use, support and recommendation of commercially-produced, described video for educational purposes. Relationships between these variables were explored. Descriptive information was highlighted to add to this exploratory study. Data were gathered to identify whether or not there were significant differences between the TVIs' academic work settings (i.e., schools for the blind, public schools and "other" schools) and the extent of their

recommendation levels of commercially-produced, described video for students with visual impairments.

The results indicated that there were relationships between each of the TVIs' levels of knowledge, use and support of commercially-produced, described video and their recommendation of described video for their students with visual impairments. Furthermore, a significant difference within the TVIs' level of recommendation of commercially-produced, described video was found between the TVIs who worked in the schools for the blind and TVIs who worked in public schools. Additionally, a significant difference in the TVIs' recommendation levels was discovered between TVIs who were employed in schools for the blind and TVIs who worked in "other" schools.

Implications and limitations of the study were identified and suggestions were given for future research. Specific implications from the study's findings were outlined for educators, administrators, educational media companies and policy makers who may affect the supply and demand of described video within education. Recommendations for increasing TVIs' educational opportunities on learning how to request and use described video for students in educational settings were made based upon the study's findings. In addition, the findings stressed the crucial need for educational media companies and vendors to increase the supply of commercially-produced, described video. This study's findings added to the sparse previous research on the topic of video description in educational settings.

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CHAPTER I

INTRODUCTION

Today's digital age consists of new technology being developed at an astounding rate. Emphasis of technology has been evident in the sectors of business, science, entertainment, and education and has been shaping the future of society (Kaku, 2011). Collins and Halverson (2009) believed that technology and electronic information integration have become more widely used in America's schools in recent years. They called attention to this integration of technology in schools and stressed that transformation of teaching and learning was crucial in preparing students for a technology-driven world.

Technology in Education

Teachers have followed the general public in utilizing technology to open new doors for gaining information and means for modern communication. Educators have switched information delivery systems: from primarily teachers and textbooks delivering instructional content (Collins & Halverson, 2009; Meyer & Rose, 2000; Anderson-Inman & Reinking, 1998) to technology and media infused platforms which cater to more customized learning (Schrum & Levin, 2009). As Bonk appropriately exclaimed, "This is not your parent's education" (2009, p. 12).

The use of books, pencils, blackboard and overhead projectors are no longer the main tools used in the classroom. Instead, there is a heavier reliance on electronic ink and online sources (Bonk, 2009). Since the mid-1990s, Internet connectivity in public school buildings has risen from 35% to 100% (Wells & Lewis, 2006). This development has enabled the growth of classroom Internet access in public schools (Greenhow, et al., 2009). As a result of this increase in technology use, it has been predicted that by 2014, 10% of all high school classes will offer online courses; and by 2019, this figure may grow to 50% (Schrum & Levin, 2009).

A digital format of information has quickly become “the norm” and a necessity for our society that demands instantaneous access and retrieval of information. Digital information has also generated unique opportunities for customized learning (Edyburn, 2010; Hitchcock, Meyer, Rose & Jackson, 2002). The transformation of printed text and images to new digital formats has opened new doors for student learning by promoting differentiated classroom instruction. Teachers who are willing to embrace and learn how to effectively use this new technology for delivery of instruction may offer their students a more stimulating and personalized educational experience (Flores, 2008). Researchers believe that with well-implemented technology incorporation, “learner control” results from customized learning activities are possible (Collins & Halverson, 2009; Edyburn, 2010; Hitchcock, Meyer & Rose, 2000; Meyer, Rose & Jackson, 2002; Pisha & Stahl, 2005).

Technology Access for Individuals with Disabilities

Learner control and customization benefits all students, including students with disabilities. In fact, through the use of accessible technologies, students with disabilities

may experience more independence and choice in their learning (Collins & Halverson, 2009; Hitchcock et al., 2002; Rose, 2000; Rose, 2001; Pisha & Coyne, 2001). Through the use of technology, learning has the potential to be individualized, flexible and engaging (Flores, 2008; Council for Exceptional Children, 2005; Anderson-Inman & Reinking, 1998). Accessible technologies have the ability to equalize learning and life opportunities for children and adults with disabilities (Blackhurst, 1997; Blackhurst & Edyburn, 2000; Huting, Johanson & Stoneburner, 1996; Packer & Kirchner, 1997; Schmeidler & Kirchner, 2001). Additionally, access to technology and curricular materials in schools is a right for students who are blind and is protected by law (Corn & Wall, 2002; Menlove & Hammond, 1998; Riccobono, 2012). The 1996 Chaffee Amendment, P.L. 104-197, has allowed accessible curriculum through specialized formats (e.g., braille, audio or digital text) for copyrighted materials (National Library Service, n.d.; American Printing House for the Blind, n.d.)

Universal Design for Access

Universal Design for Learning (UDL) and universal design features of technologies have been imperative for effective curriculum delivery options for students with disabilities, including visual impairments (Pisha & Stahl, 2005). Universal design for access has been evident in both UDL access strategies and in technology products with universal design features. Flexibility of use and usability by all individuals, not just individuals with disabilities, have been key principles for UDL and universal design (CAST, n.d.; Connell et. al, 1999; Trace Center, 2011; Vanderheiden, 2000). These principles have supported the need for multiple representations of information for curricular materials that may meet the needs of both nondisabled and disabled individuals

(Bowe, 2000; CAST, n.d.; Edyburn, 2010; Hitchcock, 2001; Hitchcock et al. 2002; Pisha and Coyne, 2001; Rose, 2000, 2001; Vanderheiden, 2000). In consideration, it has been noted that digital media has the capability of offering a curriculum that is created once but can be delivered in a multitude of ways (Hitchcock, Meyer, Rose & Jackson, 2002).

Technology is widely used in today's modern-day classrooms and can greatly enhance both curriculum and instruction if UDL, universal design or "built-in adaptations" are incorporated. The Council for Exceptional Children (CEC) stated that Universal Design for Learning (UDL) promotes access to the general curriculum for students in inclusive classrooms. The CEC stressed, "To have an opportunity to learn from the general curriculum, students must first have access to this curriculum" (2005, p. 5).

Despite the increased use of general technologies in schools, often digital, curricular media with universal design can be limited in availability, or nonexistent in many U.S. classrooms. Although digital, curricular media with universal design features may be available to schools, both educators and administrators may not have adequate awareness or training to fully utilize it. This may result in them not choosing to request it or use it as part of their curricular instruction for their students.

Assistive Technology Access for Students with Visual Impairments

Assistive technologies for individuals who are visually impaired have acted as extensions to allow access to fundamental information that they cannot obtain through sight (Presley & D'Andrea, 2008). As a result, assistive technologies have provided access to educational curriculum (Hume 2011; Kapperman, Sticken & Heinze, 2002; Kelly, 2008). Access technologies or assistive technologies (AT) have been available in

many different forms for individuals with visual impairments, from screen readers to electronic braille displays. Examples of assistive technologies for students with low vision have included high-tech devices (i.e., video magnifiers or CCTVs, screen enlargement and screen reading software programs) to low-tech devices (i.e., optical magnifiers, acetate overlays and adjustable copy holders) (Corn & Wall, 2002; Edwards & Lewis, 1998; Hume, 2011; Presley & D'Andrea, 2008). Other examples of assistive technologies for students who have limited or no functional vision and might use tactile or auditory sensory channels to gain access to curriculum have included: low-tech braille materials to high-tech refreshable braille, screen reading software, and audio or video description (Corn & Wall, 2002; Edwards & Lewis, 1998; Hume, 2011; Presley & D'Andrea, 2008). These devices, among many others have allowed students with visual impairments to access curriculum embedded in literature and technology more easily.

Teacher training and assistive technology.

Although there is an abundance of different types of assistive technology available for individuals, it has been noted that Teachers of the Visually Impaired (TVIs) have not used assistive technologies with their students. Several researchers have found that TVIs have reported not using assistive technologies due to their lack of knowledge to adequately train their students on the devices (Abner & Lahm, 2002; Bauder, 1999; Edwards & Lewis, 1998; Hume, 2011; Parker et al., 1990). In addition, TVIs indicated that the reason as to whether or not they use assistive technologies with their students often depends on their confidence in teaching the devices (Abner & Lahm, 2002; Edwards & Lewis, 1998; Kapperman, Sticken & Heinze, 2002; Smith, Kelley, Maushak, Griffin-Shirley & Lan, 2009).

This lack of using assistive technologies has inhibited students with visual impairments access to their educational curriculum. Furthermore, if properly selected and executed appropriately through training, assistive technologies may provide students with visual impairments valuable access to curriculum (Lueck et al., 2001; Parker et al., 1990; Presley & D'Andrea, 2008).

Described Video

Described video may be produced commercially as a digital, video product with description as an access feature promoting universal design. In addition, described video may be self-produced with description added-on later to existing digital videos through the use of assistive technology software. This study focuses on the former: described video as a product with universal design features. This type of pre-produced, described video is available commercially through media companies for educators to use with students.

Statement of the Problem

The problem of barriers to school curriculum for students with visual impairments has not completely dissipated in spite of the advanced technologies. Based upon previous studies, both assistive and technologies with universal design features that have the ability to minimize access barriers have not been employed by TVIs to their fullest potential (Abner & Lahm, 2002; Bauder, 1999; Described and Captioned Media Program, 2009; Edwards & Lewis, 1998; Hume, 2011; Parker et al., 1990). Insufficient access to school curriculum has hindered equal learning opportunities for students who are visually impaired and blind. It has been the responsibility of the TVI to ensure that their students have fair access to educational materials and instruction (Holbrook & Koenig, 2000).

Although, students who are blind have depended on TVIs to assist in diminishing barriers to their curriculum, some may not know how to follow the best practices for reducing curriculum barriers and encouraging their students' independence. For instance, Corn & Wall (2002) observed that TVIs often relied upon their own or others' impromptu verbal description of curriculum containing visual images embedded in multimedia as a means of access. This may have been due to the TVI respondents' reports of their need for more training on assistive technologies for the visually impaired. Described and Captioned Media Program (2009) also recounted similar reports by TVIs. The TVIs surveyed by the Described and Captioned Media Program (DCMP) revealed that verbal description was relied upon more heavily for access means to educational videos for visually impaired students than commercially-produced, described educational videos. Although, DCMP found that described videos were under-utilized by TVIs, they also discovered that TVIs were receptive to using described educational videos if available (Described and Captioned Media Program, 2009). Both Corn and Wall's 2002 and DCMP's 2009 surveys prompted the need for additional exploration into exploring the topic of access to video images within educational multimedia.

Educational multimedia may include educational internet sites, computer-based learning or assessment software programs, electronic books or digital video discs (DVDs) which often contain video images within their content. With US teachers' increased use of educational multimedia, students who are visually impaired and do not have enough vision to see video images within the media are left with a disadvantage compared to their sighted peers. This inequity may be present when digital educational media offers video images without quality, digitally-integrated description. Integrated description of

video images allows students who are blind independent access to any video images within digital educational media. Opportunity for independent access to video images within educational media is significant for students who are blind and should be a concern of any educator or school who serves them.

Purpose of Study

This study addressed commercially-produced, described video within educational multimedia for students who are blind, grades kindergarten to 12th grade. In addition, the study explored the perceptions of TVIs across the United States (U.S.) in relation to described video. The purpose of this study was to investigate the opinions of U.S. TVIs regarding commercially-described video within educational multimedia for students who are visually impaired. The study investigated TVIs' levels of knowledge, use and support variables. It then examined the relationship between each variable and the TVIs' frequency of recommendation of described video for students with visual impairments. In addition, the study categorized the TVI sample into three work setting levels (i.e., schools for the blind, public schools or "other" schools.) With respect to the educational practices exemplified by their recommendations of described video, differences between the three levels of TVIs were analyzed.

With a lack of previous, empirical research on this topic, this exploratory study helped sketch a better illustration on what U.S. TVIs' beliefs are about described video within educational multimedia. The following research questions guided this investigation.

Research Questions

Question 1

What is the TVIs' extent of knowledge of commercially-produced, described video within educational multimedia?

Question 2

How does the TVIs' knowledge of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 3

What is the TVIs' level of use of commercially-produced, described video within educational multimedia?

Question 4

How does the TVIs' use of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 5

What is the TVIs' level of support of commercially-produced, described video within educational multimedia?

Question 6

How does the TVIs' level of support relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 7

Is there a significant difference in TVIs' recommendation of described video within educational multimedia between school work settings (i.e., schools for the blind, public schools or "other" schools)?

Definition of Terms

For the purpose of this investigation, the following terms have been operationally defined:

Teacher of students with visual impairments or teacher of the visually impaired (TVI). A teacher trained to provide educational services for students with visual impairments and blindness. TVIs may provide direct instruction and collaborate with regular education teachers for students with visual impairments (Topor, Holbrook & Koenig, 2000).

Legal blindness. Legal blindness is defined as best corrected visual acuity of 20/200 or less, or reduced visual field to 20 degrees or less, in the better eye (Cassin, 2001).

Students with low vision. Students with reduced visual acuities or visual fields that may hinder optimal processing of visual information (Huebner, 2000). The degree of low vision varies from each individual, as does the effects on the student's functional vision or ability to access information through his or her visual mode. They may access information through visual, auditory, and/or tactual modes.

Students with total blindness. Students who are totally blind and do not have vision as a means for accessing information. They may access information through tactual and/or auditory modes.

Students with no or limited functional vision. Students who do not have enough functional vision to use their vision as a means for accessing information. They may access information through tactual and/or auditory modes.

Tactual learner. This term refers to a student who accesses information through touch or the tactual mode. Tactual learning may be considered the student's primary

means of accessing information. Tactual medium may consist of braille, tactual graphics, manipulatives and real objects.

Visual learner. This term refers to a student who accesses information through his or her functional vision or visual mode. Visual learning may be considered their primary means of accessing information. In consideration of varied visual impairments and fluctuation of visual acuities, visual learning may change according to the students' task, time and environment (Ward, 2000).

Auditory learner. This term refers to a student who accesses information through her or his listening or auditory mode. Auditory learning may be considered the student's primary or secondary means of accessing information.

Accommodations for a student with a visual impairment. Accommodations may reflect provisions of curriculum or educational materials based upon a student's functional vision learning media assessment (FVLMA) and implemented through a student's IEP (Lewis & Allman, 2000).

Assistive Technology (AT) device. According to the Individuals with Disabilities Education Act (Sec. 602 (1)(A)), assistive technology device is "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability" (as cited in Presley & D'Andrea, 2010, p. 18).

Universal Design for Learning (UDL). A set of principles for curriculum development, including flexibility of curriculum and instruction that give all individuals equal opportunities to learn (Edyburn, 2010; Hitchcock, 2001; Meyer & Rose, 2000; Rose, 2000).

Product with universal design. A product designed with access features which not only make it more useable for persons with disabilities, but more useable for all of its consumers (Vanderheiden, 2000; Bowe, 2000).

Best practice. Best practice for instruction determined by educators through research, training and personal experience.

Independent student access. A student's ability to access school curriculum independently or without assistance from others.

Audio description. Added audio descriptions to provide viewers with visual impairments access to visual images within displays, presentations or productions (i.e., theatrical productions and museum displays.) In addition, in the United Kingdom, the term "audio description" also refers to "video description."

Video description. An added narration track with descriptions of the video's visual images for blind and visually impaired viewers. Explanations of the video's visual images may include supplemental information about characters, plot, scenery and action (Ferrell & Monson, 2006). Three types of video description modes of delivery:

- 1) Verbal Description of a video's visual images by an individual.
- 2) Integrated Description in commercially-produced, described video.
- 3) Integrated, Self-produced Description of a video's visual images.

Educational multimedia. For purpose of this study, it will encompass educational internet sites, computer-based learning or assessment software programs, electronic books, internet streamed videos or digital video discs (DVDs) which contain commercially-produced video images within its content.

Individualized education program (IEP). A specially-designed education plan for a student who receives special education by an educational team. An IEP may consist of a student's placement requirements, goals with benchmarks, specially designed instruction, accommodations, as well as, related service, assessment and transition needs. An IEP for students with special education services is mandated by law, the Individuals with Disabilities Education Act or IDEA (Lewis & Allman, 2000; Wright & Wright, 2006).

21st Century Communications and Video Accessibility Act (CVAA).

Legislation signed into law on October 8, 2010, that gave individuals with vision or hearing loss better access to the Internet, smart phones, television programming, and other modern communications technologies. It restored and expanded requirements for video description of television programs (American Association of People with Disabilities, 2010; American Foundation for the Blind, 2010).

IDEA. This term is used for the Individuals with Disabilities Education Act of 1997 (P.L. 105-17). The US Department of Education (n.d.) stated that this national legislation protects the rights of children with disabilities by ensuring that schools and public agencies provide special education and related services to students deemed eligible. Part B of IDEA applies to children ages three to 21 and Part C of IDEA applies to children ages birth to two years. This law was later amended and has been referred to as the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004, IDEIA or P.L 108-446).

No Child Left Behind Act (NCLB). This federal legislation purports that “all children will have a fair, equal, and significant opportunity to receive high-quality

education and reach, at minimum, proficiency on challenging achievement standards and state academic assessments (20 U.S.C. Section 6301)’” (Wright, Wright & Heath, 2009, p. 16).

Summary

Research in accessibility of video images, specifically video description, within educational multimedia has not previously been thoroughly explored. Students with visual impairments have been struggling for equal access to school curriculum for numerous years. It is important that Teachers of the Visually Impaired are well-informed and utilize the best tools and practices to provide accessible educational content and materials for their students. Without these efforts, their students may be left with a distinct disadvantage and a diminished opportunity for learning.

This research supports the need for accessible educational curriculum and independent learning opportunities for students with visual impairments. It may have a positive impact for educators, administrators, researchers, public policy, and most importantly, students who are blind and visually impaired.

CHAPTER II

REVIEW OF LITERATURE

This chapter examines significant literature associated with this study. The review highlights literature on persons with visual impairments, special education, access for learning supports and audio and video description.

Persons with Visual Impairments in the United States

The United States (U.S.) has experienced an increasing population of both children and adults who experience vision loss. The National Center for Health Statistics' 2008 National Health Interview Survey Provisional Report noted that there were over 25 million U.S. civilian adults, ages 18 and older with significant vision loss (Centers for Disease Control, 2008). Vision loss among individuals has been defined as difficulty seeing despite corrected vision with prescriptive lenses (American Foundation for the Blind, 2008).

There have been many descriptions of the degree of a person's visual impairment. Visual impairment has been known to affect a person's visual acuity (the ability to see detail) and/or a person's visual field. People with visual impairments have been described many ways, including but not limited to, being totally blind, blind with light perception, visually impaired with limited functional vision and low vision (Corn & Wall,

2002; Huebner, 2000; McKenzie & Lewis, 2008; American Foundation for the Blind, 2008). In addition, people who may be considered “legally blind” may have a best corrected visual acuity of 20/200 or less, or a reduction in the visual field to 20 degrees or less, in the better seeing eye (Cassin & Rubbin, 2001, Huebner, 2000).

Numbers of Students with Visual Impairments and Blindness

The American Printing House for the Blind (APH) estimated that there were 59,341 eligible students with visual impairments in the U.S. for the receipt of their educational materials and products(Fiscal Year 2010). The total 59,341 students accounted for in APH’s Census Report was broken down into more detail: a) 11,296 were from the Infant to Preschool groups; b) 28,607 were from the K-12 and Academic Nongraded groups; and c) 17,714 were from the Postgraduate, Adult students and Other registrants groups.

This student count was taken using specific guidelines set by APH for their 2009 Federal Quota Census (Fiscal Year 2010). APH has conducted this voluntary census each year in an attempt to account for the number of students who are eligible for their federal quota monies (American Printing House for the Blind, 2010). According to Amback,

The specific purpose of the annual Federal Quota Census is to register students in the United States and outlying areas who meet the definition of blindness and are, therefore, eligible for adapted educational materials from APH through the Act to Promote the Education of the Blind (C. Amback, personal communication, April 2, 2010).

APH's efforts have been significant and have served the purpose for disseminating their materials to students who are blind. However, this census alone is not a true measure of the total number of children in the U.S. who experience vision loss. Many students have not been included in the census' total number due to underlying factors and criteria. This is because it is voluntary participation in nature, and because of the criteria used to define legal blindness. For example, the census' final numbers may not reflect many students with visual impairments who either do not qualify under the "legally blind" definition, or students who are not registered for other reasons. Eligibility for APH's Federal Quota Census has required students to "meet the legal definition of blindness" or "function at the legal definition of blindness" due to a brain injury or dysfunction (American Printing House for the Blind, 2010). Based on these factors, it has been predicted that the total U.S. population of students with vision loss in the K-12 age range may be far greater than what the census represents.

Special Education Services in U.S. Schools

The National Center for Education Statistics collected data for the number of U.S. students ages 3-21 with disabilities who received special education services from the school years, 1976-1977 to 2008-2009. Data suggested that there were a growing number of students with disabilities who were served. In fact, the numbers have almost doubled (U.S. Department of Education, 2010). In order to properly serve the rising number of children with disabilities in our educational system, laws have been put into place to ensure appropriate, equal access to a free, public education.

Legislation Supporting Special Education

Inclusion of students with disabilities into regular academic classrooms has been a result of historical legislation involving national disability law. The Individuals with Disabilities Education Act (IDEA) has been one of the most significant pieces of federal legislation implemented to not only protect the rights of students with disabilities and their parents, but also to ensure these students to a free, appropriate public education (Wright & Wright, 2006). It should be noted that although IDEA was employed in 1990, its origin came from its predecessor, the Education for All Handicapped Children Act or P.L. 94-142 which was established in 1975 (Hatlen, 2000, p. 12). IDEA would later be reauthorized in 2004 and renamed, the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) (Wright & Wright, 2006).

Students with disabilities who are eligible and protected under Part B, Section 1414 of IDEIA 2004 have been required to have individual education programs (IEPs). IEPs have helped schools establish students' individualized goals, outline their special education and related services, plan for appropriate accommodations and modifications to be provided, and monitor their progress. Specifically, IDEIA 2004 requires an IEP to contain, "a statement of any individual appropriate accommodations that are necessary to measure the academic achievement and functional performance of the child on State and district wide assessments" (Wright & Wright, 2006, p.100). IEPs have assisted students with disabilities gain fair access to the schools' curriculum, while promoting their educational success.

Special Education Services for Students with Visual Impairments

Students with visual impairments which adversely affect their education have often been deemed "eligible for special education services" maintained under IDEIA

2004. If a student has been determined “eligible” for services, then the educational committee is responsible for developing his or her IEP. Goals and objectives targeting the student’s areas of deficits and proper supports to allow for learning and educational growth have been crucial parts of an IEP.

Supports have included appropriate accommodations and modifications for classroom activities and assessments and have regularly been included in IEPs. Educational materials have frequently required these supports for students with visual impairments. It has been important that these students have the same timely and equal access to school curriculum as their non-disabled peers. Students with disabilities have been held accountable with the same high standards for learning mandated by the federal law, No Child Left Behind Act (Wright, Wright & Heath, 2009). Therefore, they should be provided with appropriate supports to meet these standards.

It has been documented that lack of access to educational curriculum within media has presented a significant barrier for visually impaired and blind students (Corn & Wall, 2002). Therefore, in order, to support equal access to educational curriculum, IDEIA 2004, Section 613 (a)(6) has required that all educational instructional materials must be provided by local education agencies (LEAs) in accessible formats, so that students with visual impairments have equal access to the same educational content as their non-disabled peers. In addition, Section 612 (a)(23) of IDEIA 2004 has mandated States to provide accessible instructional materials in a timely manner to students with visual impairments or print disabilities. This section was included in IDEIA 2004, since students who were blind were often left waiting long periods of time before receiving

vital materials like textbooks in a medium that was accessible (Federal Register, 2009, p. 42056).

Teachers of the Visually Impaired (TVIs) have been responsible for providing special educational services and making specially designed instructional recommendations for students with visual impairments (Topor, Holbrook & Koenig, 2000). TVIs who serve students grades K-12, commonly work in state schools for the blind or public schools (Johnstone, Thurlow, Altman, Timmons & Kato, 2009). In addition, TVIs may be employed in “other” schools, such as, charter, parochial, alternative or private schools serving students with visual impairments in grades K-12 (Described Captioned Media Program, 2009).

Access for Learning Supports

Supports for educational instruction, activities, and curriculum access have been crucial components for special education programs and services. Schools that are mandated by law have provided a variety of accommodations for their students with disabilities. Prior to IDEA, Hitchcock, Meyer, Rose and Jackson explained, “the access hurdle was about legal access to an education and physical access to buildings” (2005, p. 10). This meant that students with disabilities had physical access to attend regular education classrooms. It was the Americans with Disabilities Act (ADA) of 1990 that brought awareness to physical accessibility (McGuire, Scott & Shaw, 2006). Specifically, ADA Title II required public school districts to ensure their buildings, programs and services were accessible for persons with disabilities (Joffee, 1994; Riccobono, 2012). In addition, ADA Title III, required public accommodations (which includes private schools) to, “comply with basic nondiscrimination requirements that

prohibit exclusion, segregation, and unequal treatment” (U.S. Department of Justice, 2005, p. 5).

Individuals with Disabilities Education Act Amendments of 1997 (IDEA, '97) was an impetus for the greater needs of finding solutions for children with disabilities to access the general curriculum. IDEA '97 required students with disabilities: (1) *have access* to the general curriculum; (2) *be involved* in the general curriculum; and (3) *progress in* the general curriculum (20 U.S.C. 1400 et seq.) As a result of these requirements, greater emphasis has been put on schools' personnel to provide a greater variety of accommodations for their students with disabilities. Also, IDEA '97 recognized the importance of assistive technology for students with disabilities and required that assistive technology devices and services be considered in the development of every child's Individual Education Program (IEP).

As Sapp (2009) noted, when instructional materials are presented only in visual formats like print, images and videos, students who are blind do not have access. Now the consideration of using alternate methods of presenting the content and using assistive technology devices and products with universal design features have provided children with visual impairments better access to the general curriculum. Furthermore, access to materials have been provided using assistive technology devices, such as screen readers and screen magnification, as well as, through digitally-integrated audio descriptions via “alt tags” for pictures and video description for video images (Sapp, 2009).

Assistive Technology for Students with Visual Impairments

According to Hatlen (2000), since the 1990's, students with visual impairments have been more frequently educated in regular, mainstreamed and inclusive classrooms.

Since students with disabilities have often been educated in inclusive settings or in a regular classroom placement, assistive technology has helped provide a necessary link to accessing the curriculum. Assistive technology has been regarded as an essential key for successful inclusion of students with disabilities (Smith, Polloway, Patton & Dowdy, 2001).

According to the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, P.L. 108-446) assistive technology has been defined as, “any item, piece of equipment, or product system, whether acquired commercially off the shelf modified, or customized, that is used to increase, maintain, or improve functional capabilities of an individual with a disability” (IDEIA, 2004, Sec. 602, 20 USC 1401, Sec. 300.6).

Assistive technologies have retro-fitted information delivery systems for students with disabilities (Pisha & Stahl, 2005). Assistive technologies have provided students access to the same educational curriculum as their peers. For students with visual impairments, assistive technologies have allowed greater independence (Lueck, Dote-Kwan, Senge & Clark, 2001). According to Presley and D’Andrea (2008), assistive technologies for students who are blind encourage independent learning and promote best practice for instruction.

For this reason, the variety and sophistication of assistive technologies for students who are blind have grown considerably over the years. Assistive technology’s focus has been on “information access” for students with visual impairments. Presley and D’Andrea (2008) stated that assistive technologies can be low-tech or high-tech access tools for students with disabilities to access the environment and technology. For students who use braille, assistive technology devices have progressed from the likes of

the slate and stylus and braille writer to the more sophisticated computer screen reading software and electronic braille displays. Additionally, for print students who need print magnification, devices have ranged from a variety of handheld magnifiers to closed-circuit televisions (CCTVs) and computer screen magnification software (Edwards & Lewis, 1998; Kapperman, Sticken & Heinze, 2002; Kelly & Smith, 2011).

What's more, when considering assistive technologies, it has not been recommended that the devices be assigned to visually impaired students randomly or haphazardly. Selection of assistive technology must be systemic in nature with their needs and abilities kept front and center. In order to ensure a best match for device and student, the selection process has often been guided through important assessments and the student's IEP. The assessments have included Functional Vision Learning Media Assessments (FVLMAs) and assistive technology assessments (Parker et al, 1990; Presley & D'Andrea, 2008). Selections of devices for students have needed to be adaptable and flexible, since student needs change over time. For example, device selections may be adjusted for changes in the student's maturation, learning media, overall needs, and advancements in technology (Lueck et al., 2001).

Many TVI may recognize the availability of assistive technologies; however, they might not choose to use them due to barriers. For example, it has been suggested that deficiency of assistive technology use among students with visual impairments has stemmed from lack of teacher's assistive technology knowledge to adequately train students (Abner & Lahm, 2002; Bauder, 1999; Edwards & Lewis, 1998; Hume, 2011; Parker et al., 1990; Smith, 2009). Corn & Wall (2002) described TVIs' general "working knowledge" of assistive technology as their basic understanding of access technology.

In addition to TVIs' basic knowledge of assistive technology, lack of time during the school day for training and shortage of funding for devices have also been reported as related barriers for teacher assistive technology use (Hume, 2011; Kapperman et al., 2000). Furthermore, educators' use of assistive technology with their students often has depended on their personal confidence in teaching the students how to use the devices (Abner & Lahm, 2002; Edwards & Lewis, 1998; Kapperman, Sticken & Heinze, 2002; Smith, Kelley, Maushak, Griffin-Shirley & Lan, 2009). It should be noted that in order for AT to be effective, especially for students with visual impairments, there needs to be 1) active parent involvement in student's education, and 2) students who attended residential schools for the blind Kelly (2009).

Reiterating, assistive technology has been a tool for accessing educational curriculum. Specific to video description, it has been used as an extension to access curriculum within technology containing video images. In this case, computer software for video description has been used as an assistive technology tool. It has allowed individuals to self-produce or add-on audio/video descriptions to pre-existing digital, visual images or videos. For example, *MAGpie 2.0*, a free description and captioning software program, was developed by WGBH's National Center for Accessible Media to allow self-production of video descriptions. *MAGpie 2.0* has allowed individuals like teachers and students to record and insert their own audio or video descriptions for visual content within digital curricular media. In addition, *Quicktime* by Apple, Inc. has been another software program utilized by educators to create descriptions for video (Ely et al., 2006).

Further exploration of this type of assistive technology has been implemented by the Smith-Kettlewell Video Description Research and Development Center (VDRDC). VDRDC (2012) has been investigating video description technologies and has hosted webinar trainings for educators on creating crowd-sourced description (CCD) for web-based video. Many have felt that with the increased student use of web-based videos for curricular needs, accessibility of this technology is crucial for students who are blind. Thus, increased research and resources for video description has been strongly recommended and supported by the U.S. Department of Education (VDRDC, 2012).

Universal Design

Besides assistive technologies for access needs, universal design has also been instrumental for access to environments, products and technologies for persons with disabilities. Ronald Mace was a “forefather” of universal design (UD). Coming from an architectural background, the premise of universal design has been to make consumer products and environments accessible to all individuals to, “the greatest extent possible, without the need for adaptation or specialized design” (Connell, et al., 1997, para. 1). There are seven principles of universal design (Connell et al., 1997): 1) equitable use, 2) flexibility in use, 3) simple and intuitive use, 4) perceptible information, 5) tolerance for error, 6) low physical effort, and 7) size and space for approachable use.

Universal Design Principle 4, perceptible information, (Connell, et al., 1997) has been of particular interest as it promotes that product design should effectively communicate necessary information regardless of an individual’s sensory disabilities. This principle recommended the use of different delivery modes of information such as, pictorial, tactile, and/or verbal for presentation of essential information (Scott, McGuire

& Shaw, 2001). This universal design principle supports the use of pre-produced, integrated description within a video product.

Universal Design for Learning

Historically, the philosophy of universal design began in the planning for construction of physical buildings and structures; however, it essentially prompted the extension of Universal Design for Learning (UDL). Educational legislation like IDEA encouraged the principles of UDL out of concern for disabled students' access to the general curriculum (CAST, n.d.; Edyburn, 2010; Hitchcock, 2001; Meyer & Rose, 2000, Rose, 2000). Menlove and Hammond discussed how the ADA and other disability legislation have prompted accessibility to go beyond the physical barriers of schools. They pointed out that a major concern for instructional accessibility has to do with educational materials being provided in accessible formats. They noted that adapting the design of instructional materials is particularly important for students with sensory disabilities (1998). The central thought behind universal design for learning (UDL) has been to infuse flexibility within curricular materials and instruction to benefit all students, including students with disabilities (CAST, n.d.; Edyburn, 2010; Hitchcock, 2001; Pisha & Coyne, 2001; Rose, 2000, 2001; Hitchcock, Meyer, Rose & Jackson, 2002; Rose, Meyer & Hitchcock, 2006).

Flexibility has been key and accessibility options have been expanded through advanced digital technology (Edyburn, 2010; McGuire, Scott and Shaw, 2006).

Ultimately, according to Rose and Meyer (2000), educational curriculum must accommodate all learners, regardless of its mode of presentation (i.e., text, sound,

pictures). Thus, digital technology with flexible, options has embraced these possibilities.

Accessibility of the curriculum has been achieved through both UDL strategies and assistive technologies. It has been observed that these two means of access are unique within themselves but also have the ability to work well in tandem with each other. What's more, access to curriculum has been accomplished through a third option for educators. This option is covered next from previous literature referencing products with universal design, specifically, educational curricular products with universal design features or built-in supports (Edyburn, 2010).

Products with Universal Design

Edyburn defined accessibility as, “an environment where access is equitably provided to everyone at the same time” (2010, p. 35). Edyburn (2010) further pointed out that this may be possible with well-thought-out designs of products which include built-in supports. This has been the case for some educational technology products with universal design features.

The Trace Center (2011, para. 1) listed ideas for products with universal design features based on the Telecommunications Act Guidelines. They recommended audio descriptions for video products to allow visual information to be accessible to persons who are blind. Gregg Vanderheiden, the Trace Center's director and researcher of universal design, had a foundational belief that when designers of products make educational materials or curriculum more useable for persons with disabilities, they also make them more useable for their peers without disabilities (Vanderheiden, 2000; Bowe, 2000). In addition, Pisha and Coyne described how it is less expensive to consider

universal design during the planning phase, rather than “retro-fitting” later at a greater cost (2001).

Pisha and Coyne (2001) also believed that products created with universal design in mind, not only helped students with disabilities, but also could support their peers’ and teachers’ classroom experience. They stated that universal design supplied teachers with “pre-made” aids and supports for presentation of curriculum, and the flexibility for their diverse student population (Meyer & Rose, 2000). In other words, universal design in educational curricular products benefit teachers, so they do not have to rely on the less effective and time consuming strategy of “retro-fitting” the product for accessibility (Pisha & Stahl, 2005).

Products with universal design for consumers with visual impairments.

Built-in accessibility features for products have been emphasized by following universal design principles for persons with sensory impairments (Flores, 2008). Apple, Inc. has been a prime example. It has been recognized as a leader in universal design and accessibility for its products. American Foundation for the Blind even honored Apple for its efforts by naming Apple, Inc. as a 2009 Access Award recipient (American Foundation for the Blind, 2012). Apple, Inc. offered a “built in” screen reader for its Macintosh computers, so consumers weren’t required to purchase a separate assistive technology device for access to the computers’ visual text (Vanderheiden, 2007).

Besides cutting consumer expenses, such products with universal design have increased more efficient usability for consumers. Edyburn (2010) saw the importance of mindful, built-in supports for products. Commercially-produced, video products that already contain the accessibility options for video description and closed captions have

been natural examples of products with universal design features. These product features have allowed greater usability (Described Captioned Media Program, 2011) by many consumers who include but are not limited to consumers who are visually impaired, blind, deaf-blind, deaf or hard of hearing.

Described video product with universal design.

Fels, Udo, Diamond and Diamond (2006) researched a universal design approach to described video. The researchers concluded that the inclusion of first person narrative for description during the production phase of a video was deemed more feasible than retro-fitting access to the video at a later time. Hence, this supported the ease of integrating description during the production of videos to create a product with universal design features to benefit both blind and sighted viewers. In education settings, this type of product has provided simplified access for student consumers with visual impairments. Plus, its integrated format has given educators a flexible and accessible curricular product that promotes independence, efficiency and ease-of-use (CAST, n.d.; Edyburn, 2010; Hitchcock, 2001; Rose, Meyer & Hitchcock, 2006). In order, to fully understand this product, a look back at the evolution of description was essential.

The History of Audio and Video Description

Piety (2003) defined audio description (AD) as human voice descriptions used for live events, television programs, movies and museum exhibits to provide access for persons who are visually impaired. Audio description had been practiced for over 20 years (Piety, 2004). Gregory Frazier first developed the groundwork for audio description in the 1970s (Piety, 2003; Snyder, 2005).

Audio Description in the United States

Beginning in 1981 in the U.S., audio description was offered in a live theater setting for persons who were blind by Dr. Margaret Pfanstiehl and Cody Pfanstiehl through their nonprofit organization, the Metropolitan Washington Ear, Inc. (Pfanstiehl, 1997; Piety, 2003; Snyder, 2005; Udo & Fels, 2009; Peters & Bell, 2006). Live description of theatrical performances initiated the groundwork for pre-recorded audio description.

Since 1981, pre-recorded audio description has emerged to provide auditory information for describing visual presentations and attractions available to the public. Many venues and public attractions like museums, art galleries, and amusement parks have started to offer audio description for their visitors. On June 27, 2010, Walt Disney World theme parks offered portable audio description devices for their guests who were visually impaired. These hand-held, wireless devices, provided audio description for key visual elements in the park's attractions (National Center for Accessible Media, 2010). Other public venues like the National Museum of Natural History and the National Air and Space Museum at the Smithsonian have offered their guests audio description for increased accessibility of their exhibits (Association of Science Technology Centers, n.d., para. 12). When public attraction giants like Disney and the Smithsonian have placed greater emphasis on accessibility features for all patrons, it sends an important message to other organizations to endorse the same high standard for accessibility. Larry Goldberg, director of Media Access Group at WGBH commented, "With captioning systems for guests who are deaf or hard-of-hearing and now outdoor environmental description for guests who are blind or visually impaired, Walt Disney World is now more inclusive than ever" (Deaf Network, 2010, para. 3).

Audio description has also expanded into descriptions of still images within digital content which may be found in the newest, growing technologies. Peters and Bell (2006) noted that libraries and museums have transferred many historical documents containing visual images into digital formats. This transformation of documents provided increased accessibility to the public. Specifically, audio description paired with these materials, has greatly expanded accessibility for visually impaired consumers.

Earlier in 2004, the Alliance Library System wrote a grant funding the *Illinois Alive* project. The project was for seven Illinois libraries to learn how to record human-voiced, audio descriptions for historical images housed on their library website. For this venture, the project focused on audio description of still image photographs of historical Illinois figures from the 19th-century. It was found that both librarians and visually impaired participants preferred a human voice to a synthetic screen reader voice for the audio descriptions. Additionally, the audio descriptions were found to be beneficial and provided better access to the website's images. Interestingly, the audio descriptions benefitted sighted viewers, as the audio descriptions added more awareness of the visual details (Peters & Bell, 2006). Peter and Bell concluded, "Making digital libraries and archives accessible to the blind and visually impaired through audio description provides additional features that improve the access to and enrich the experience of these collections for everyone" (2006, p. 28). This "benefits for all" concept supported the theory behind universal design (Connell et al., 1997; Vanderheiden, 2000).

Video Description

In the U.S., video description began in the early 1970s (Piety, 2003; Snyder, 2005). According to Cronin and King (1990), it wasn't until the mid-1980's that

television's visual images were made accessible through new technology developments. However, Descriptive Video Service (DVS) wasn't debuted until 1990 by WGBH, a public television station in Boston, Massachusetts (Cronin & King, 1990). As indicated, the Media Access Group at WGBH has produced video description for both television programs and for movies (National Center for Accessible Media, November 2010).

The terms video description, described video, audio description (AD), and description (D) have been regularly used interchangeably. Fels et al. (2006) even used the term descriptive video information (DVI) to explain the narrative descriptions of the visual images. Visual images within a video have included actors' facial expressions, gestures, actions, appearance, among many other examples for visual content.

Descriptions for these visual elements within a video are usually inserted into the natural pauses or gaps between the regular dialogue (Cronin & King, 1990; Schreier, 1990).

Ferrell, Finnerty and Monson (2006) defined video description as, "an additional narration track for the blind and visually impaired viewers of educational media that supplements the audio track with explanatory information about characters, plot, scenery, and action" (p. 1).

Video description has been produced as "open" description with description audible to viewers and listeners of the video programs at all times. Organizations like DCMP and Descriptive Video Service (DVS) of the Media Access Group have offered videos available with open description (Hoffner, Baker & Quinn, 2008). The second form of video description has been called, "closed" description (Martin, 2000). Closed description has allowed its audience to turn on or off the description option via digital remote controls or video menus for television programs and videos. Movie theaters in

the U.S. have offered closed description through specialized headsets for their patrons who wish to access described motion pictures. Television has most often used closed description for programs (Martin, 2000).

In the past, described programs or Descriptive Video Service (DVS) had been accessed through a secondary audio channel, called the Secondary Audio Program (SAP) channel, prior to the digital transition of television broadcasting. With this mode of delivery, consumers were able to select video description through either a stereo TV set or VCR (National Center for Accessible Media, 2008; National Center for Accessible Media, 2000; McNulty, 1996; Cronin & King, 1990). For digital television (DTV) it had been planned that video description would be delivered through “Associated Audio Services” (National Center for Accessible Media, 2008) or an alternate audio channel controlled by a remote control or set-top box (Federal Communication Commission Consumer Advisory, 2012, para. 4; Media Access Group at WGBH, 2012). Transition to digital television (DTV) was required by the FCC and scheduled to take effect on February 17, 2009 (Burton, 2008). The FCC formed a group called the Video Programming Accessibility Advisory Committee (VPAAC) to help plan for the digital delivery of video description due this national transition (VPAAC, 2012).

Expanded Description

Another different type of description for visual images or video has been called “expanded description” or “extended description.” Expanded descriptions have extended the description of the video past the standard description offered in the natural pauses of the dialogue. Basically, it has been thought to provide more specifications of the visual elements not accessible to a person who is blind. This mode of description has been

helpful in educational videos which have not allowed enough time during dialogue gaps to provide sufficient standard description (Sapp, 2009). In the Ely, et al. study, this type of description was delivered as a closed description option to be selected throughout the video either by a student viewer or his/her teacher (2006). Expanded description has provided its users more interaction and control over the amount of description supplied.

Benefits of Audio or Video Description

With the advancement of digital technologies and legislation, description options have grown tremendously. Chiari (2004) commented that there will continue to be a growing need for video description, especially considering the aging population of baby boomers and age-related vision loss. Furthermore, the increase in demand would directly affect the increase in production of described video, which should benefit libraries serving the general public and schools. In their article on computer technology's role in the education of students with special needs, Hasselbring and Glaser (2000) believed that described video has helped students who are visually impaired and/or blind access educational programs in regular classrooms and become more independent learners. Other supporters of video description shared this belief, but also knew that the quality of the described video or media produced was crucial to its benefit (Described Captioned Media Program, 2009; Ferrell & Siller, 2008; Media Access Group at WGBH, n.d.). In other words, the technical way descriptions were integrated and produced mattered.

In general, research conducted on video description has been sparse. However, the growth in technology and the emphasis on accessibility by disability groups have opened the doors to research possibilities. For example, research studies like Packer and Kirchner's have initiated the awareness of video description and its benefits for adults

who are visually impaired and blind (1997). They explored a prospective audience for video description and its benefits. Packer and Kirchner (1997) investigated the television and video viewing habits of adults who were visually impaired and blind and the impact of video description. They used two different samples to gather data. The first sample was taken from AFB's Household Survey. It consisted of 417 participants with visual impairments. The second sample was taken from AFB's DVS(r) Guide Users Survey. This sample was made up of 885 participants with visual impairments who were on AFB's DVS(r) Guide Users Survey "self-selected" mailing list. The results of this survey showed that its participants had limited awareness of video description. In fact, only 13% of the respondents were aware of video description and only 7% had ever used it.

The pitfalls of television or video without description for persons with visual impairments were examined. From the first sample (N=417), the researchers discovered some difficulties that the participants had reported from television viewing without description. They found that 97% had difficulty seeing details on a TV screen, and that 64% said that they often miss information available to others (Packer & Kirchner, 1997, chart 2). The benefits of television or video with description for persons with visual impairments were also studied. The researchers data showed that over 75% of the participants felt that video description enhanced the following: 1) the overall television or video experience; 2) the learning experience of television or video; and 3) the social experience of television or video (Packer & Kirchner, 1997, table 5).

Schmeidler and Kirchner (2001) confirmed the benefits of described video for persons who are visually impaired. They investigated the advantage of described video

versus undescribed video in science-related television programs for adults with visual impairments. The results from their sample (N=111) revealed that not only did the participants report increased enjoyment of described programs, they also felt that they were able to gain more information and retain it better with the added descriptions. Furthermore, the respondents disclosed that they felt more comfortable talking with their sighted peers about television programs viewed when it contained description. Additionally, Sapp (2009) related that carefully-produced description has facilitated better content comprehension for students with visual impairments. However, she advised that more research will be needed to substantiate the effectiveness of video description.

American Foundation for the Blind has supported additional investigations. For example, Ferrell, Finnerty and Monson (2006) conducted the first meta-analysis of video description literature for the American Foundation for the Blind. They found 146 pieces of existing literature on descriptive video; however, 40 could not be located. In addition, 75 pieces were listed as informational literature, not research-based, and 53 were not in peer reviewed journals. Ely, et al.'s article, *Increased Content Knowledge of Students with Visual Impairments as a Result of Extended Descriptions*, was the only article that met the strict, evidence-based meta-analysis criteria. According to Ferrell, Finnerty and Monson, this study provided guidance for developing one possible video description guideline, "descriptive video may work when the description is inserted prior to the relevant content" (2006, p. 4). However, since only one article qualified for inclusion the authors found that a meta-analysis could not be conducted. Their efforts definitely drew

attention to the lack of existing research on the topic of descriptive video and signaled the need for future studies.

In 2008, the American Foundation for the Blind conducted field trials to gather data examining the benefit of adding description to videos for students with visual impairments. One hundred and forty-five students with visual impairments, ages ranging from six to 21 years old and from 18 different states were recruited to take part in the study. Initially, the participants were asked to view a video, the undescribed version first and then the described version last. The researchers were investigating to see if there was a difference in the participants' comprehension between the undescribed and described versions of the video. The results of the trials suggested that descriptions may increase the students' comprehension of the video's content, which supported the value of adding descriptions to video (Ferrell, 2008).

The American Foundation for the Blind and Described and Captioned Media Program (DCMP) partnered to create a set of guidelines for how to best describe educational videos or media. These guidelines, the *Description Key for Educational Media*, were published in 2008 and made recommendations on preferred techniques or "best practices" for description (Ferrell & Siller, 2008). The *Description Key for Educational Media* guidelines were the first of their kind and set a higher standard for the way description for educational media was produced.

Shortly thereafter, in April 2009, DCMP organized an informal study. They surveyed U.S. Teachers of the Visually Impaired (TVIs) to check for their awareness and utilization trends of described educational video-based media. In DCMP's findings, 86% of TVIs surveyed said that they were aware of some educational videos having

description. Only 45% of the TVIs disclosed that they had used videos with their students with visual impairments. Most often, they relied on informal verbal description for student access to videos. Eighty-seven percent of the TVIs said that they provided impromptu verbal descriptions or asked aides or sighted peers to provide them (Described and Captioned Media Program, 2009).

When asked about availability of described videos, 48 of the 93 TVI respondents stated that only 0-25% of the videos which they had used with their students actually contained description. Although this number was low, for the 55% of TVIs who reported not using videos with their students with visual impairments, over three-fourths of them said that they would begin to use videos if described videos were available (Described and Captioned Media Program, 2009). DCMP reported that less than five percent of educational videos contain description (Described and Captioned Media Program, 2009). Speculations have been made that demand plays a significant role in described videos' low supply (Video Description Research and Development Center, 2012). Educational media distributors' perceptions of the described video market may have been based on the overall demand of the product by teachers, school districts and states. This, in turn, may have affected the distributor's decisions for production and supply of digitally-described video (B. Stark, personal communication, October 13, 2011).

U.S. Legislation Regarding Video Description

The Americans With Disabilities Act (ADA) was passed in 1990 and serves to protect the civil rights of Americans with disabilities. Packer and Kirchner (1997) stated that the ADA was mandated to fully bring persons with disabilities into civic and

community life. In addition, they felt that video description and its attribute of accessibility bear the spirit of the ADA (Packer & Kirchner, 1997).

Video description mandates for televised programs.

Supporters of accessible communications have been advocating for video description for televised programs for some time now. In 2000, the FCC first adopted requirements for television broadcasting (in the top-25 markets that are affiliated with NBC, CBS, ABC or Fox) to contain 50 hours of prime time or children's television programs with video description per calendar quarter (Martin, 2002; 2000). These mandates went into effect in April 2002, but were dismissed shortly after in November 2002 by a federal court (American Foundation for the Blind, 2010, para. 8; Cugini, 2009; Federal Communication Commission Consumer Advisory, 2012, para. 3). Although short-lived, this legislation served as a stepping stone to the most recent laws for video description.

In 2010, the Twenty-First Century Communications and Video Accessibility Act (CVAA) was signed into law. This law has stricter requirements. For example, the CVAA required that modern communication technologies, television programs and smart phones are accessible for persons with vision and/or hearing loss (American Association of People with Disabilities, 2010; American Foundation for the Blind, 2010). The CVAA required more than 60 hours per week of described television programming (Richert, 2012). Under Title II, Section 202 of the CVAA, it requires increased increments of video description for television and expanded television markets obligated to follow these rules, starting with the top four broadcast networks and top five cable channels in the 25 most populated U.S. markets. The expansion of video description being available in all

of the U.S.'s television markets has been expected to take place over a ten year time period (Schroeder & Richert, 2011).

Additionally within Title II, Schroeder and Richert noted that Sections 203, 204, and 205 of the CVAA list requirements for video description under this new law. These sections included mandates for digital device accessibility for video description and closed captioning. Lastly, Section 206 provided definitions (2011). These provisions should allow more accessibility in receiving and playing described television programs for consumers who are blind (Richert, 2012).

The passage of the CVAA intended to increase described prime-time and children's programming. According to Richert, the CVAA clearly determined that the four national broadcast networks, ABC, CBS, NBC, and Fox, as well as the major channels of USA, the Disney Channel, TNT, Nickelodeon, and TBS, must describe at least 50 hours of their prime-time and/or children's programming during each calendar quarter. That amounts to an average of at least four hours per week (2011).

Unfortunately, the CVAA does not include requisites for educational videos or programming often used in schools (B. Stark, personal communication, October 13, 2011). However, many have hoped that this legislation will continue to develop and spawn future laws in the years to come that will require described videos in all television programming and motion pictures, on commercially-produced internet sites and in commercially-produced products like DVDs, software and electronic books.

Movie Theaters and Video Description Equipment

Many U.S. public movie theaters have offered video description headsets or DVS equipment for their consumers who wish to attend a described movie. Snyder (2005)

reported that there were an estimated 200 cinema theaters in America with described movies. According to the United States Census Bureau (2007), there were 4,879 motion picture theaters in the United States (excluding drive-in theaters) for the year 2007.

Description and Multimedia

There have been several studies examining the multimedia aspect of description. For example, Ely et al. (2006) investigated multimedia access for students with visual impairments. In partnership with the National Center for Accessible Media (NCAM), researchers explored the use of “eDescriptions” or extended descriptions. Extended descriptions have been an interactive description option, different from the standard video descriptions inserted between a video’s dialogue. The eDescriptions were supplemental descriptions of the educational video that restated the video’s vocabulary, followed with a description or definition. Extended descriptions were accessed in this study by both students with visual impairments and by their TVIs. The descriptions were accessed manually through the video’s eDescription option. The results of this study indicated that students felt that this access method would help them when viewing educational videos in class or for homework.

Researchers suggested that these formal, language-specific, descriptions helped young students to better understand concepts and make sense of the visual content within the video that they otherwise might miss. Still, the researchers have recommended that much more research in this area is needed (Sapp, 2009; Ely et. al., 2006). Both NCAM and the Media Access Group at WGBH have continued their work with both standard description and extended description for videos and visual imagery, expanding into

multimedia arenas of the Web and other digital media (Media Access Group at WGBH, n.d.).

Future Direction of Description

Description has been evolving to pair up with new technologies being introduced to education. Description has been developing and moving forward to help make visual images within electronic media more accessible. The future of description has the potential to increase independent learning opportunities for students who are visually impaired or blind.

Accessible Multimedia in the 21st Century Classroom

Electronic multimedia has become an integral part of the 21st Century classroom. Hasselbring and Glaser (2000) have asserted, “Today’s children are the first generation of the ‘digital age’” (2000, p. 102). More and more classrooms have been equipped with Internet access. Wells and Lewis (2006) said that 100% of U.S. public schools have Internet connectivity. What’s more, Schrum and Lewis (2009) expected online coursework to grow within high schools, as a result of the increased availability and use of technology. Technology has generated numerous multimedia options for classrooms; thus providing more customized learning or learner-controlled opportunities for students (Schrum & Lewis, 2009; Collins & Halverson, 2009).

Bonk (2009) hypothesized that the technology movement has led to more reliance on electronic ink. Technology in schools has spanned from online educational sources to electronic books, all filled with information via digital text and/or visual images. Both static and animated visual imagery, along with audio may be inserted into electronic texts for multimedia support for readers. Therefore, multimedia options have

been provided as an interactive experience for the reader, which may potentially improve comprehension (Anderson-Inman & Reinking, 1998). The use of visual imagery, along with audio/sound, may have provided students with a better anchor for understanding text (Anderson-Inman & Reinking, 1998). Furthermore, multimedia within electronic text furnishes increased clarification and support for the reader. Graphics, visual images and sound may aid students who have weaker literacy skills and may benefit from additional information to strengthen their comprehension of unfamiliar concepts. The flexibility of technology within multimedia has been crucial for students who have been unable to effectively see text or images. The accessible audio support tools for electronic multimedia have helped provide these students equal access (Corn & Wall, 2002; Presley & D'Andrea, 2008; Sapp, 2009).

More research has continued to validate the claims of how pliable text (Anderson-Inman and Reinking, 1998) and flexibility of digital media could empower diverse learners (Riccobono, 2012). Also, there have been investigations identifying the need for integrated UDL supports for more accessible multimedia. For example, Pisha and Coyne reported that new multimedia learning tools, including but not limited to the classroom computer, afford students and educators a variety of ways for accessing information in nontextual forms, such as images, sound, and video. They believed that these latest electronic tools have expanded the educational palette that allows customized learning experiences. Furthermore, they emphasized that UDL supports these access tools that cultivate a new generation of flexible curriculum that accommodate every student's unique needs (2001).

Corn and Wall (2002) also supported the use of Universal Design for Learning within classroom multimedia through products with universal design features and assistive technologies. They stipulated that universal design of hardware and software for the classroom needs to be adopted, to ensure fair access. Based upon the multimedia options expanding in today's classrooms, students with visual impairments are entitled to equal access of this digital curriculum.

Programs for Accessible Educational Media and Description

The U.S. Department of Education promotes several technology programs to support IDEA 2004 and accessible educational curriculum within its Office for Special Education Programs (OSEP.) OSEP has recognized the necessity for every student's access to the educational curriculum, and has provided funding for programs wishing to support a mission working to make this access happen. Current efforts have been put into place to address the need for description for educational multimedia. These programs' goals have been positioned to bring better access to education for students who are visually impaired and blind.

For example, one program has been the Digital Image and Graphic Resources for Accessible Materials Center (DIAGRAM). DIAGRAM's intentions have been to research and develop tools and best practices for accessible images within a range of educational content. OSEP is funding DIAGRAM as a collaboration effort between Benetech, The Carl and Ruth Shapiro Family National Center for Accessible Media (NCAM) at WGBH, and the U.S. Fund for Digital Accessible Information SYstem (USFDAISY) to further educational access for students with disabilities. DIAGRAM addresses the growing need for accessibility of media and its images more frequently

being integrated into U.S. classrooms (Benetech, 2010, para. 1). Furthermore, in DIAGRAM's March 2010 press release, George Kerscher, Secretary General of the DAISY Consortium pointed out that it is critical to address accessibility of multimedia problems, since more and more media is being used. The explosion of multimedia may include: 1) the use of electronic textbooks, books or literature and 2) the use of online materials, images, videos or assessments.

Other projects that may guide the future development of description, include the work conducted by the Smith-Kettlewell Video Description Research and Development Center (VDRDC). This center was established to research "new technologies and techniques for making online video more accessible to blind and visually impaired students and consumers" (Video Description Research and Development Center, n.d, para. 1). VDRDC has already started to provide educators webinar training on video description. In addition, it has begun the development of video annotation methods for educational settings (Video Description Research and Development Center, n.d, para. 1).

In 2011, the National Association of the Deaf (NAD) secured funding from OSEP for a five-year, 7.5 million-dollar grant to support the Described and Captioned Media Program (DCMP). Under this grant, the NAD intended for DCMP to assist making educational media programs more accessible through description and captioning, and to distribute these programs through DVDs and Internet streaming (Described and Captioned Media Program, 2011).

In addition, NAD's newest grant included partners, American Council of the Blind (ACB) and Dicapta. This grant has reached out to support Spanish captions and descriptions for children with sensory disabilities who require Spanish for accessibility.

Dicapta, has promoted description in both English and Spanish for accessible media (Dicapta, n.d.)

It has been evident through programs such as DCMP, VDRDC, and the DIAGRAM Center, OSEP recognizes the current and future needs of accessible digital multimedia for classroom use and instruction. Programs like these integrally support research, innovation, availability and education for description as equal access to multimedia images within school curriculum. They are all at the heart of a crucial movement for the advancement of description.

Summary

The review of literature explored the need for better access to school curriculum for students with visual impairments and blindness. Specifically, it has addressed description as a solution for access to video images within multimedia for students with visual impairments (Corn & Wall, 2002; DCMP, 2009; Ely et al.; Hasselbring & Glaser, 2000; Media Access Group at WGBH, n.d.; Sapp, 2009). Previous research findings have indicated that today's digital curriculum has offered more flexible solutions for assuring students' access (Edyburn, 2010; Hitchcock, 2001; Pisha & Coyne, 2001; Rose, 2000, 2001; Hitchcock, Meyer, Rose & Jackson, 2002).

Existing literature for video description and accessible multimedia for the blind has been limited; however, DCMP brought attention to TVIs' awareness and lack of use of described educational videos (2009). In addition, DCMP concluded that if described educational videos were more readily available, then TVIs would be more inclined to use them (2009).

Based upon the review of literature, further research is needed. Therefore, an investigation regarding described video used in education by teachers of the visually impaired will help the field better understand the status quo. The purpose of this study is to further the investigation of why there appears to be an under-utilization of described educational videos in the classroom. This study will investigate TVIs' opinions about commercially-produced, described video within multimedia for students with visual impairments. The study will examine TVIs' opinions about description and how those opinions may relate their professional recommendation of described video for their students. The results of this study will provide added information for researchers, educators, and organizations looking at described video as a means of access to curriculum delivered through educational multimedia for students who are blind or visually impaired.

CHAPTER III

METHODOLOGY

The purpose of this chapter is to describe the methods that were used in this study. The major areas concentrated on type of study and statistical methodology, survey instrument development, content validity of survey items, participants, procedures, research questions and data analysis.

With lack of related, existing, empirical studies, the purpose of this study was to explore and add description to a topic not previously researched. This exploratory study examined the utilization of commercially-produced, described video within educational multimedia by Teachers of the Visually Impaired (TVIs) who serve students with visual impairments, grades K-12, in the United States (U.S.). It investigated perceptions of TVIs' level of knowledge, use and support of commercially-produced described video within educational multimedia and their relationships with TVIs' recommendation of commercially-produced, described video for students with visual impairments. Extent of "knowledge" referred to the TVIs' general working knowledge or basic understanding of described video as accessible technology (Corn & Wall, 2002) through educational resources and/or training. Level of "use" implied how often the TVIs use described video with their students with visual impairments. "Support" showed the TVIs' level of

personally favoring or advocating for the use of described video. “Recommendation” indicated their professional recommendation of described video being integrated into their students’ specially-designed, educational programs.

The TVIs’ opinions were collected through the use of an online survey instrument. Data were analyzed and reported using descriptive and inferential statistics with frequency distributions, correlations, and one-way ANOVA. Intercorrelations among variables were used to describe broad relationships of this observational study (Boslaugh & Watters, 2008; Glass & Hopkins, 1996). Independent variables examined were “extent of knowledge, level of use and level of support of described video.” The dependent variable studied was “recommendation of described video.” The Pearson’s correlation coefficient was used to measure associations between these variables.

Analysis of variance was used to test for differences between groups in a sample (Boslaugh & Watters, 2008; Glass & Hopkins, 1996). When examining TVIs in different work settings, one-way ANOVA was used to assess whether statistically significant differences were between the three categorized work setting levels for TVIs. For this study, three TVI work setting levels were classified as: 1) TVIs who work in schools for the blind, 2) TVIs who work in public schools, and 3) TVIs who work in “other” schools (i.e., charter school, private school, parochial school, alternative school, etc.) These three TVI work setting levels represented the independent variable, while the TVIs’ mean scores of their recommendation of described video was the dependent variable to be analyzed using one-way ANOVA.

Survey Instrument Development

A survey instrument was designed and was used to collect data for this study. Design elements including a statement of purpose, a list of variables to be measured, and an analysis plan were considered when developing this survey instrument. The survey was designed specifically for this study; however, it built on the informal survey by Described Captioned Media Program (DCMP) (2009). It emulated the identification of TVIs' school works setting named by DCMP's survey. In addition, it furthered DCMP's original intent to explore the U.S. TVI awareness and use of described video (Described Captioned Media Program, 2009).

The survey was comprised of a preamble with introduction, definitions of key terms, statement of informed consent and 20 question items. The survey contained items under the headings demographics, knowledge, use, support, recommendation and additional comments. The first survey item asked the participants, if they understood the survey's terms and agreed to participate. Next, question items two to five gathered information regarding the respondent's background (employment status, work setting, highest degree completed and total number of years teaching as a TVI). Then, questions six to 19 asked the respondents to select from a list of possible answers using a 5-point Likert rating scale (Fink, 2009) to represent their opinions. Lastly, question 20 was optional to complete and asked TVIs to list any further comments. All questions selected for the instrument were carefully aligned with the survey's purpose to answer the study's seven research questions (see Table 1) and to describe the study's sample. Furthermore, four of the survey items were included to not only provide descriptive data, but to help "jog" the respondents' memory for a subsequent survey item.

The approximate time for participants to complete the online survey was to be determined through trial runs. A copy of the survey instrument is located in Appendix A. In addition, Table 1 aligns each of the survey instrument's items to the research questions, as well as, to the study's demographic and descriptive information inquiries.

Table 1

Research Questions & TVI Survey Matrix

Research Questions	TVI Survey Question Number
Question 1 What is the TVIs' extent of knowledge of commercially-produced, described video within educational multimedia?	10. What is your overall knowledge of described video?
Question 2 How does the TVIs' knowledge of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?	Survey Question 10 and 19. How often do you recommend described video to meet the special access needs of your students with visual impairments and blindness?
Question 3 What is the TVIs' level of use of commercially-produced, described video within educational multimedia?	11. Have you used described video with your students with visual impairments? ___Yes (if checked, directed to #12) ___No 12. How frequently have you used described video with your students?
Question 4 How does the TVIs' use of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?	Survey Questions 11, 12 and 19. How often do you recommend described video to meet the special access needs of your students with visual impairments and blindness?

(Table continues)

Table 1 (continued)

Research Questions	TVI Survey Question Number
Question 5 What is the TVIs' level of support of commercially-produced, described video within educational multimedia?	14. How much do you personally support the use of described video for students with visual impairments?
Question 6 How does the TVIs' level of support relate to their recommendation of described video within educational multimedia for students with visual impairments?	Survey Questions 14 and 19. How often do you recommend described video to meet the special access needs of your students with visual impairments and blindness?
Question 7 Is there a significant difference in TVIs' recommendation of described video within educational multimedia between schoolwork settings (i.e., schools for the blind, public school or "other" schools)?	3. Which type of school are you currently employed in? (Please check one. If more than one applies, then please select the one in which you spend the majority of your time)
Demographic Items	2. Are you currently a certified TVI employed in a K-12 academic school setting in the United States?
	3. Which type of school are you currently employed in? (Please check one. If more than one applies, then please select the one in which you spend the majority of your time)
	4. How many total years have you been employed as a TVI?
	5. What is your highest level of education?
Descriptive Information Items	6. Please check any of the following resources that have helped you gain knowledge of for commercially-produced, described video.
	___ Described & Captioned Media Program (DCMP)
	___ WGBH's "Teacher's Domain"
	___ Other: _____

(Table continues)

Table 1 (continued)

Research Questions	TVI Survey Question Number
Descriptive Information Items	<p>7. For each above resource checked, how much knowledge of described video did you gain?</p> <p>8. Please check any of the following trainings for commercially-produced, described video in which you have participated.</p> <p>___University class</p> <p>___Professional conference</p> <p>___School Inservice</p> <p>___Professional books or journals</p> <p>___Colleagues</p> <p>___Educational Media Companies/Vendors</p> <p>___Online Webinars</p> <p>___Other:_____</p> <p>___I have not received any training or professional development regarding described video.</p> <p>9. From the above trainings, how much knowledge of described video did you gain?</p> <p>13. Of your students who might benefit from described video, what percentage use it?</p> <p>15. How much do other teachers (i.e., regular education teachers or resource teachers who provide curricular instruction for your students) support the use of described video?</p> <p>16. How much do library media specialists or librarians who work in your schools support the use of described video for your students?</p>

(Table continues)

Table 1 (continued)

Research Questions	TVI Survey Question Number
Descriptive Items	17. Does your school administration (i.e., principals, superintendent) support the use of described video with your students? described video by educational media 18.How would you rate the support of companies through its commercial availability?
Additional Comments	20. Please add any comments.
Participant Consent Item	1. By checking yes, I understand these terms and agree to participate.

Content Validity of Survey Items

Well-developed survey questions are more likely to result in their answers corresponding with what the questions were intended to measure (Fowler, 2005 & 2009). Evaluation of the survey questions and their content was conducted by a focus group to establish content validity (Fink, 2009.) The focus group's evaluation of the survey instrument was intended to reduce measurement error or inaccurate respondent answers due to poor question wording and questionnaire construction (Dillman, 2000). Focus group members were chosen for their expertise in the topic under study (Fink, 2009). Specifically, individuals in the field of visual impairments with previous experience with general research and described video (i.e., university professors, program or organization leaders) were selected. Ten focus group members were asked to evaluate the survey instrument for the validity of its questions. In addition, they were not asked to participate in the study.

The focus group members were sent an electronic link to the survey's evaluation located in accessible *Survey Monkey*TM (Finley, 1999) and were asked to participate in the

validation process. They were asked to rate the structure of each item and its relevance to the objective. For example, focus group members rated each survey item with a rating score of 1 for “clear and relevant to the objective,” 0 for “relevant to the objective but unclear,” or “not relevant to the objective.”

This procedure was modeled after an adaptation of index of item-objective congruence (Hambleton, 1984; Rovenelli & Hambleton, 1977; Turner, Mulvenon, Thomas & Balkin, 2002) by Hume (2011). Data were collected in *Survey Monkey*TM and analyzed. Items with an average score below .75 were re-evaluated. The items re-evaluated were either modified or eliminated based upon the focus group feedback (Hume, 2011).

Participants

U.S. TVIs were asked to participate in the study by completing a self-administered and accessible online survey. The eligibility for participation criteria stated that the TVIs must be currently employed as a certified TVI in an U.S. academic school setting, kindergarten to 12th grade (K-12). Inclusionary criteria was presented within the first question of the demographic section of the online survey. The sample (n) for this study was drawn from the U.S. TVIs who meet the criteria (Fink, 2009; Glass & Hopkins, 1996).

Procedures

Blindness professionals’ listserves (McKenzie & Lewis, 2008) and websites have been routinely used for participant recruitment by researchers in the field of education for the blind, because they reach a broad audience of educational professionals through approved administrative channels, as direct access to TVI email account lists are not

permitted by the acting administrators due to confidentiality (J. Durst, personal communication, September 21, 2011). For this study, U.S. TVIs who serve students in grades K-12 were invited to participate in the online survey via the service *Survey Monkey*TM (Finley, 1999). The invitation was forwarded to their email accounts through instructional materials resource centers directors, superintendents, outreach directors and/or supervisors. Invitations for U.S. TVI participation were also extended through professional websites and listserves via Association for Education and Rehabilitation of the Blind and Visually Impaired (AERBVI) member listserve, Council of the Schools for the Blind (COSB) listserves for state instructional materials resource centers and outreach directors. State instructional materials resource centers maintain TVI email lists for TVIs who request instructional materials for their students with visual impairments (J. Durst, personal communication, September 21, 2011). In addition, invitations to participate in the study were posted on the websites of two leading U.S. organizations for the blind that TVIs may access (American Printing House for the Blind and American Foundation for the Blind).

The invitation (see Appendix B, Invitation Email to Participants) requested the TVIs' participation and directed them to the confidential, electronic through a survey link via *Survey Monkey*TM (Finley, 1999). Participating TVIs followed the link and completed a self-administered online survey. An introduction to the survey and IRB materials was made available to participants (see Appendix A, Preamble). This was provided to explain the purpose of the study, assure the confidentiality of their responses and stress the importance of their opinions on this topic.

*Survey Monkey*TM (Finley, 1999) assigned each participant a number, so the responses remained anonymous (McKenzie & Lewis, 2008) and securely stored. Due to the nature of the participants' recruitment, it was not possible to determine the response rate (McKenzie & Lewis, 2008). However, multiple recruitment attempts encouraged a higher response for the study (Dillman, 2000; Fink, 2009). A follow-up request for participation in the survey was disseminated after two weeks of the initial survey recruitment date. In total, the survey remained open for three weeks.

Institutional review board

Careful attention was given to the ethical manner in which this study is conducted. The study and its survey was submitted to the Institutional Review Board (IRB) for the University of Louisville that oversees research involving human subjects prior to collecting data. After the University of Louisville's IRB approval, recruitment for participants followed mindful and ethical procedures. Participants were well-informed of the survey and research that they were volunteering for (Fowler, 2009). Participants were able to review an informed consent section before agreeing to participate further with the electronic survey. Consent from the participants was given by an acknowledgement for full participation. All survey data was kept anonymous, confidential, and secure.

Research Questions

This study explored seven research questions in total. Six research questions were examined to explore TVIs' opinions about their knowledge, use and level of support of commercially-produced, described video within educational multimedia; and whether these variables were related to their recommendation of described video for students with

visual impairments. Lastly, question seven determined significant differences with mean scores of the three levels of TVIs identified by their school work setting.

Question 1. What is the TVIs' extent of knowledge of commercially-produced, described video within educational multimedia?

Question 2. How does the TVIs' knowledge of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 3. What is the TVIs' level of use of commercially-produced, described video within educational multimedia?

Question 4. How does the TVIs' use of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 5. What is the TVIs' level of support of commercially-produced, described video within educational multimedia?

Question 6. How does the TVIs' level of support relate to their recommendation of described video within educational multimedia for students with visual impairments?

Question 7. Is there a significant difference in TVIs' recommendation of described video within educational multimedia between school work settings (i.e., schools for the blind, public schools or "other" schools)?

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 21.0 was used to conduct quantitative methods for data analysis per referencing Field (2009). First, the number of responses and frequencies to the demographic questions (i.e., TVI background

or attributes) and descriptive inquiries were calculated. Second, analysis of the data for the seven research questions was conducted. The methods of data analysis for each of the research questions are described on the following pages.

Analysis of Research Question 1.

To answer research question one, data results were taken from survey item 10 measuring the extent of TVIs' overall knowledge of described video. The results were collected from the Likert rating responses. A mean score for the survey item's ratings of overall knowledge was displayed in a table format.

Analysis of Research Question 2

To answer research question two, the relationship between the Likert scale rating scores from the independent variable (TVIs' ratings of their knowledge of commercially-produced described video, survey item 10) and the scores of the dependent variable (TVIs' ratings of the frequency of their recommendation of described video, survey item 19) were analyzed using Pearson product-moment correlation. Nunnally and Bernstein described correlation (r) as "the magnitude of linear relationship between two variables" (1994; p. 120).

Analysis of Research Question 3

To answer research question three, data results were taken from survey items (11 and 12) measuring the level of TVIs' use of described video. The results were collected from the Likert rating responses. A mean score for the survey item's ratings was displayed in a table format.

Analysis of Research Question 4

To answer research question four, the relationship between the Likert scale rating scores from the independent variable (TVIs' ratings of their use of commercially-produced described video, survey items 11 and 12) and the scores of the dependent variable (TVIs' ratings of the frequency of their recommendation of described video, survey item 19) were analyzed using Pearson product-moment correlation.

Analysis of Research Question 5

To answer research question five, data results were taken from survey item 14 measuring TVIs' level of personal support for described video. The results were collected according to the Likert rating responses. A mean score for the survey item's ratings was displayed in a table format.

Analysis of Research Question 6

To answer research question six, the relationship between the Likert scale rating scores from the independent variable (TVIs' perceptions of their support of commercially-produced described video, survey item 14) and the scores of the dependent variable (TVIs' recommendation of described video, survey item 19) were analyzed using Pearson product-moment correlation.

Analysis of Research Question 7

To answer research question seven, the sample of TVIs was divided into three levels, determined by their work settings (i.e., schools for the blind, public schools and "other" schools). A one-way analysis of variance (ANOVA) compared the mean scores of the three levels of the independent variable and looked for significant differences (.05 level of significance) in the dependent variable (i.e., the recommendation mean score of described video) across the three groups (Boslaugh & Watters, 2008; Glass & Hopkins,

1996). Consequently, an ANOVA test determined if the TVIs' recommendation of described video for students with visual impairments differ according to their work setting placement.

The test statistic for ANOVA is the F-test (Boslaugh & Watters, 2008; Glass & Hopkins, 1996). It tests the ratio of between-group variance (i.e., the differences between the responses within each level or TVI work setting) to within-group variance (i.e., the differences among mean scores of the three levels of TVI work settings). The F-test was statistically significant, so the Bonferroni correction (Boslaugh & Watters, 2008) was used to perform specific comparisons between work setting levels. This procedure better controlled for the chance of a Type I error. Survey item 3 was used to conduct the analysis.

CHAPTER IV

RESULTS

The results of the data collection are presented in this chapter. First, the research components are reviewed. Then, sample, demographic and descriptive information are provided. In conclusion, the analysis of data is reported as it aligns with each research question.

Review of Research Components

Accessible educational curriculum for students with visual impairments and blindness is essential. Assistive technologies in various forms have allowed access to curriculum for students with different visual impairments (Abner & Lahm, 2002; Hume, 2011; Kapperman, Sticken & Heinze, 2002; Kelly, 2008; Kelly & Smith, 2011; Presley & D'Andrea, 2008). Assistive technologies are matched with each individual student's needs (Lueck, 2001; Presley & D'Andrea, 2008). For example, large print, hand-held magnifiers, CCTVs and screen enlargement software for computers can be used as assistive technology devices for students with low vision. While, braille, audio books, electronic notetakers, screen reading software for computers, and video description software programs are some examples of assistive technologies for students with poor functional vision or total blindness.

In addition, some technology products are designed with universal design in mind (Vanderheiden, 2007) and are used in classrooms for flexible and accessible curriculum. Apple computers with integrated screen reading capabilities have been designed as such and have won access awards (American Foundation for the Blind, 2012). Furthermore, some commercially-produced, educational videos have also followed this trend by already coming equipped with integrated description and close captioning for better accessibility options for students (Described Captioned Media Program, 2009). However, despite the presence of access technologies, many students with visual impairments are not using them.

A review of literature suggested that assistive technologies have been under-utilized by students with visual impairments in classrooms (Abner & Lahm, 2002; Corn & Wall, 2002; Hume, 2011; Kapperman, Sticken & Heinze, 2002; Kelly, 2008). Video description, as related to assistive technologies (i.e., video description software programs) and to commercially-produced, described videos as accessible products, has also been under-utilized in educational settings (Described Captioned Media Programs, 2009; Ely, et al., 2006; Sapp, 2009). It was the purpose of this study to investigate the under-utilization of commercially-produced, described video with educational multimedia for students with visual impairments and blindness. More specifically, it examined the perceptions of teachers of the visually impaired (TVIs) in regards to commercially-produced described video for K-12 school settings.

Dependent Variable

The dependent variable of this study was the frequency of the TVIs' recommendation of commercially-produced described video for students with visual

impairments. With the survey, TVIs provided data indicating the frequency of their recommendation of commercially-produced described video when appropriate for their students' specially-designed instruction or educational program. The level of their recommendation was measured to see how it related and compared (Boslaugh & Watters, 2008; Glass & Hopkins, 1996) to the independent variables.

Independent Variables

The study looked at perceptions of TVIs' level of knowledge, use and support of commercially-produced described video. These independent variables were correlated with the dependent variable of TVIs' level of recommendation of commercially-produced described video. This measured relationships between the variables (Boslaugh & Watters, 2008; Glass & Hopkins, 1996).

In addition, the TVIs' school work setting (independent variable) and its three levels were compared to check for significant differences (Boslaugh & Watters, 2008; Glass & Hopkins, 1996) among the dependent variable of TVIs' level of recommendation of commercially-produced described video. The three levels included: 1) schools for the blind, 2) public schools, and 3) "other" schools.

Sample

In January of 2013, the investigator invited TVIs across the United States to participate in the *Perceptions of U.S. Teachers of the Visually Impaired on Commercially-produced, Described Video within Educational Multimedia for Students with Visual Impairments* survey. Invitations were presented to TVIs through electronic email lists, listserves and websites. They were disseminated by administrators of the email lists, listserves and websites. Administrators and contacts from Instructional

Resource Centers, Council of Schools for the Blind, outreach departments for students with visual impairments, Association for Education and Rehabilitation of the Blind and Visually Impaired, American Printing House for the Blind and American Foundation for the Blind assisted in these efforts. A total of 490 TVIs responded to the study's electronic survey.

Inclusion and Exclusion Criteria

Fink (2009) suggested data cleaning and exclusion of respondent data that did not meet the study's set inclusion criteria. Data were cleaned to account for duplicate response attempts that involved excessive missing responses to survey items. It was speculated that this likely occurred when a participant started the survey, stopped and then restarted the survey at a later time. In addition, exclusion of data was determined by the inclusionary criteria requiring the TVIs to be certified and currently working in a K-12 school setting. As a result, 374 TVIs were included in the sample. However, it should be noted that some of these participants did not answer all of the survey items. This may account for differing sample totals across data analysis.

The rest of this chapter provides the results discovered in this exploration of U.S. TVIs' perceptions of commercially-produced, described video within multimedia for students with visual impairments. Demographic and descriptive results are presented first, and then followed by the results of the study's seven research questions.

Participant Demographic and Descriptive Data

Data regarding participant's current school work setting, years of employment as a TVI and highest level of education were collected and analyzed. Out of the 374 respondents, 366 TVIs reported their current work setting. TVIs working in a public

school setting totaled 289, which was the largest of the sample. Next, 61 of the TVIs were employed in a school for the blind work setting. Finally, 16 TVIs responded as working in “other” schools (i.e., charter school, private school, parochial school, alternative school, etc.) as their work setting. Table 2 breaks down the participants according to their school work setting.

Table 2

TVIs’ School Work Setting

	Frequency (<i>N</i> =366)	%
Public School	289	78.9
School for the Blind	61	16.6
Other Schools	16	4.3

The respondents (*N*=374) estimated the total number of years that they had been employed as a TVI. The TVIs’ responses to “years of employment as a TVI” were split: 20.9% of the respondents had worked for zero to five years; 19.5% had worked six to 10 years; 19.3% had been employed 11 to 15 years; 13.1% had worked 16 to 20 years; 9.4% had worked 21 to 24 years; and 17.4% reported working as a TVI for 25 or more years.

Further demographic data were collected regarding the participants’ level of education. The majority (81.3%) of the 374 respondents had master’s degrees. Then, 17.1% had bachelor’s degrees, and 1.6% had doctorate degrees.

Descriptive Data of TVIs’ Perceptions of Their Knowledge of Commercially-produced, Described Video

Data were collected from the survey to provide descriptive data about TVIs’

knowledge of commercially-produced, described video in regards to their experience with specific resources and trainings for described video. In Table 3, 374 TVIs responded to which resources they had knowledge about for commercially-produced, described video within educational multimedia. Of the respondents, 35% of the TVIs had previous knowledge of Described and Captioned Media Program (DCMP). Fewer TVIs, 12.3% of the respondents, knew about WGBH's Teacher's Domain as a resource. Finally, 42.8% of the TVIs credited "other resources" as sources of knowledge for commercially-produced, described video. Some of the "other resources" listed by the TVIs included: state libraries for the blind; National Library Services for the Blind; local educational broadcasting sources; Braille Institute video catalogue; Video Description Research and Development Center (VDRDC); Narrative Television Network; Media Access Group at WGBH; American Foundation for the Blind and American Printing House for the Blind.

Table 3

TVIs' Knowledge of Commercially-produced, Described Video Resources

Resources	Frequency (N=374)	%
Described and Captioned Media Program (DCMP)	131	35.0
WGBH's Teacher's Domain	46	12.3
Other	160	42.8

Table 4 displays the TVIs responses to how much they learned about commercially-produced, described video through using the resources categorized as; 1) Described and Captioned Media Program (DCMP); 2) WGBH's Teacher's Domain; and 3) Other. They could rate the knowledge gained from these categories on a 5-point Likert

scale: 1) no knowledge; 2) very little knowledge; 3) little knowledge; 4) some knowledge; 5) a lot of knowledge.

Of the 374 TVI respondents, 177 of them responded to the inquiry about their knowledge of commercially-produced, described video gained from DCMP. The mean score for the respondents' perceived knowledge gained by their experience with DCMP as a described video resource was 3.09. This was closest to the TVIs' perceptions that they gained a "little knowledge" from DCMP as a resource for commercially-produced, described video.

In addition, 118 TVIs responded to the question about their knowledge of commercially-produced, described video gained from WGBH's Teacher's Domain. The respondents' mean score was 2.21 for perceived knowledge gained by their experience with WGBH's Teachers Domain as a described video resource. According to the survey's scale, this was estimated by the TVIs as gaining "very little knowledge" from this commercially-produced, described video resource.

Finally, 95 of the TVI participants answered that "other resources" helped them gain knowledge of commercially-produced, described video. The mean score was 2.99. Referencing the survey scale, this was approximated by the TVIs as having gained a "little knowledge" of commercially-produced, described video.

Table 5 lists types of education or trainings that the TVIs utilized for learning about the use of commercially-produced, described video. The 374 respondents were asked to select from the university class, professional conference, school inservice, professional books/journals, colleagues, educational media companies/vendors, online webinars and "other." Respondents were allowed to select more than one training option.

Topping the results, 129 of the TVIs (22.7% of $N=374$) reported that they learned about the use of described video through colleagues. Following this, professional conference

Table 4

TVIs' Knowledge Gained from Commercially-produced, Described Video Resources

	1 No Knowledge Frequency (%)	2 Very Little Knowledge Frequency (%)	3 Little Knowledge Frequency (%)	4 Some Knowledge Frequency (%)	5 A Lot Knowledge Frequency (%)	Mean
DCMP ($N=177$)	28 (5.8)	35 (19.8)	21 (11.9)	80 (45.2)	13 (7.3)	3.09
WGBH's Teacher's Domain ($N=118$)	56 (47.5)	18 (15.3)	11 (9.3)	29 (24.6)	4 (3.4)	2.21
Other ($N=95$)	22 (23.2)	17 (17.9)	13 (13.7)	26 (27.4)	17 (17.9)	2.99

was listed by 89 (23.8% of $N=374$) respondents and university class was listed by 85 (22.7% of $N=374$) respondents. The other sources for trainings were more evenly accounted. Both professional books/journals and educational media companies/vendors were selected by 72 (19.3% of $N=374$) TVIs. Online webinars was chosen by 71 (19.0% of $N=374$) TVIs. School inservice was experienced by 65 TVIs. Lastly, "other" trainings were listed by 51 (13.6% of $N=374$) TVIs. Some of the "other" sources for education and trainings were described by TVIs as the following: 1) performing arts centers and movie theaters offering description, 2) internet searches, 3) Lighthouse International, 4) training as audio describer, 5) data collection for described video research and 6) friends and family members who used described videos.

Table 5

Types of Trainings Utilized by TVIs for Described Video

	Frequency (N=374)	%
Colleagues	129	34.5
Professional Conference	89	23.8
University Class	85	22.7
Professional Books/Journals	72	19.3
Educational Media	72	19.3
Companies/Vendors		
Online Webinars	71	19.0
School Inservice	65	17.4
Other	51	13.6

Table 6 explains the perceived level of knowledge gained by the TVIs from each of their educational or training experiences dealing with described video. The table lists the trainings in order from greatest to least mean scores according to the amount of knowledge gained by the TVI respondents. Survey responses were on a 5-point Likert scale ranging from “no knowledge” to “a lot of knowledge” gained by trainings. Respondents reported gaining on average an estimated “little knowledge” from the following educational/training experiences: 1) colleagues ($N=129$; mean=3.13); 2) professional conferences ($N=89$; mean=3.02); 3) online webinars ($N=51$; mean=2.98); 4) educational media companies/vendors ($N=72$; mean=2.89); 5) online webinars ($N=71$; mean=2.73); 6) university class ($N=85$; mean=2.71); and 7) professional books/journals ($N=72$; 2.67). Lastly, the TVIs’ disclosed school inservice trainings ($N=65$) had a mean score of 2.34 that was closer to the survey scale’s choice of “very little knowledge” gained.

Descriptive Data of TVIs’ Perceptions About Student Use of Commercially-produced, Described Video

TVI respondents estimated the percentages of their students who might benefit from described video and who actually use it. A little over half (52.9%) of the

Table 6

Level of Knowledge of Described Video Gained from Trainings Utilized by TVIs

Level of Knowledge	1 No	2 Very Little	3 Little	4 Some	5 A Lot	Mean @ 95% CI
Colleagues (N=129)	14	30	26	47	13	3.13
Professional Conference (N=89)	20	13	8	41	7	3.02
Other (N=51)	17	4	5	13	12	2.98
Educational Media Companies/Vendors (N=72)	21	7	10	27	7	2.89
Online Webinars (N=71)	24	6	14	19	8	2.73
University Class (N=85)	19	22	14	25	5	2.71
Professional Books/Journals (N=72)	21	12	13	22	4	2.67
School Inservice (N=65)	30	8	7	15	5	2.34

respondents answered that between zero to 20 percent of their students use commercially-produced, described video. Other reported results by the respondents included: eight percent of TVIs (21 to 40% of students), 7.2 percent of TVIs (41 to 60% of students), 5.1

percent of TVIs (61 to 80% of students), and 2.7 percent of TVIs (81 to 100% of students).

Descriptive Data of TVIs' Perceptions About the Support of Commercially-produced, Described Video from Others

Of the 374 respondents, 236 TVIs stated their perceptions of other teachers' support of commercially-produced, described video for students with visual impairments if applicable for them. 35.6% of the respondents believed that other teachers who provide curricular instruction for their students "never" support the use of commercially-produced, described video. Additionally, respondents reported that other teachers "rarely" (28.4%); "sometimes"; (21.6%); frequently (10.6%); and "always" (3.8%) support the use of commercially-produced, described video.

Next, the perceptions of 231 of the 374 respondents regarding library media specialists' or librarians' support of commercially-produced, described video for students with visual impairments were reported. 38.1% of the respondents stated that library media specialists/librarians "never" support the use of described video. Also, respondents reported that library media specialists/ librarians "rarely" (26.8%); "sometimes"; (17.3%); frequently (7.8%); and "always" (10%) support the use of commercially-produced, described video.

In addition, 267 of the 374 respondents gave their opinion on how often administrators support the use of described video for the TVIs' students. 37.5% of the respondents perceived that administrators "never" support the use of described video. Respondents believed administrators "rarely" (21.3%); "sometimes"; (18.4%); frequently (12.7%); and "always" (10.1%) support the use of commercially-produced, described

video.

Finally, 265 of the 374 TVI respondents reported their perceptions of media companies/vendors' support of described video through its commercial availability. 23.0% of the respondents believed that media companies/vendors "never" support described video. Respondents also reported that media companies/vendors "rarely" (43.4%); "sometimes"; (27.5%); frequently (4.2%); and "always" (1.9%) support the use of commercially-produced, described video.

Research Question 1

What is the TVIs' extent of knowledge of commercially-produced, described video within educational multimedia?

Results. Of the 374 completed surveys, 295 TVIs reported their perception of their overall knowledge of commercially-produced, described video within educational multimedia. The mean score for the TVIs' overall knowledge of commercially-produced, described video was 2.99. This was closest to the survey's rating choice designated as "little knowledge."

Research Question 2

How does the TVIs' knowledge of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Results. The TVIs' overall knowledge of commercially-produced, described video had a mean score of 3.01. This would fall closest to "little knowledge" on the survey's 5-point Likert scale. In addition, their mean score for the recommendation of described video within educational multimedia for students with visual impairments was 2.45. Using SPSS version 21.0, the measures of the TVIs' overall knowledge of

described video and their recommendation of described video were analyzed for Pearson correlations testing for significance at the .01 level (Nunnally and Bernstein, 1994). The extent of the TVIs overall knowledge of commercially-produced, described video showed a significant correlation with their level of recommendation of described video at the .01 level ($r = .433$). Table 7 displays these results.

Table 7

Correlation of TVIs' Knowledge and Recommendation of Commercially-produced, Described Video

	Mean	Pearson Correlation
Overall Knowledge Totals		
Valid N=281	2.99	.443**
	2.45	.443**
Recommendation Totals		
Valid N=281		

Note. ** Correlation is significant at the 0.01 level (2-tailed)

Research Question 3

What is the TVIs' level of use of commercially-produced, described video within educational multimedia?

Results. Of the 374 completed surveys, 290 TVIs estimated the frequency of their use of commercially-produced, described video within educational multimedia with their students. The mean score for the TVIs' "use" was 1.65. This was estimated to be between the survey's rating choices of "never" and "yearly" for the TVIs' frequency of use of described video with their students who are visually impaired or blind.

Research Question 4

How does the TVIs' use of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Results. The TVIs' mean score for frequency of use of commercially-produced, described video was 1.65. The mean score for their recommendation of commercially-produced, described video was 2.45.

The measures of the TVIs' use of described video and their recommendation of described video were analyzed for Pearson correlations testing for significance at the .01 level (Nunnally & Bernstein, 1994). The level of the TVIs' use of commercially-produced, described video showed a significant correlation (Fink, 1995) with their level of recommendation of described video at the .01 level ($r = .511$). Table 8 shows these results.

Table 8

Correlation of TVIs' Use and Recommendation of Commercially-produced, Described Video

	Mean (N=290)	Pearson Correlation
Use Totals	1.65	.511**
Recommendation Totals	2.45	.511**

Note. ** Correlation is significant at the 0.01 level (2-tailed)

Research Question 5

What is the TVIs' level of support of commercially-produced, described video within educational multimedia?

Results. Of the 374 completed surveys, 275 TVIs responded to the inquiry of the level of their personal support for commercially-produced, described video within educational multimedia. The mean score for the TVIs' "personal support" was 3.02. This was closest to the survey's rating choice designated as "sometimes support" the use of described video for students who are visually impaired or blind.

Research Question 6

How does the TVIs' level of support relate to their recommendation of described video within educational multimedia for students with visual impairments?

Results. The TVIs ($N=275$) had a mean score of 3.02 for their personal support of commercially-produced, described video. In addition, the TVIs had a mean score of 2.47 for recommendation of described video. This fell in between the survey's ratings of "rarely" recommends and "sometimes" recommends.

The measures of the TVIs' personal support of described video and their recommendation of described video were analyzed for Pearson correlations testing for significance at the .01 level (Nunnally and Bernstein, 1994). The level of the TVIs' personal support of commercially-produced, described video showed a significant correlation with their level of recommendation of described video at the .01 level ($r = .661$). Table 9 illustrates these results.

Table 9

Correlation of TVIs' Personal Support and Recommendation of Commercially-produced, Described Video

	Mean	Pearson Correlation
Overall Knowledge Totals Valid $N=275$	3.02	.661**
Recommendation Totals Valid $N=275$	2.47	.661**

Note. ** Correlation is significant at the 0.01 level (2-tailed)

Research Question 7

Is there a significant difference in TVIs' recommendation of described video within educational multimedia between school work settings (i.e., school for the blind, public school or "other" school setting)?

Results. Of the 374 TVIs, 274 respondents reported both their school work settings and their recommendation levels of described video. Table 10 shows the school work setting and recommendation mean scores. 51 respondents worked in schools for the blind (TVI level 1) and had a recommendation mean score of 3.04. This score was closest to the survey’s response of “sometimes” have recommended described video to meet the special access needs of their students with visual impairments. 208 respondents were employed in public schools (TVI level 2) and had a recommendation mean score of 2.33. This score fell in between the survey’s response choices of “rarely” and “sometimes” have recommended described video. Lastly, 16 respondents reported working in “other” school settings and had a recommendation mean score of 2.25. This score also fell between “rarely” and “sometimes” have recommended described video for their students.

Table 10

TVIs’ School Work Setting Levels and Frequency of Recommendation Means

(N=274)	N	Mean
School for the Blind	51	3.04
Public School	208	2.33
Other	16	2.25

A one-way ANOVA test (Boslaugh & Watters, 2008; Glass & Hopkins, 1996) was conducted using SPSS and significant differences were found between the TVI group’s work setting levels [$F(2, 274) = 8.579, p=.000$] at the .05 level. These results are displayed in Table 11.

A Bonferroni post hoc test (Boslaugh & Watters, 2008) was run in SPSS to further test for differences among the TVIs’ work setting levels and their

Table 11

ANOVA Recommendation Between TVIs' Work Setting Levels

	Df	F	Sig.
Between Levels	2	8.579	.000
Within Levels	272		
Total	274		

recommendation scores (see Table 10), since the levels' sizes were unbalanced. A significant difference ($p=.000$) was shown between the schools for the blind TVIs (work setting level 1) and the public school TVIs (work setting 2) and their recommendation of described video. Another significant difference ($p=.043$) was found between the schools for the blind TVIs (work setting level 1) and the TVIs who worked in "other" schools (work setting level 3). Finally, there was no significant difference ($p=1.000$) between public schools' TVIs (work setting level 2) and other schools' TVIs (work setting level 3) at the .05 level. Table 12 illustrates these differences.

Table 12

Bonferroni's Post Hoc Test for Significant Difference in Means Between TVIs' Work Setting Levels

School Work Levels		Mean Difference	P
1) Schools for the Blind	2) Public Schools	.712	.001*
	3) Other Schools	.789	.043*
2) Public Schools	3) Other Schools	.077	1.000

Note. * The mean difference is significant at the 0.05 level

CHAPTER V

DISCUSSION

This chapter first presents an overview of the study's purpose, population and methods. Conclusions and implications are then discussed. Limitations of the study are provided. Lastly, the chapter concludes with recommendations for future research.

Overview

Federal laws mandate access to school curriculum and its materials for students with visual impairments and blindness. Previous literature indicated that although classrooms were often equipped with curriculum in digital formats for students, access tools (i.e.- assistive technologies and universally designed products) for students with visual impairments were under-utilized (Abner & Lahm, 2002; Corn & Wall, 2002; Hume, 2011; Kapperman, Sticken & Heinze, 2002; Kelly, 2008; Kelly & Smith, 2011). Access to video images within commercially-produced, educational videos used in school curriculum has been explored in this study. Specific attention was given to Teachers of the Visually Impaired (TVIs) and their perceptions of the use of commercially-produced, described video for students with visual impairments.

To better understand the utilization of commercially-produced, described video for students with visual impairments, this study examined the TVIs' levels of knowledge, use, support and recommendation of commercially-produced, described video. The study

explored demographic and descriptive facets of the sample regarding this topic. Special focus was placed on determining relationships between each of the variables (i.e., knowledge, use and support of commercially-produced, described video and the TVIs' level of recommendation of commercially-produced, described video). In addition, the study investigated whether or not there were significant differences between the TVIs' work setting levels (i.e., schools for the blind, public schools and "other" schools). A validated survey instrument was used to collect data from the study's inclusionary sample of certified TVIs working in K-12 schools in the U.S. Seven research questions were explored, and the data collected in *Survey Monkey*TM (Finley, 1999) were analyzed using *SPSS version 21*. The study's results were presented in Chapter Four. Conclusions related the study's results regarding demographic and descriptive data and research questions are presented on the following pages.

Demographic Data

Demographic data was reported by the respondents that helped to describe the study's sample. TVI respondents provided data on their personal education level. According to the results, the majority of the respondents had master's degrees. Bachelor's degrees were reported by less than 20% of the respondents and even fewer had doctorate degrees. This data may reflect the types of university personnel preparatory programs that are available for TVIs.

Next, the respondents provided data that told the number of years that they had been working as a TVI. If the respondents' "years of experience" was divided half-way into the survey's employment timeline, then approximately 60% of the TVIs had been employed between zero to fifteen years and 40% of the TVIs had been employed between

sixteen or more years. These numbers reflect that just a little over half of the TVI respondents were newer to the workforce.

Finally, TVI respondents designated the type of K-12 work setting that they were employed in. The data showed that over three-fourths of the TVIs were employed in public schools. Fewer than 17% of the TVIs worked in schools for the blind and less than 5% worked in “other schools. This data revealed that most of the TVIs worked in public school systems. This is logical, because many students with visual impairments have been placed in inclusive educational settings following historical legislative advancements (Hatlen, 2000). In addition, both public schools and schools for the blind are mandated to provide special education services, so it is reasonable to say that more TVIs would be employed in these types of schools, instead of the “other” schools’ category. Data supported this idea.

Descriptive Data

TVIs’ knowledge from resources for commercially-produced, described video results summary and discussion. The results in this section described the TVI respondents’ experience with different resources and trainings related to commercially-produced, described video. The results also illustrated to what magnitude these resources and trainings added to the TVIs’ general working knowledge of commercially-produced, described video.

TVI respondents ($N=374$) reported knowing about commercially-produced, described video through the following resources for educators: 1) Described and Captioned Media Program (DCMP); 2) WGBH’s Teacher’s Domain; and 3) other. Respondents could select more than one of these resources and could also describe the

“other” resource in a subsequent comment section. Results confirmed that DCMP had been utilized by more of the respondents than WGBH’s Teacher’s Domain. It is also important to note that the percentage results for “other” resources may be elevated and misleading, due to the respondents prematurely listing additional “trainings” as resources. Many of these additional trainings were addressed later in the survey under a section specified for trainings.

The overall results illustrated that few of the respondents had utilized these specific resources for commercially-produced, described video. Some of the TVIs’ comments suggested that they were unaware of these resources. However, other resources listed by the respondents (i.e., state and national library services for the blind, educational broadcasting sources, Braille Institute video catalogue, Video Description Research and Development Center, Narrative Television Network, Media Access Group at WGBH, American Foundation for the Blind and American Printing House for the Blind) suggested that the TVIs were trying to reach out to more resources for information on commercially-produced, described video. In addition, the findings indicated that although the TVI respondents had not utilized these resources prior to the survey, they were now eager to learn more about them.

Next, results from this study estimated how much knowledge of commercially-produced, described video the TVIs felt that they gained from the selected resources (i.e., DCMP, Teacher’s Domain and other). The findings determined that the TVIs felt that they had gained “little knowledge” from DCMP and “very little knowledge” from WGBH’s Teacher’s Domain in regards to learning about commercially-produced, described video through these resources. Perchance, this may be due to their initial

reporting that they lacked awareness of these resources and had not utilized them.

Lastly, the results showed that the TVI respondents felt that they had gained “little knowledge” from “other” resources. Caution should be taken when interpreting these results, due to the respondents including various trainings under this section, sometimes in lieu of resources. It is also important to remember that the results linked to the DCMP, WGBH’s Teacher’s Domain and “other” resources utilized by the TVIs only touched on one area of the TVIs’ utilization of these resources. The results cannot explain the frequency, duration or breadth of the TVIs’ utilization of each resource. These results were not meant to provide a deeper picture of these resources for TVIs. However, the findings did show that the TVI respondents were interested in learning more about resources for commercially-produced, described video which may be taken into consideration by organizations that provide such resources.

TVIs’ knowledge from trainings regarding commercially-produced, described video results summary and discussion. This study examined different types of trainings regarding commercially-produced, described video that the TVI respondents had utilized. Respondents were able to select more than one of the trainings. The study also probed to find out how much knowledge of commercially-produced, described video was gained by each of the trainings. The top three utilized trainings for commercially-produced, described video by TVI respondents were through colleagues, university classes and professional conferences. In contrast, TVIs had less frequently been trained through professional books and journals, educational media companies/vendors, online webinars and school inservices.

Additionally, respondents reported how much knowledge of commercially-

produced, described video was gained by each of the trainings utilized. The findings revealed that the TVIs felt that they had gained more knowledge about commercially-produced, described video from the following top three trainings: colleagues, professional conferences and “other” trainings. In contrast, they felt that they had not gained as much knowledge about commercially-produced, described video from educational media companies/vendors, online webinars, university classes, professional books and journals, and school inservices.

These results explored where the TVI respondents had received training regarding commercially-produced, described video and the extent of their knowledge gained from their experiences. Perhaps, these descriptive results may help guide future outreach planning for training educators on the use of commercially-produced, described video for students. However, it is important to remember that these results may change over time with the advancements of described video, technologies and educational delivery systems.

TVIs’ perceptions of their students’ use of commercially-produced, described video results summary and discussion. It was determined in the results that more than half of the TVIs responded that between zero and 20 percent of their students who might benefit from commercially-produced, described video actually use it. The findings confirm that commercially-produced, described videos have been under-utilized or not been used to its fullest potential. This raises the question of why students are not using commercially-produced, described video, if they could benefit from it.

TVIs’ perceptions of other teachers’ support of commercially-produced, described video results summary and discussion. These results explained that over

half of the TVI respondents felt that other teachers who provide curricular instruction for their students have either “never” or “rarely” supported the use of commercially-produced, described video. Particular commentary by respondents in the survey’s comment section furthered these results. For example, one respondent remarked, “While I frequently recommend descriptive videos, classroom teachers rarely work with me on initiating it.” Another respondent felt that other regular education and special education teachers might not support the use of commercially-produced, described video due to their lack of awareness of the product.

These results and comments draw attention to the question of why other teachers in inclusive school settings have not supported the use of commercially-produced, described video. The findings also bring up the question of how to best implement the use of commercially-produced, described video for students (i.e., implementing it through formal written requests in students’ IEPs or through more informal requests).

TVIs’ perceptions of librarian/library media specialists’ support of commercially-produced, described video results summary and discussion. Again in the results, over half of the TVI respondents perceived that librarians/library media specialists either “never” or “rarely” support the use of commercially-produced, described video for the TVIs’ students. These results are concerning, because often teachers and principals have relied upon library media specialists for technology support in their schools. These findings may possibly lead to question how library media specialists are aware and/or trained on the product.

TVIs’ perceptions of administrators’ support of commercially-produced, described video results summary and discussion. The study’s results found that over

half of the TVI respondents felt that administrators in their schools either have “never” or “rarely” supported the use of commercially-produced, described video. Additionally, comments by respondents supported the need for further investigations regarding administrators’ support of commercially-produced, described video. One respondent who worked at a school for the blind said that the school administration advocated for the use of commercially-produced, described video. A different respondent remarked that if her/his administration knew more about commercially-produced, described video, then they would support it more.

Questions from these findings arise in that it may be possible for the results to differ if the respondents’ responses were divided according to the TVIs’ work setting levels. Explorations are needed for a deeper look into support of commercially-produced, described video by school administrators and how it may differ according to the type of school work setting.

TVIs’ perceptions of media companies/vendors’ support of commercially-produced, described video through availability of the product results summary and discussion. Over 66% of the TVI respondents felt that media companies/vendors either “never” or “rarely” supported commercially-produced, described video through its availability. Additionally, several respondents voiced their opinions on this matter in the survey’s comment section. They commented about the limited availability of commercially-produced, described video. They reported not being able to find commercially-produced, described video for education in a timely manner or even at all. Other comments included, “the limited availability of descriptive videos makes them hard to recommend” and “I can’t recommend that my student’s teachers should use described

media, if it's not available.” Others stated, “I wish all the educational library videos had to be audio-described. If someone could make it realistically easy for TVIs and classroom teachers to find audio-described video, I'm sure they would use it” and “I would use them more, if they were just automatically available with all media that is used in the school.”

The lack of available commercially-produced, described video has been emphasized as problematic in past literature (Described and Captioned Media Program, 2009). DCMP revealed that the TVIs surveyed at the time of their investigation who were not using videos with students, would begin to use videos, if described videos were available (2009).

Considering the results of the descriptive data and the comments from the respondents in this study, this seems to validate earlier literature that described the lack of available commercially-produced, described video. The available supply of commercially-produced, described video still seems to be inadequate as the findings indicated. This sparks curiosities on why educational media companies haven't produced and distributed more described video products, if educators are eager to use them.

The next section discusses the results of each of the study's seven research questions.

Research Question 1

What is the TVIs' extent of knowledge of commercially-produced, described video within educational multimedia?

Research question 1 results summary and discussion. In the survey, TVI respondents gave their perceptions of their overall, general working knowledge of

commercially-produced, described video. The data shared indicated that they felt they had little overall knowledge of commercially-produced, described video. These results gave thought to previous research that advised that TVIs should be provided more educational opportunities to learn about access technologies (Abner & Lahm, 2002; Hume, 2011; Kapperman, Sticken & Heinze, 2002; Kelly, 2008), specifically described video (Described and Captioned Media Program, 2009; Corn & Wall, 2002; Sapp, 2009).

Many respondents added commentary at the end of the survey in relation to their lack of awareness and knowledge of commercially-produced, described video. Although the respondents often stated that they lacked training and were unaware of resources for commercially-produced, described video, they also were eager to learn more about commercially-produced, described video. Past research has implied that greater awareness (Described and Captioned Media Program, 2009) and general working knowledge (Corn & Wall, 2002) may potentially affect TVIs' confidence for utilizing accessible technology (Abner & Lahm, 2002).

Research Question 2

How does the TVIs' knowledge of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Research question 2 results summary and discussion. The results determined that there was a significant, positive correlation between the TVI respondents overall knowledge of commercially-produced, described video and their recommendations of the product. These results did estimate a relationship between two variables; however, it has been advised not to assume causation regarding correlations (Fink, 1995).

In the comment section, respondents disclosed further that they had not experienced trainings or resources for commercially-produced, described video, so they felt they had little to no knowledge due to this. Respondents also reported not knowing where to locate commercially-produced, described video or information about it. One respondent stated that if she/he knew more about commercially-produced, described video, then she/he could support it more. Some even suggested that better education, promotion and advertisement of commercially-produced, described video may be needed. Comments like these added more insight and highlighted the need for increased educational opportunities for TVIs on the use of commercially-produced, described video.

Research Question 3

What is the TVIs' level of use of commercially-produced, described video within educational multimedia?

Research question 3 results summary and discussion. The results illustrated that the TVI respondents used commercially-produced, described video between “never” and “yearly.” Previous research has explained that there has been very little research on the use of video description (Ferrell, Finnerty & Monson, 2006). However, there were a few studies that referred to the magnitude of TVIs' use of commercially-produced, described video.

One study by Corn and Wall (2002), found that video description was the most common approach for accessing multimedia presentations in classrooms when compared to other access tools like accessible hardware and software, braille and tactile materials. However, they also noted that TVIs' relied more upon impromptu verbal descriptions for

access to videos than videos that contained integrated video description. Later, Hume (2011) reported that in Kentucky, there was a low use of video description by students with visual impairments and auditory learners. He also advised that more research was needed on the extent of how video description was being used by TVIs to assist students with visual impairments in accessing school curriculum.

The study in this dissertation discussed U.S. TVIs' use of commercially-produced, described video in the U.S, which added information needed in this area. The lack of use or under-utilization of commercially-produced, described video by TVIs was confirmed through the study's quantitative results. Although TVI respondents reported using commercially-produced, described video, it was infrequent use. A comment section at the end of the survey gave respondents opportunities to add more detail to this investigation. One respondent explained in the comment section, "I would use them more, if they were just automatically available with all media that is used in the school." This TVI's comment, along with other respondents' comments, spoke to the lack of availability of commercially-produced, described videos in educational settings (Described and Captioned Media Program, 2009). These findings prompt questions asking why TVIs are or are not using commercially-produced, described video.

The next question looks for a relationship between the TVIs' use and recommendation of commercially-produced, described videos.

Research Question 4

How does the TVIs' use of described video relate to their recommendation of described video within educational multimedia for students with visual impairments?

Research question 4 results summary and discussion. The results discovered a significant, positive correlation between the TVIs' use of commercially-produced, described videos and their recommendation of the product. Fink (1995) would have described its correlation as having a moderate to good relationship, since the correlation results fell between .51 to .75. These results showed a positive correlation between the TVIs' use of commercially-produced, described videos and their recommendation of it, but causation of the relationship could not be assumed.

However, it is important to note that the TVI respondents stated that their use of commercially-produced, described video has been influenced by the limited availability of the product. In addition, they have hesitated to recommend the product for students' educational programs. These findings ignite other inquiries about reasons why TVIs are and are not using commercially-produced, described video.

Research Question 5

What is the TVIs' level of support of commercially-produced, described video within educational multimedia?

Research question 5 results summary and discussion. The findings determined that TVI respondents felt that they "sometimes" personally supported commercially-produced, described video. The survey instrument in this dissertation study offered the TVI respondents a chance to provide additional comments regarding this inquiry. One respondent commented in this section about factors influencing their support of commercially-produced, described video, "My knowledge and use of described video is non-existent. This service would be a great value to my students; however, I lack the knowledge to be able to support it."

This comment also echoed a past related study that suggested that TVIs couldn't support the use of assistive technologies with students due to their lack of confidence in their trainings (Abner & Lahm, 2002). Indeed, TVIs may have many factors that influence their personal support for accessible products and access tools for their students. This was found in earlier studies about under-utilization of assistive technologies. In these studies, TVIs shared that they often do not have enough time for assistive technology instruction or might lack funds for purchasing assistive technologies for their students (Hume, 2011; Kelly, 2008).

Ultimately, student need for equal access and improved, independent learning opportunities should be a primary concern (Corn & Wall, 2002; Hitchcock, et al., 2002; Hume, 2011; Sapp, 2009). With this in mind, a universally-designed product, like commercially-produced, described video has the potential to be an efficient access tool with built-in supports and greater usability for consumers (i.e., students, TVIs, and regular education teachers; Pisha & Coyne, 2001). However, DCMP (2009) explained that less than 5% of educational videos are described. Clearly, more described educational video products need to be available for TVIs. In fact, several TVI respondents commented in the survey that they would support commercially-produced, described video more, if it was more readily available.

Research Question 6

How does the TVIs' level of support relate to their recommendation of described video within educational multimedia for students with visual impairments?

Research question 6 results summary and discussion.

A significant, positive correlation was found in the study's results. Again, Fink (1995) would have determined the correlational size to have a moderate to good relationship, because it fell between .51 to .75.

A significant relationship was established; but causation should not be assumed. Causational questions arise past the realm of this exploratory study. It might be possible that as TVIs gain more exposure to commercially-produced, described video through specialized resources, training, and use of the product, their support and advocacy for recommending it for their students educational programs may increase. It also would be interesting to see TVIs' support and recommendation for commercially-produced, described video starts to increase as educational media companies and vendors start to produce more videos with description.

Research Question 7

Is there a significant difference in TVIs' recommendation of described video within educational multimedia between school work settings (i.e., schools for the blind, public schools or "other" schools)?

Research question 7 results summary and discussion. The findings determined that TVIs' recommendation of commercially-produced, described video differed according to their school work setting. When referring to the survey's 5-point Likert scale, the recommendation mean score for the schools for the blind TVIs was closest to the TVIs "sometimes" recommending commercially-produced, described video. In addition, both the recommendation mean scores for the public schools TVIs and the "other" schools TVIs fell in between the TVIs "rarely" and "sometimes" recommending commercially-produced, described video.

After a one-way ANOVA test (Boslaugh & Watters, 2008) was run, the findings determined significant differences among the three work levels of TVIs and their recommendation mean scores for commercially-produced, described video. Then after a Bonferroni post hoc test (Boslaugh & Watters, 2008) was performed, further findings of where exactly the significant differences were between the levels were discovered. The results showed that there was a significant difference TVIs who worked in schools for the blind and the TVIs who were employed in public schools. Additionally, the results established a significant difference between the TVIs who worked in schools for the blind and TVIs who worked in “other” schools. Lastly, the findings indicated no significant difference between TVIs who worked in public schools and TVIs who worked in “other” schools.

As mentioned, the findings examined the extent of TVIs’ recommendation of commercially-produced described video for their students’ educational program depending on the TVIs’ K-12 work setting. While looking at the TVIs’ recommendation mean scores, TVI respondents who worked for schools for the blind reported recommending commercially-produced, described video more often than both the TVIs who worked for public schools and TVIs who worked for “other” schools. Previous literature reflected higher use of assistive technologies by students in residential schools (schools for the blind) when compared to students in non-residential school placements like public or other schools (Hume, 2011; Kelly, 2008). In addition, DCMP’s survey (2009) investigated TVIs and their use of educational videos in classrooms. Their descriptive data results showed that 61% of the participants that used classroom videos were the TVI respondents from residential schools for the blind. Furthermore, 34% of

the TVI participants who used classroom videos were the TVIs from public schools.

Although, the DCMP survey asked about the TVIs' use of educational video, it did not investigate the TVIs' use of described educational video.

Although previous studies researching assistive technologies, educational video and school settings were not the same as this exploratory investigation, they were linked enough to add insight to the results. There may be a multitude of reasons why TVIs who work for schools for the blind have recommended commercially-produced, described video more often. Perhaps, TVIs in schools for the blind have been responsible for the own classrooms and have more time and control over their students' direct instruction and accommodations for curriculum. In contrast, TVIs in public schools and "other" schools have teaching and/or consulting responsibilities that are part of inclusive regular education programs, which depend on other educators for curriculum instruction, a complication which may lead to barriers.

Intriguingly, Hume (2011) speculated that residential schools provide students with visual impairments an environment rich in adaptations for curriculum access. This may be conceivably true and affect a TVI's opinion for recommending access technologies, including commercially-produced, described video. In fact, a respondent from a school for the blind commented that his/her school actively promotes the use of commercially-produced, described video and resources like Described and Captioned Media Program (DCMP). On the contrary, the lack of availability of commercially-produced, described video in public schools was noted by some of the respondents. One TVI even stated that described videos were rarely available through the media used by the public school system.

Implications

There are several implications as a result of this study. These implications are divided into 3 areas for discussion: education, practice and legislation.

Implications for education. The TVI respondents felt that they had between “very little knowledge” and “a little knowledge” when estimating their overall knowledge of commercially-produced, described video. In addition, many of their annotations at the end of the survey suggested that they felt that they had no knowledge or limited knowledge of commercially-produced, described video. However, many respondents also remarked that they were eager to learn more about commercially-produced, described video to better help their students. This information supports the need for improving educational opportunities for TVIs on commercially-produced, described video.

Future thought of how to provide these educational opportunities for TVIs should be given by organizations and institutions. Organizations and institutions may look at the respondents’ descriptive data results on trainings (Tables 7 and 8) as a guide for planning these opportunities. These tables show data results for the respondents who had experienced trainings on commercially-produced, described video. Specifically, it provided information on which types of trainings they had already experienced, and in essence, how much was learned from the selected trainings. As Tables 7 and 8 data results seemed to indicate, trainings from colleagues and professional conferences appeared to be more beneficial to the respondents.

In addition, the respondents provided information about which educators’ resources for commercially-produced, described video they had previously experienced,

and how much they learned from the selected resources (Tables 5 and 6). Data provided for the resources included: 1) Described and Captioned Media Program (DCMP), 2) WGBH Teacher's Domain and 3) other resources that respondents supplemented. This information may encourage resource organizations for commercially-produced, described video to enhance marketing plans for educational outreach, so more resources may be available for more TVIs and educators.

Implications for practice. Significant relationships were determined between the TVI respondents' recommendation of commercially-produced, described video and the TVIs' levels of knowledge, use and support of commercially-produced, described video. Causation should not be assumed; however, these initial results may lead to speculations and further research. Perhaps an increase in TVIs recommending commercially-produced, described video for their students may develop, as TVIs' levels of knowledge, use and support of commercially-produced, described video increase.

TVIs want their students with visual impairments to have independent learning opportunities and receive equal access to school curriculum just like their sighted peers. Accessible technology products like commercially-produced, described video have the ability to provide access to curriculum that students may encounter in their classrooms. However, over half of the respondents ($N=284$) reported that only zero to 20% of their students who might benefit from commercially-produced, described video were actually using it. TVIs are often the gatekeepers to their students' needs. For this reason, TVIs should consider recommending commercially-produced, described video both informally and formally (i.e., as part of the IEP) to meet their students' individual access needs.

The TVI respondents from inclusive schools (i.e., public schools and "other"

schools) reported that they were only recommending commercially-produced, described video between “rarely” and “sometimes.” TVI respondents from schools for the blind had recommendation (of commercially-produced, described video) mean scores were higher and significantly different than the other two TVI work setting levels’ recommendation mean scores. Even though the schools for the blind respondents appeared to be recommending the product more than the other respondents, they still were only recommending commercially-produced, described video “sometimes.”

Often in inclusive educational settings, TVIs’ students depend on regular classroom teachers and/or special education teachers to provide curriculum instruction. In these cases, it is imperative that TVIs educate their colleagues on the importance for curricular access for their students with visual impairments and blindness. This includes requesting and implementing the use of commercially-produced, described video. One of the TVI respondents even stated that the use of a pre-produced product like commercially-produced, described video not only helps the student access the curriculum content in video, but also helps the regular classroom teacher to ensure a more standardized and efficient method of instructional delivery of the video’s content.

Furthermore, administrators should be made aware of the need for available commercially-produced, described video products. Some respondents noted that if their administrators knew more about commercially-produced, described video, then the administrators might support it more. The administrators’ role may be vital for availability. Administrators may be able to request the described video products when they commit to business contracts with educational media companies who provide video streaming services. TVIs should express to their administrators the importance of

requesting commercially-produced, described video to educational media companies and vendors.

Implications for legislation. The dilemma of limited availability of commercially-produced, described video was frequently mentioned by respondents in their commentary. In fact, more than half of the respondents ($N=265$) felt that media companies/vendors either rarely (43.4%) or never (23.0%) supported described video by making it commercially available. Inadequate supply of commercially-produced, described video should be addressed through advocacy for the product and through legislation. Currently, there are no laws that require educational videos to contain description. Inaccessible video curriculum should not be tolerated and laws should be put into place in order to protect students' rights. Indeed, advocating for new legislation should be a priority. Expanded laws for described video could be added to existing legislation like the Twenty-First Century Communications and Video Accessibility Act (CVAA).

Furthermore, IDEA of 2004 speaks to the requirements of accessible materials for students with visual impairment. In its current state, it seems to allow interpretations that may not always be clear about the quality of access. Possibly, expanded mandates should state that accessible curricular materials provided to students with visual impairments should support independent learning opportunities. For example, in the case of providing access to videos, it should discourage video access to be dependent on others (i.e., impromptu verbal description) and encourage access through truly accessible curricular materials (i.e., commercially-produced, described video products). If enough voices are frequently heard on this matter through advocacy and lobbying efforts, educational media

companies and vendors may better acknowledge the demand for commercially-produced, described video products and start to increase their available supply. This is to suggest the spirit, “the squeaky wheel gets the grease.”

Limitations of the Study

There are several limitations to the findings of this study: 1) limited sample and generalizability, 2) limitations for descriptive findings and 3) limitations for replication.

Limited sample and generalizability. The study was limited to Teachers of the Visually Impaired whom were currently employed in schools in the United States. The survey instrument used in the study was available electronically to TVIs who agreed to participate. Although most U.S. TVIs have access to the internet and email, there still may have been some who were not reached through this mode of communication.

In addition, recruitment for participants did not allow for direct access to TVIs’ email addresses, so a response rate for the survey instrument was unclear. Instead, dependence for participant recruitment was placed upon administrators of email lists, listserves and websites for TVIs. A link to the survey was provided to the participants through this distribution method. Participants were able to follow the link to the *Survey Monkey*TM website (Finley, 1999) and remain anonymous. However, this did not allow for determining duplicate responses, nor did it allow for a correct response rate.

The study also had set criteria parameters for the respondents’ inclusion. Following these parameters, a nonrandom sample of 490 TVIs responded, and 374 were included. For all of the above reasons, the study’s results may not be generalized to all TVIs. Expanding the study through direct participant recruitment, random sampling and targeting TVIs in other countries outside the US may improve generalizability.

Limitations for descriptive findings. The study was descriptive in nature due to the study's intent to explore TVIs' perceptions on a topic not thoroughly studied by previous researchers (Bryant, 2004). The current characteristics and perceptions of the sample were described. This provided a current snapshot for study, but continuous change over time may affect these results or even make them obsolete. In addition, the findings of the study described patterns of distribution for the variables investigated but could not assume causation for additional meaning. More variables could be explored and causation could be investigated for expansion of the research.

Limitations for replication. The study's topic focuses on TVIs' perceptions about a technology product, commercially-produced, described video. The static nature of the topic and the population could result in limitations for replication of the study.

Future Research

The results of this study provide a current description of TVIs' perceptions of commercially-produced, described video in the U.S. This exploratory study's results and implications related to its descriptive inquiries and research questions, spawned new curiosities and ideas for future research. Certainly, the topic of commercially-produced, described video within educational multimedia needs further study. In addition, it would be interesting to broaden the scope of the study to other populations (i.e, other educators and students with other special needs). Examples of future quantitative and qualitative research that may be explored include:

1. How does the availability of described video as a commercial product predict the frequency of TVIs' recommending it for use with students who are visually impaired?

2. How does the support from regular classroom teachers predict the use of commercially-produced, described video with students with visual impairments and who attend public schools?
3. How are TVIs recommending and implementing the use of commercially-produced, described video for students with visual impairments?
4. Why do TVIs who work at schools for the blind recommend commercially-produced, described video more than TVIs in public or other schools?
5. Which training methods do TVIs prefer for learning about the use of commercially-produced, described video?
6. How do TVIs perceive the benefits of commercially-produced, described video for students with visual impairments and blindness?
7. What factors predict the use of commercially-produced, described video for students with visual impairments?
8. To what extent does the use of commercially-produced, described video increase comprehension of the video's curriculum for students with visual impairments?
9. To what extent does the use of commercially-produced, described video increase comprehension of the video's curriculum for other populations of students (i.e., sighted students, students with disabilities or English language learners)?

10. To what extent does the use of commercially-produced, described videos increase vocabulary acquisition for language learning students (i.e., English language learners or preschoolers)?

In addition, more and more video content in classrooms may be web-based and crowd sourced; therefore, descriptions may need to be added. Further research to investigate described video that is self-produced using special assistive technology software would be suggested. Possible research questions include:

1. How do sighted students benefit from creating video descriptions for crowd sourced video?
2. To what extent does creating video descriptions for crowd sourced videos increase literacy skills for students?
3. To what extent do students with visual impairments benefit from crowd sourced video containing descriptions?
4. Which training methods do TVIs prefer for learning about self-produced, described video?
5. To what extent do personal preparatory programs for TVIs include instruction on described video?

Summary

It is apparent that Teachers of the Visually Impaired (TVIs) want to provide their students with visual impairments access to school curriculum. Both educational products with universal design features and assistive technologies help to achieve access to curriculum. For curriculum within educational videos, access for students with visual impairments is available through digital video description. Digital description may be

added-onto a video either by individuals through video description software (assistive technology) or by media companies through their pre-produced video products with integrated description. The latter, commercially-produced, described video provides access as a ready-to use, product with universal design features. Its consumers or users do not have to worry about adding onto or retro-fitting the video with description, which makes its access to video curriculum more efficient and user-friendly for educators and students.

There is little reservation that educators, including TVIs are pressed for valuable instruction time with students. With this in mind, it seems that their selection of well designed, accessible educational products would benefit them and their students. Although TVIs seem to want accessible curriculum for their students, there seem to be some barriers for their use and recommendation of commercially-produced, described video. By exploring their perceptions of commercially-produced, described video, we begin to see the current state of the under-utilization of the product.

TVIs seem to have had limited exposure to resources and trainings on using commercially-produced, described video. As a whole, they had little overall knowledge of the product. Organizations, university preparatory programs and education professional development proctors who are responsible for educating teachers and TVIs should include more trainings and resources regarding described video. With increased knowledge of described video, TVIs and other teachers may be more inclined to support its increased use for students who are visually impaired.

In addition, limited availability of the product seems to also be another barrier for TVIs. Many of the respondents of this study restated the problem of limited availability

of commercially-produced, described video through their descriptive data results and their comments collected by the survey. Media companies and vendors responsible for providing schools with educational video products need to listen to their consumers' needs for described video. However, first TVIs, educators, administrators, parents and students need to express their needs and advocate for described video. More demand for the product may help influence an increase in its supply.

Furthermore, it is crucial for policy makers to keep lobbying for new laws to require all educational videos to contain digital description. Importantly, more research on the topic of described video may help policy makers' efforts to improve mandates for existing legislation for video description like the Twenty-First Century Communications and Video Accessibility Act (CVAA). It also may help them expand existing legislation like IDEA of 2004 that requires students with visual impairments be provided accessible curricular materials. Accessible curricular materials are definitely needed for students, but independent access opportunities are important, as well. Again, an access technique like, impromptu verbal description of video curriculum does not allow consistent delivery of the video curriculum; nor does it allow independent learning experiences for the students with visual impairments. In contrast, the use of commercially-produced, described video would give students more consistent, independent learning opportunities that would be more equivalent to the curricular access opportunities given to their sighted peers. This example, of what may be currently interpreted as acceptable for accessible materials should be considered when new mandates are examined for accessible materials in video formats.

Clearly, agents for change are needed to increase the supply and demand for

commercially-produced, described video products. The first critical finding in this study indicated that there is an essential need for increasing educational opportunities for TVIs to learn more about described video. TVIs not only need to be confident in how to use the commercially-produced, described video product, but they also should know where to find the product and how to request it for students. With this in mind, a future increase in education, practice and demand for commercially-produced, described video by TVIs may help influence new laws and availability for commercially-produced, described video.

Another important finding in this study stressed that many TVI respondents had expressed their need for available commercially-produced, described video. The findings undoubtedly articulated that the TVIs felt that educational media companies and vendors were not providing an adequate supply of commercially-produced, described video. This emphasizes the need for readily available educational video products with integrated description. Hopefully, these findings will inform companies that produce and distribute educational videos to schools that there is indeed a consumer need for their products to contain integrated video description.

This study's results bring greater awareness and understanding to the under-utilization of commercially-produced, described video within educational multimedia for students with visual impairments that was lacking prior to this investigation. The results provide a base of pertinent information for educators, organizations and researchers to learn more about this product through the perceptions of TVIs. Its findings may serve as a catalyst for further research on topics that include: 1) integrated description for digital video or still images, 2) accessible educational multimedia and 3) best practice for equal

access to school curriculum and optimal learning opportunities for students who are blind. Future research is pertinent to broaden the scope of investigations.

REFERENCES

- Abner, G. H., & Lahm, E. A. (2002). Implementation of assistive technology with students who are visually impaired: teachers' readiness. *Journal of Visual Impairment & Blindness*, 96(2), 98-105.
- American Association of People with Disabilities (2010). 21st century technology legislation signed by president. Retrieved November 14, 2010, from <http://www.aapd.com/site/apps/nlnet/content3.aspx?c=pvI1IkNWJqE&b=5657917&ct=8>
- American Foundation for the Blind (2010). Landmark technology access bill heads to president Obama's Desk. Retrieved October 6, 2010, from <http://www.afb.org/Section.asp?DocumentID=5318>
- American Foundation for the Blind (2010). President Obama signs historic technology access bill. Retrieved November 14, 2010, from <http://afb.org/Section.asp?SectionID=47>
- American Foundation for the Blind (2010). Technology policy. Retrieved January 26, 2010, from <http://www.afb.org/Section.asp?SectionID=3&TopicID=135&Mode=Print>
- American Foundation for the Blind (2008). Key Definitions of statistical terms. Retrieved January 17, 2012, from <http://www.afb.org/Section.asp?SectionID=15&DocumentID=1280&Mode=Print>
- American Foundation for the Blind (2009). Access Awards. Retrieved January 20, 2012, from <http://www.afb.org/Section.asp?SectionID=28&TopicID=236>

- American Printing House for the Blind (2009). An overview of federal quota. Retrieved April 2, 2010 from <http://www.aph.org/fedquotpgm/fedquota.htm>
- American Printing House for the Blind (n.d.). The Chafee Amendment. Retrieved May 9, 2012 from <http://www.aph.org/louis/reposchaf.html>
- Anderson-Inman, L. & Reinking, D. (1998). Learning from text in a post-typographic world. In C. Hynd, S.A. Stahl, M. Carr, & S.M. Glynn (Ed.), *Learning from text across conceptual domains* (pp. 165-192). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Association of Science Technology Centers (n.d.). Accessible Practices, Best Practices, Audio Description. Retrieved from <http://www.astc.org/resource/access/medad.htm>
- Bauder, D. K. (1999). *The use of assistive technology and the assistive technology training needs of special education teachers in Kentucky schools* (Doctoral dissertation). Doctoral dissertation retrieved from Proquest Dissertation and Thesis database. (Publication No. AAT 9957018.)
- Blackhurst, A.E. (1997). Perspectives on technology in special education. *Teaching Exceptional Children*, 29(5), 41-48.
- Blackhurst, A.E. & Edyburn, D.L. (2000). A brief history of special education technology. *Special Education Technology Practice*, 2(1), 21-36.
- Bonk, C. J. (2009). *The world is open: How Web technology is revolutionizing education*. San Francisco, CA: Jossey-Bass.
- Boslaugh, S. & Watters, P. A. (2008). *Statistics in a nutshell*. Sebastopol, CA: O'Reilly Media, Inc.
- Bowe, F. (2000). *Universal design in education: teaching nontraditional students*. Westport, CT: Gergin & Garvey.
- Bryant, M.T. (2004). *The portable dissertation advisor*. Thousand Oaks, CA: Corwin Press.
- Burton, D. (2008). TV or not TV: The accessibility of digital television converter boxes. *AccessWorld*, 9(6). Retrieved from

<http://www.afb.org/afbpress/pub.asp?DOCID=aw090602>

Cassin, B. (Ed.) (2001) *Dictionary of Eye Terminology* (4th edition ed.). Gainesville, FL: Triad Publishing Company.

CAST (n.d.). *About UDL*. Retrieved May 15, 2012, from <http://cast.org/udl/index.html>

Center for Universal Design (n.d.). Introduction to universal design: Definition. Retrieved February 14, 2012, from http://www.ncsu.edu/project/design-projects/sites/cud/content/UD_intro.html

Centers for Disease Control and Prevention (2008). National center for health statistics 2008 provisional report. Retrieved November 22, 2009 from <http://www.cdc.gov/nchs/about.htm>

Chiari, A. (2004). Ten things TLs should know about video description. [Article]. *Teacher Librarian*, 32(1), 35-35.

Coalition of Organizations for Accessible Technology (2010, October). COAT national affiliate gets \$2.5 million dollar grant to provide video description. Retrieved November 14, 2010, from <http://www.coataccess.org/node/9916>

Coded videos for the blind or deaf. (1993). *New Scientist*, 139(1888), 18.

Collins, A. & Halverson, R. (2009). *Rethinking education in the age of technology: The digital revolution and schooling in America*. New York, NY: Teachers College Press.

Cone, J. D. & Foster, S. L. (2006). *Dissertations and theses from start to finish* (2nd ed.). Washington: American Psychological Association.

Connell, B. R., Jones, M., Mace, R., Mueller, J., Mullick, A., Ostroff, E., Sanford, J., Steinfeld, E. Story, M. & Vanderheiden, G. (1997). Principles of universal design. NC State University: Center for Design. Retrieved February 8, 2012 from <http://www.ncsu.edu/project/design-projects/udi/center-for-universal-design/the-principles-of-universal-design/>

Corn, A. L., & Wall, R. S. (2002). Access to multimedia presentations for students with visual impairments. *Journal of Visual Impairment & Blindness*, 96(4), 197.

Council for Exceptional Children (Ed.). (2005). *Universal Design for Learning: A guide*

- for teachers and education professionals*. Arlington, VA: Pearson Merrill Prentice Hall.
- Cronin, B. J. & King, S. R. (1990). The development of the descriptive video service. *Journal of Visual Impairment & Blindness*, 84(10), 503-506.
- Cugnini, A. (2009). Digital audio for DTV. *Broadcast Engineering*, 51(2), 24-28.
- Cureton, E. (1971). The stability coefficient. *Education and Psychological Measurement*, 31, 45-55.
- Deaf Network (2010, June). Walt Disney World unveils new outdoor audio description produced by WGBH. Retrieved November 16, 2011 from <http://deafnetwork.com/wordpress/blog/2010/06/28/walt-disney-world-unveils>
- Described and Captioned Media Program (2011, October). NAD Wins government grant to ensure equal educational opportunity for 1.5 million students who are deaf and/or blind. Retrieved January 18, 2012, from <http://www.dcmp.org/About/News.aspx>
- Described Captioned Media Program (2009, April). DCMP survey of educators reveals great potential for described video. Retrieved January 1, 2010 from <http://www.dcmp.org/caai/nadh241.pdf>
- Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method*. New York, NY: John Wiley & Sons, Inc.
- Edwards, B. J., & Lewis, S. (1998). The use of technology in programs for students with visual impairments in Florida. *Journal of Visual Impairment & Blindness*, 92(5), 302-312.
- Edyburn, D. L. (2010). Would you recognize universal design for learning if you saw it? Ten propositions for new directions for the second decade of UDL. *Learning Disability Quarterly*, 33(1), 33-41.
- Eisner, A. (2000). The BBC drives a digital transition. *World Broadcast Engineering*, 23(10), 22.
- Ely, R. W., Emerson, R. W., Maggiore, T., Rothberg, M., O'Connell, T., & Hudson, L. (2006). Increased content knowledge of students with visual impairments as a

- result of extended descriptions. *Journal of Special Education Technology*, 21((3)).
- Federal Communication Commission Consumer Advisory. Video descriptions and digital television transition. Retrieved January 12, 2012, from www.fcc.gov/guides/video-descriptions-and-digital-television-transition
- Fels, D. I., Udo, J. P., Diamond, J. E., & Diamond, J. I. (2006). A comparison of alternative narrative approaches to video description for animated comedy. *Journal of Visual Impairment & Blindness*, 100(5), 295-305.
- Ferrell, K. A., Megan, F. & Monson, M. (2006). Meta-Analysis of the descriptive video literature: Technical report. In American Foundation for the Blind (Ed.), (pp. 29). New York, NY: American Foundation for the Blind.
- Ferrell, K. A. & Siller, M. A. (2008). Description Key Retrieved April 2, 2010, from <http://www.afb.org/Section.asp?SectionID=44&TopicID=338&DocumentID=4032&Mode>
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Fink, A. (2009). *How to conduct surveys: A step-by-step guide* (4th ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Fink, A. (2003). *How to design survey studies* (Vol. 6). Thousand Oaks: Sage Publications.
- Fink, A. (1995). *How to analyze survey data*. Thousand Oaks: Sage Publications.
- Finley, R. (1999). Survey Monkey, from SurveyMonkey.com LLC.
- Flores, M. (2008). Universal design in elementary and middle school: Designing classrooms and instructional practices to ensure access to learning for all students. *Childhood Education*, 84(4), 224.
- Fowler, F. J. (1995). *Improving survey questions: Design and evaluation* (Vol. 38). Thousand Oaks, CA: Sage Publications.
- Fowler, F. J. (2009). *Survey research methods*. Thousand Oaks, CA: Sage Publications, Inc.

- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Glass, G. & Hopkins, K. D. (1996). *Statistical methods in education and psychology* (3rd ed.). Needham Heights, MA: Simon & Schuster Company.
- Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age. *Educational Researcher*, 38(4), 246-259.
- Hambelton, R. K. (1984). Validating test scores. In R.A. Berk (Ed.), *A guide to criterion-referenced test construction*. Baltimore, MD: The Johns Hopkins University Press.
- Hasselbring, T. S. & Williams-Glaser, C. H. (2000). Use of computer technology to help students with special needs. *The Future of Children*, 10(2), 102-122.
- Hatlen, P. (2000). Historical perspectives. In M. C. Holbrook, A.J. Koenig (Ed.), *Foundations of education: History and theory of teaching children and youths with visual impairments* (Vol. I, pp. 1-54). New York: AFB Press.
- Hitchcock, C. (2001). Balanced instructional support and challenge in universally designed learning environments. *Journal of Special Education Technology*, 16(4), 23-30.
- Hitchcock, C., Meyer, A., Rose, D., & Jackson, R. (2002). Providing New Access to the General Curriculum. [Article]. *Teaching Exceptional Children*, 35(2), 8.
- Hoffner, H., Baker, E., & Quinn, K. B. (2008). Lights, cameras, pencils! Using descriptive video to enhance writing. *Reading Teacher*, 61(7), 576-579. doi: 10.1598/rt.61.7.8
- Holbrook, M.C. & Koenig, A.J. (2000). Basic techniques for modifying instruction. In M. C. Holbrook, A.J. Koenig (Ed.), *Foundations of education: Instructional strategies for teaching children and youths with visual impairments* (Vol. II, pp. 173-195). New York: AFB Press.
- Huebner, K.M. (2000). Visual Impairment. In M. C. Holbrook, A.J. Koenig (Ed.), *Foundations of education: History and theory of teaching children and youths with visual impairments* (Vol. I, pp. 55-76). New York: AFB Press.

- Hume, D. (2011). *Assistive technology use by Kentucky students with visual impairments*. (Unpublished doctoral dissertation, University of Louisville, Louisville, KY).
- Hutinger, P.L., Johanson, J. & Stoneburner, R. (1996). Assistive technology applications in educational programs of children with multiple disabilities: A case study report on the state of the practice. *Journal of Special Education Technology*, 13, 16-35.
- Hynd, C. (1998). *Learning from text across conceptual domains*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Individuals with Disabilities Education Improvement Act, 20 U.S.C. Sec.1400 et. seq. (2004).
- Joffee, E. (1994). The ADA and public schools. *Journal of Visual Impairment & Blindness*, 88(3), 6-7.
- Johnstone, C., Thurlow, M., Altman, J., Timmons, J., & Kato, K. (2009). Assistive technology approaches for large-scale assessment: Perceptions of teachers of students with visual impairments. *Exceptionality*, 17(2), 66-75. doi: 10.1080/09362830902805756
- Kaku, M. (2011). *Physics of the future*. New York, NY: Random House, Inc.
- Kapperman, G., Sticken, J., & Heinze, T. (2002). Survey of the use of assistive technology by Illinois students who are visually impaired. *Journal of Visual Impairment & Blindness*, 96(2), 106-108.
- Kelly, S.M. (2008). *Correlates of assistive technology use by students who are visually impaired in the U.S.: Multilevel modeling of the special education elementary longitudinal study (Doctoral dissertation)*. Northern Illinois University, Illinois.
- Kelly, S. M., & Smith, D. W. (2011). The impact of assistive technology on the educational performance of students with visual impairments: A synthesis of the research. *Journal of Visual Impairment & Blindness*, 105(2), 73-83.
- Lewis, S. & Allman, C. B. (2000). Educational programming. In M.C. Holbrook, A.J. Koenig (Ed.), *Foundations of education: History and theory of teaching children and youths with visual impairments* (Vol. I, pp. 218-259). New York: AFB Press.

- Litwin, M.S. (2003). *How to assess and interpret survey psychometrics*. Thousand Oaks, CA: Sage Publications.
- Lueck, A. H., Dote-Kwan, J., & Senge, J. C. (2001). Selecting assistive technology for greater independence. *RE:view*, 33(1), 21-33.
- Mace, R. L. (1998). A perspective on universal design. NC State University: Center for Design. Retrieved February 8, 2012 from <http://www.ncsu.edu/project/design-projects/udi/ronald-l-mace-last-speech/>
- Martin, H. (2000). FCC Update. *Broadcast Engineering*, 42(1), 34.
- Martin, H. C. (2000). New FCC rules for descriptive programming. *Broadcast Engineering*, 42(11), 22.
- Martin, H. C. (2002). Powell offers plan to spur DTV transition. *Broadcast Engineering*, 44(6), 24.
- Media Access Group at WGBH (n.d.). Descriptive narration for TV, films and web-based video, p. 2. PDF retrieved January 10, 2012, from http://main.wgbh.org/wgbh/pages/mag/pdfs/wgbh_descriptive_narration.pdf
- Media Access Group at WGBH (n.d.). Captioning and video description for the web, p. 2. PDF retrieved January 10, 2012 from http://main.wgbh.org/wgbh/pages/mag/pdfs/marketing_web.captioning.pdf
- McGuire, J., Scott, S. & Shaw, S. (2006). Universal design and its application in educational environments. *Remedial and Special Education*, 27, 166-175.
- McKenzie, A. R., & Lewis, S. (2008). The role and training of paraprofessionals who work with students who are visually impaired. *Journal of Visual Impairment & Blindness*, 102(8), 459-471.
- McNulty, T. (1996). Descriptive video service (DVS) makes television programming and video available to the blind and visually impaired viewers. *Library High Tech News*, 132, 15.
- Menlove, M. & Hammond, M. (1998). Meeting the demands of ADA, IDEA, and other disability legislation in the design, development, and delivery of instruction. *Journal of Technology and Teacher Education*, 6(1), 75-85.

- Meyer, A., & Rose, D. H. (2000). Universal design for individual differences. *Educational Leadership*, 58(3), 39.
- National Center for Accessible Media (2000, April). Implementing DTV closed captioning and video description. Paper presented at the NAB Broadcast Engineering Conference. Abstract retrieved from http://ncam.wgbh.org/invent_build/analogue/dtv-access-a-resource-site-for/implementing-dtv
- National Center for Accessible Media (2008, June). Digital television and video description: Service continues, consumer and industry efforts required. Paper retrieved January 12, 2012, from http://ncam.wgbh.org/invent_build/analogue/dtv-access-a-resource-site-for/
- National Center for Accessible Media (2010, June). Disney unveils first-of-its-kind outdoor audio description technology for guests with disabilities. Retrieved January 10, 2012, from <http://ncam.wgbh.org/about/news/disney-unveils>
- National Center for Accessible Media (2010, November). Press “5” to hear more of Toy Story 3. Retrieved January 10, 2012, from <http://ncam.wgbh.org/about/news/press-5-to-hear-more-of-toy-st>
- National Library Service for the Blind and Physically Handicapped (n.d.) Copyright law amendment, 1996. Retrieved May 9, 2012 from <http://www.loc.gov/nls/reference/factsheets/copyright.html>
- Nunnally J.C. & Bernstein, I. H. (1994). *Psychometric Theory* (Third ed.). New York, NY: McGraw-Hill, Inc.
- Packer, J. & Kirchner, C. (1997). *Who's watching: A profile of the blind and visually impaired audience for television and video*. New York: American Foundation for the Blind.
- Parker, S., Buckley, W., & Truesdell, A. (1990). Barriers to the use of assistive technology with children: A survey. *Journal of Visual Impairment & Blindness*, 84, 532-533.
- Patton, J.R., Blackbourn, J.M. & Fad, K. (1996). *Exceptional individuals in focus*. Englewood Cliffs: Prentice-Hall, Inc.

- Peters, T., & Bell, L. (2006). Audio description adds value to digital images. *Computers in Libraries*, 26(4), 26-28.
- Pfanstiehl, M. (1997). Accessible opera for blind and low-vision audiences. *The American Music Teacher*, 46(6), 30.
- Piety, P. J. (2003). *Audio description, a visual assistive discourse: An investigation into language used to provide the visually disabled access to information in electronic texts*. Dissertation, Georgetown University, Washington D.C.
- Piety, P. J. (2004). The language system of audio description: An investigation as a discursive process. *Journal of Visual Impairment & Blindness*, 98(8), 453-469.
- Pisha, B., & Coyne, P. (2001). Smart from the start. *Remedial & Special Education*, 22(4), 197.
- Pisha, B., & Stahl, S. (2005). The promise of new learning environments for students with disabilities. *Intervention in School & Clinic*, 41(2), 67-75.
- Presley, I. & D'Andrea, F.M. . (2008). *Assistive technology for students who are blind or visually impaired: A guide to assessment*. New York, NY: AFB Press.
- Riccobono, M. A. (2012). Action required: Are your kids using technology in school? *Future Reflections*, 31(1), 1-6.
- Richert, M. (2012). The Twenty-first century communications and video accessibility act: Highlights of a new landmark communications law. *AccessWorld*, 13, (1). Retrieved from <http://www.afb.org/afbpress/pub.asp?DOCID=aw130104>
- Rose, D. H. (2001). Universal design for learning: deriving guiding principles from networks that learn. *Journal of Special Education Technology*, 16(2), 66-67.
- Rose, D. H. (2000). Universal design for learning. *Journal of Special Education Technology*, 15(1), 67-70.
- Rose, D.H. & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*. Alexandria, VA: ASCD.
- Rose, D. & Meyer, A. (2000). Universal design for learning. *Journal of Special*

Education Technology, 15 (1), 67-70.

- Rovinelli, R.J. & Hambleton, R.K. (1977). On the use of content specialists in assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research*, 2, 49-60.
- Sapp, W. (2009). Universal design: Online educational media for students with disabilities. *Journal of Visual Impairment & Blindness*, 103(8), 495.
- Schmeidler, E., & Kirchner, C. (2001). Adding audio description: Does it make a difference? *Journal of Visual Impairment & Blindness*, 95(4), 197-212.
- Schreier, E. M. (1990). The future of access technology for the blind. *Journal of Visual Impairment & Blindness*, 84(10), 520-523.
- Schroeder, P. & Richert, M. (2011). *The Twenty-first century communications and video accessibility act: Summary of the landmark new law*. Paper presented at the AERBVI, Cleveland, OH.
- Schrum, L. & Lewis, B.B. (2009). *Leading 21st century schools: Harnessing technology for engagement and achievement*. Thousand Oaks, CA: Corwin.
- Scott, S.S., McGuire, J.M. & Shaw, S.F. (2001). *Principles of universal design for instruction*. Storrs: University of Connecticut, Center on Postsecondary Education and Disability.
- Smith, D. W., Kelley, P., Maushak, N.J., Griffin-Shirley, N. & Lan, W.Y. (2009). Assistive technology competencies for teachers of students with visual impairments. *Journal of Visual Impairment & Blindness*, 457-469.
- Smith, T. E., Polloway, E.A., Patton, J.R. & Dowdy, C.A. (2001). *Teaching students with special needs in inclusive settings* (3rd ed.). Needham Heights, MA: A Pearson Education Company.
- Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. *Applied social research methods*. Thousand Oaks, CA: Sage.
- Tobias, J. (2003). Information technology and universal design: An agenda for accessible technology. *Journal of Visual Impairment & Blindness*, 97(10), 592-601.

- Topor, I. L., Holbrook, M. C., & Koenig, A.J. (2000). Creating and nurturing effective educational teams. In M. C. Holbrook & A.J. Koenig (Ed.), *Foundations of education: Instructional strategies for teaching children and youths with visual impairments* (Vol. II, pp. 3-26). New York: AFB Press.
- Trace Center. (2011). Availability of Visual Information. Retrieved December 23, 2011, from <http://trace.wisc.edu/docs/browser/>
- Turner, R. C., Mulvenon, S. W., Thomas, S. P. & Balkin, R. S. (2002, April 14). *Computing indices of item congruence for test development validity assessments*. Paper presented at the SUGI 27, Orlando, FL.
- Udo, J. P., & Fels, D. I. (2009). Suit the action to the word, the word to the action: An unconventional approach to describing Shakespeare's Hamlet. *Journal of Visual Impairment & Blindness*, 103(3), 178-183.
- United States Census Bureau (2007). Industry statistics sampler: NAICS 512131. Retrieved May 15, 2012, from <http://www.census.gov/econ/industry/geo/g512131.htm#>
- U.S. Department of Education (2010). Digest of educational statistics. Retrieved March 17, 2012, from <http://nces.ed.gov/fastfacts/display.asp?id=64>
- U.S. Department of Education (n.d.). Building the legacy: IDEA 2004. Retrieved May 9, 2012, from <http://idea.ed.gov/>
- U.S. Department of Justice (2005). A Guide to Disability Rights Laws. Retrieved November 11, 2007, from <http://www.usdoj.gov/crt/ada/publicat.htm>
- Vanderheiden, G. C. (2000). *Fundamental principals and priority setting for universal usability*. Paper presented at the Proceedings of the 2000 Conference on Universal Usability, New York, NY.
- Vanderheiden, G. C. (2007). Redefining assistive technology, accessibility and disability based on recent technical advances. *Journal of Technology in Human Services*, 25(1/2), 147-158. doi: 10.1300/J017v25ri01-10

- Video Description Research and Development Center (2012, January 24). Bringing video description into the 21st century [Webinar]. Retrieved March 7, 2012, from <http://www.webinarsdcmp.org/>
- VPAAC WG2-Video Description (2012). DBS Tutorial Document. Retrieved January 11, 2012, from <http://vpaac2.wikispaces.com/home>
- Ward, M. (2000). The visual system. In M. C. Holbrook & A.J. Koenig (Ed.), *Foundations of education: History and theory of teaching children and youths with visual impairments* (Vol. I, pp. 77-110). New York, NY: AFB Press.
- Weisen, M. (1992). Audio description on television: New prospects for Europe. *New Beacon*, 76(898), 206-209.
- Wells, J. & Lewis, L. (2006). Internet access in U.S. public schools and classrooms: 1994-2005: National Center for Education Statistics, U.S. Department of Education.
- Wright, P. W., Wright, P. D. & Heath, S. W. (2009). *Wrightslaw: No Child Left Behind*. Hartfield, VA: Harbor House Law Press, Inc.
- Wright, W. D. & Wright, P. D. (2006). *Wrightslaw: Special education law* (2nd ed.). Hartfield, VA: Harbor House Law Press, Inc.

LISTING OF APPENDICES

- Appendix A Perceptions of U.S. Teachers of the Visually Impaired on Commercially-produced, Described Video within Educational Multimedia: Survey
- Appendix B Invitation Email to Participants
- Appendix C Follow-up Email to Participants
- Appendix D Email to Instrument Validation Focus Group
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APPENDIX A

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

Preamble

1. Dear Teacher of the Visually Impaired:

You are being invited to participate in a research study by answering the attached survey about commercially-produced, described video within educational multimedia. Videos within educational multimedia often include curricular information that is only accessible to students who have enough vision to effectively see the visual images. Visual information related to facial expressions, action, and setting may be present in videos, but may not be independently accessible for students with visual impairments, unless the video contains description. This survey will ask for your personal opinion on commercially-produced, described video and its educational use for students who are blind.

Your identity will not be asked for participation of this study and this will help assure your anonymity. There are no known risks for your participation in this research study. The information collected may not benefit you directly. The information learned in this study may be helpful to others. The information you provide will help explain TVI opinions regarding described video and how these opinions may relate to the recommendation of described video for students with visual impairments. Your completed survey will be stored in a secured computer locked in the researcher's office. The survey will take approximately 15 minutes of your time to complete.

Individuals from the Department of Teaching and Learning, College of Education and Human Development, the Institutional Review Board (IRB), the Human Subjects Protection Program Office (HSPPPO), and other regulatory agencies may inspect these records. In all other respects, however, the data will be held in confidence to the extent permitted by law. Should the data be published, your identity will not be disclosed.

Taking part in this study is voluntary. By completing this survey you agree to take part in this research study. You do not have to answer any questions that make you uncomfortable. You may choose not to take part at all. If you decide to be in this study you may stop taking part at any time. If you decide not to be in this study or if you stop taking part at any time, you will not lose any benefits for which you may qualify.

If you have any questions, concerns, or complaints about the research study, please contact: Dr. Thomas Simmons, 502-852-0569 or Dr. Debra Bauder, 502-852-0564.

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

If you have any questions about your rights as a research subject, you may call the Human Subjects Protection Program Office at (502) 852-5188. You can discuss any questions about your rights as a research subject, in private, with a member of the Institutional Review Board (IRB). You may also call this number if you have other questions about the research, and you cannot reach the study doctor, or want to talk to someone else. The IRB is an independent committee made up of people from the University community, staff of the institutions, as well as people from the community not connected with these institutions. The IRB has reviewed this research study.

If you have concerns or complaints about the research or research staff and you do not wish to give your name, you may call 1-877-852-1167. This is a 24 hour hot line answered by people who do not work at the University of Louisville.

By checking yes, I understand these terms and agree to participate:

☐ Yes

Explanations of Terms Used in Survey

Described Video- for the purpose of this study's survey, it refers to a commercially-produced video with integrated description for the visually impaired. Commercially-produced described videos are available in the traditional product form of DVDs, streamed videos, or videos within other educational multimedia sources. Commercially-produced described videos may be available through educational media companies.

Educational Multimedia- refers to educational internet sites, computer-based learning or assessment software programs, electronic books, television or traditional digital video discs (DVDs) which contain video images within its content.

"Knowledge" of described video- refers to general, working knowledge of described video that may have been obtained through teacher resources, training or use of described video.

"Use" of described video- refers to one's use of described video with students who are visually impaired or blind in educational settings.

"Support" of described video- refers to one supporting, favoring, or advocating the use of described video for students with visual impairments in educational settings.

"Recommendation" of described video- refers to one's professional recommendation of described video when appropriate for a student's specially-designed instruction or educational program.

Directions

Please answer all questions to the best of your knowledge. Thank you for your valued answers and opinions.

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

Demographics

2. Are you currently a certified Teacher of the Visually Impaired (TVI), employed in a K-12 academic school setting in the United States?

- ☐ Yes
☐ No

3. Which type of school are you currently employed in?

(Check only one. If more than one applies, then please select the one in which you spend the majority of your time.)

- ☐ School for the blind
☐ Public school
☐ Other school (i.e., Charter school, Private school, Parochial school, Alternative school...)

Other (please specify)

4. How many total years have you been employed as a TVI?

- ☐ 0-5 years
☐ 6-10 years
☐ 11-15 years
☐ 16-20 years
☐ 21-25 years
☐ 26 or more years

5. What is your highest level of education?

- ☐ Bachelor's degree
☐ Master's degree
☐ Doctorate degree

Knowledge of Described Video

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

***6. Please check any of the following resources that have helped you gain knowledge of commercially-produced, described video.**

☐ Described & Captioned Media Program (DCMP)

☐ WGBH's "Teacher's Domain"

☐ Other

Other (please specify)

7. For each above resource checked how much knowledge of described video did you gain?

	NA	No Knowledge	Very Little Knowledge	Little Knowledge	Some Knowledge	A lot of Knowledge
Described and Captioned Media Program (DCMP)	☐	☐	☐	☐	☐	☐
WGBH's Teacher's Domain	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐

8. Please check any of the following trainings for using commercially-produced, described video in which you have participated.

☐ University class

☐ Colleagues

☐ Professional conference

☐ Educational Media Companies/Vendors

☐ School Inservice

☐ Online Webinars

☐ Professional books or journals

☐ Other

Other (please specify)

9. From the above trainings, how much knowledge of described video did you gain?

	NA	No Knowledge	Very Little Knowledge	Little Knowledge	Some Knowledge	A lot of Knowledge
University Class	☐	☐	☐	☐	☐	☐
Professional Conference	☐	☐	☐	☐	☐	☐
School Inservice	☐	☐	☐	☐	☐	☐
Professional Books/Journals	☐	☐	☐	☐	☐	☐
Colleagues	☐	☐	☐	☐	☐	☐
Educational Media Companies/Vendors	☐	☐	☐	☐	☐	☐
Online Webinars	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

10. What is your overall knowledge of commercially-produced, described video?

☐ No Knowledge
 ☐ Very Little Knowledge
 ☐ Little Knowledge
 ☐ Some Knowledge
 ☐ A lot of Knowledge

Personal Use of Described Video

11. Have you used described video with your students with visual impairments?

☐ Yes
☐ No

12. How frequently have you used described video with your students?

☐ Never
 ☐ Yearly
 ☐ Monthly
 ☐ Weekly
 ☐ Daily

13. Of your students who might benefit from described video, what percentage use it?

☐ 0-20%
 ☐ 21-40%
 ☐ 41-60%
 ☐ 61-80%
 ☐ 81-100%

Personal Experience with Support of Described Video

14. How much do you personally support the use of described video for students with visual impairments?

☐ Never Support
 ☐ Rarely Support
 ☐ Sometimes Support
 ☐ Frequently Support
 ☐ Always Support

15. How much do other teachers (i.e., regular education teachers or resource teachers who provide curricular instruction for your students) support the use of described video?

☐ Never Support
 ☐ Rarely Support
 ☐ Sometimes Support
 ☐ Frequently Support
 ☐ Always Support
 ☐ N/A

16. How much do library media specialists or librarians who work in your schools support the use of described video for your students?

☐ Never Support
 ☐ Rarely Support
 ☐ Sometimes Support
 ☐ Frequently Support
 ☐ Always Support
 ☐ N/A

17. Does your school administration (i.e., principals, superintendent...) support the use of described video with your students?

☐ Never Support
 ☐ Rarely Support
 ☐ Sometimes Support
 ☐ Frequently Support
 ☐ Always Support

Perceptions of U.S. Teachers of the Visually Impaired on Commercially-

18. How would you rate the support of described video by educational media companies through its commercial availability?

Never Support	Rarely Support	Sometimes Support	Frequently Support	Always Support
☐	☐	☐	☐	☐

Professional Recommendation of of Described Video

19. How often do you recommend described video to meet the special access needs of your students with visual impairments and blindness?

Never	Rarely	Sometimes	Frequently	Always
☐	☐	☐	☐	☐

Additional Comments

20. Thank you for taking the time to complete this survey. If you have additional comments about this survey's questions or topic, please add any comments here:

APPENDIX B

Invitation Email to Participants

Dear TVI Colleague:

Are you interested in accessible technology products which provide independent access to educational curriculum for your students who are blind? I am a doctoral student at the University of Louisville conducting a study with Principal Investigator, Dr. Debra Bauder, on TVIs' perceptions of described video within educational multimedia and how they relate to their recommendations of described video for students with visual impairments. If you are currently employed in the United States as a TVI in a school setting, then I'd like to invite you to give your personal opinion on this topic.

This simple survey will only take a few minutes of your time and your feedback will be a valuable addition to my research. The survey will not ask for your identity and will help assure your anonymity. Thank you for your willingness to contribute to research for accessible educational curriculum for students with visual impairments. Please click on the link below to begin the survey.

(Survey Link)

Sincerely,

Lori

Lori A. Johnson, M.A.T., TVI

lajohn01@louisville.edu

(502) 386-2785

Debra Bauder, Ed.D, Principal Investigator

Debra.bauder@louisville.edu

(502) 852-0564

APPENDIX C

Follow-up Email to Participants

Dear TVI Colleague:

Last week, I sent an email asking TVIs who are currently employed in a school setting to complete a survey about TVIs' opinions regarding described video within educational multimedia for students who are blind. Your opinion is very important for this research study conducted by Dr. Bauder, Principal Investigator, and myself at the University of Louisville..

If you haven't already participated, please take a few minutes to complete this easy survey. Your help is truly appreciated! Please follow the link below to the quick survey.

(Survey link)

Thanks again,

Lori

Lori A. Johnson, M.A.T., TVI

lajohn01@louisville.edu

(502) 386-2785

Debra Bauder, Ed.D, Principal Investigator

debra.bauder@louisville.edu

(502) 852-0564

APPENDIX D

Email to Instrument Validation Focus Group

Dear Friend & Colleague,

As you already know, I have been busy working on my dissertation research study, Perceptions of U.S. Teachers of the Visually Impaired on Commercially-produced Described Video within Educational Multimedia. I am getting ready to send out a survey to U.S. TVIs and collect their opinions about described video within an educational setting. As part of the research process, I am implementing a focus group to help validate the survey items. For this group/panel, I have selected experts in our field who are familiar with both described video and general research practices for students with visual impairments.

You are being invited to participate in my focus group to help validate my survey questions, as they relate to their objectives. Participation will be very simple. I will ask you to fill out a short, one-time, online survey. It shouldn't take more than 15 minutes to complete and your feedback will be extremely valuable in my study's process.

Thank you again for volunteering. Please follow this link to start the focus group survey:

<https://www.surveymonkey.com/s.aspx>

This link is uniquely tied to this survey and your email address. Please do not forward this message. Thanks for your help and participation!

Lori

Lori A. Johnson
Doctoral Candidate & NCLVI Fellow
University of Louisville
lajohn01@louisville.edu
(phone number)

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.

<https://www.surveymonkey.com/optout.aspx>

APPENDIX E

Follow-up Email to Instrument Validation Focus Group

Dear Friend and Colleague,

Hello again. Last week, I sent you an invitation to complete a brief questionnaire as a member of an expert panel for my dissertation study, *Perceptions of Teachers of the Visually Impaired on Commercially-produced, Described Video within Educational Multimedia*. I would really appreciate your feedback as part of my survey instrument's validation process.

If you haven't already done so, please go to the following *SurveyMonkey* link to complete the focus group questionnaire:

[SurveyLink]

Thank you for your help!

Sincerely,

Lori

Lori A. Johnson
Doctoral Candidate & NCLVI Fellow
University of Louisville

Please note: If you do not wish to receive further emails from us, please click the link, and you will be automatically removed from our mailing list. [RemoveLink]

CURRICULUM VITAE

LORI GREENLEE JOHNSON

Email:
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EDUCATION

Doctor of Philosophy - Degree expected August 2013
University of Louisville, Louisville, KY
Special Education, Emphasis in Visual Impairments and Educational Leadership

Master of Arts in Teaching - June 1999
University of Louisville, Louisville, KY
Elementary Education, K-5

Bachelor of Arts - June 1991
Bellarmino University, Louisville, KY
Major: Communications
Minor: Business Administration

International Studies - June 1990
Bellarmino University and Oxford University, Oxford, England
Business Administration

CERTIFICATION

Director of Special Education Certificate, Level II
Commonwealth of Kentucky

Teaching Exceptional Children, Visually Impaired, Grades Primary to 12, Rank I
Commonwealth of Kentucky

Teaching in Elementary School, Primary to Grade 5
Commonwealth of Kentucky

PROFESSIONAL WORK EXPERIENCE IN EDUCATION

Described Captioned Media Program, Spartanburg, SC

Consultant

2010

Consulted for described educational video program in the areas of marketing, public relations and educational outreach.

Kentucky School for the Blind (KSB), Louisville, KY

Teacher of the Visually Impaired (TVI), 2006 - 2010

Worked as a Vision Resource Teacher, K-12, responsible for Functional Vision Learning Media Assessments, Assistive Technology (AT) assessments, reading assessments, braille & AT instructional support for students and faculty. Served as case manager for Individual Education Programs, ARC meetings, KSB liaison for Jefferson County Public Schools. Served on KSB's Assistive Technology Team and Committee that developed and managed a school plan and budget for AT devices and grants.

Teacher of the Visually Impaired and Recreation Director, 2000 - 2005

Instructed students in center-based, grade 5 and visual arts and humanities, K-12.

Directed KSB's residential recreation program for students K-12 with visual impairments and multiple disabilities. Responsible for the recreation programs' programming and management and the supervision and evaluation of its staff. Served on KSB's school climate committee.

University of Louisville, Louisville, KY

Grant Associate

2005 - 2006

Designed a *Blackboard* platformed distance education course, *Assistive Technology for Teachers of the Visually Impaired*. Assisted professors with special education projects. Reviewed textbooks for the Kentucky Accessible Materials Resource Consortium (KAMC).

Huntington Learning Center, Louisville, KY

Teacher

1999 - 2000

Worked as language arts and mathematics instructor. Conducted reading and academic assessments.

PROFESSIONAL INTERNSHIP EXPERIENCE

Kentucky School for the Blind, Louisville, KY

Director of Special Education Intern

2006 - 2007

Conducted monitoring and regulatory compliance checks for KCMP submission. Worked with ARC direction and transition planning for students with visual impairments and other disabilities. Successfully completed training for directing special education programs under IDEA 2004.

Oldham County Public Schools, LaGrange Elementary, LaGrange, KY

1998 - 1999

Student Teacher

Instructed kindergarten students in core curriculum. Engaged in professional development related to regular education, diversified instruction and high stakes assessments.

Jefferson County Public Schools, Wheeler Elementary, Louisville, KY

1998 - 1999

Student Teacher

Instructed students, grades 4 and 5, in core curriculum. Engaged in professional development related to regular education, diversified instruction and high stakes assessments.

AWARDS

National Center for Leadership in Visual Impairment (NCLVI) Doctoral Fellowship awarded by the U.S. Department of Education, Office of Special Education Programs (OSEP) Cooperative Agreement H325U040001.

2005 - 2009

PROFESSIONAL AFFILIATIONS

The Association for Education and Rehabilitation of the Blind and Visually Impaired (AERBVI), Technology Division

2002 - present

Kentucky Education Association

2000 - 2010

California Transcribers and Educators of the Visually Handicapped (CTEVH)

2009 - 2010

The International Council for Education of People with Visual Impairments (IECVI)

2006 - 2009

American Education Research Association (AERA)

2007 - 2009

North Oldham Lions Club
2006 -2007

PUBLICATIONS

WORKS IN PROGRESS

Johnson, L. (2013). *Perceptions of U.S. teachers of the visually impaired on commercially-produced, described video within educational multimedia*. Doctoral dissertation in preparation.

Video Description Research & Development Center (VDRDC), American Foundation for the Blind & Johnson, L. (2012, in preparation). Collaborative report for VDRDC.

PEER REVIEWED

Johnson, L. & Lawson, H. (2006). Teachers of visually impaired students as providers of related services? Supportive services versus specially designed instruction. *Journal of Visual Impairment & Blindness*, 100 (10), 595-596.

PROFESSIONAL PRESENTATIONS

Johnson, L., Siller, M.A. & Siu, Y.T. (2013). *TVI's, technology, and description as a teaching tool*. Presentation at Description Leadership Network, VDRDC Conference, Smith Kettlewell Eye Research Institute, San Francisco, CA.

Johnson, L. & Hume, D. (2009, March). *Partnering assessments for a student's IEP*. Poster presentation and discussion at K-AER state conference, Carrollton, KY.

Johnson, L. (2008, July). *Coping self-efficacy and social support as predictors of career success of professionals with visual impairments or blindness*. Poster presentation at the NCLVI Reception, Association of Education & Rehabilitation of the Blind & Visually Impaired International Conference, Chicago, IL.

Johnson, L. (2007, June). *Reel 'em in with podcasting*. Presentation at the University of Louisville's 2007 Summer Institute: Creating and Sustaining 21st Century Learning Communities, Louisville, KY.

Johnson, L. (2007, March). *Reel 'em in with podcasting*. Presentation at the Kentucky Teaching and Learning Conference sponsored by the Kentucky Department of Education, Louisville, KY.

PROFESSIONAL PROJECTS

VDRDC, Smith Kettlewell Eye Research Institute, WGBH National Center for Accessible Media (NCAM) & Johnson, L. (2013). Working member of the *Community of Practice for the Visual Impairment Research Agenda for Description (VIRAD)* group that created a prioritized agenda for quantitative research regarding digital description for the visually impaired. San Francisco, CA.

VDRDC, Smith Kettlewell Eye Research Institute & Johnson, L. (2012, July). Assisted with research focus group at American Council for the Blind conference, Louisville, KY.

Described & Captioned Media Program (DCMP) & Johnson, L. (2009, October). Served as representative for DCMP at the *National Media Market* for educational media, Lexington, KY.

American Foundation for the Blind & Johnson, L. (2008, July). Served on team for accessibility of distance learning for students who are blind.

West Ed & Johnson, L. (2007, May). Served on West Ed Bias Committee for high stakes assessments for Kentucky schools, Lexington, KY

Barnard, S., Freeland, A., Johnson, L. & Monson, M. (2007, July). *A meta-analysis of studies addressing transition and students with visual impairments*. Conducted for NCLVI, University Consortium and Public Advisory Council.

Lueck, A. & Johnson, L. (2006, November). Assessment and the Visually Impaired. Co-leader for a higher education online discussion board for NCLVI fellows and consortium members.