

IMPLICATIONS OF THE IMPLEMENTATION OF ACCESSIBLE INSTRUCTIONAL
MATERIALS FOR STUDENTS WITH PRINT-RELATED DISABILITIES IN
VIRGINIA: A DELPHI STUDY

by

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With Print-Related Disabilities in Virginia: A Delphi Study

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Doctor of Philosophy at George Mason University

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DEDICATION

This dissertation is dedicated to my amazing family; My Mom, Dad, and siblings, Deb, Brenda, Rick and Bill. Your love, laughter and unwavering support made it possible for me to persevere and get to the finish line. FINALLY!

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LIST OF ACRONYMS

Americans With Disabilities Act	ADA
Braille Ready Format	BRF
Closed Circuit Television	CCTV
Digital Accessible Information System	DAISY
Digital Talking Book	DTB
Free and Appropriate Public Education	FAPE
Individuals With Disabilities Education Act	IDEA
Individualized Education Plan	IEP
Instructional Materials Accessibility Act.....	IMAA
Local Education Agency	LEA
Least Restrictive Environment.....	LRE
National Instructional Materials Access Center	NIMAC
National Instructional Materials Accessibility Standard	NIMAS

ABSTRACT

IMPLICATIONS OF THE IMPLEMENTATION OF ACCESSIBLE INSTRUCTIONAL MATERIALS FOR STUDENTS WITH PRINT-RELATED DISABILITIES IN VIRGINIA: A DELPHI STUDY

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This study explored the implementation of a statewide program to provide accessible instructional materials (AIM) to students with print-related disabilities in Virginia. The reauthorization of the Individuals With Disabilities Education Act included provisions requiring local education agencies (LEAs) in each state to provide accessible instructional materials (AIM) to students with print-related disabilities in a timely manner. To meet this new requirement, the Virginia Department of Education (VDOE) funded a statewide library, AIM-VA. This study identified some of the advantages and challenges of providing AIM through a statewide program for the purpose of developing a framework for best practices. Using the Delphi technique a panel of 18 local and national experts in the field of AIM shared their expertise. The first round of this study consisted of interviews with local experts with direct experience with the AIM-VA project. Both local and national experts participated in the remaining three rounds

through a series of questionnaires aimed at building consensus regarding the advantages and challenges to providing AIM. In the last round, panelists recommended solutions to confirmed challenges. The results identified 40 advantages and 32 challenges. A few key advantages confirmed included the use of shared resources to provide a one-stop shop and the availability of just-in-time technical support. Key challenges included inconsistent policies at the local, state, and national levels and insufficient training to implement technology needed to support the use of AIM. A number of recommendations are provided to address the key challenges.

1. INTRODUCTION

Statement of the Problem

With the passage of the No Child Left Behind [NCLB] Act of 2001 (Pub. L. No. 107-110), all students, including those with disabilities, are expected to reach a minimum level of proficiency on a set of state academic achievement standards. The decision to include students with disabilities in these accountability standards has intensified the need to ensure that the general education accessible to all students (Stahl, 2004). The majority of materials used for instruction are print-based (textbooks, worksheets, and standardized assessments). These materials often create an unfair and substantial barrier for students with print-related disabilities. In fact, 80-90% of grades 4-12 math and science classrooms in the United States use textbooks (Hudson, McMahon, & Overstreet, 2002). How can students with disabilities be expected to meet general academic achievement standards if, because of their disabilities, they do not have access to the instructional materials that are used to teach these skills to their typically developing peers?

To address this issue, in 2004 Congress amended the Individuals With Disabilities Education Act (IDEA) (1997) to include provisions requiring local education agencies (LEAs) in each state to ensure that accessible instructional materials (AIM) are available, in a timely manner, to students with print-related disabilities (Access to Instructional

Materials Rule, 2007). Aud et al report that in the 2008-2009 school year, there were over six million children ages 6-21 receiving services under IDEA. Of those students approximately 75-80% would potentially benefit from accessible instructional materials (Aud et. al, 2010). This results in a costly and labor-intensive obligation for school systems.

As a relatively new special education policy initiative, there has been little information to guide states as they try to implement the new mandate for AIM. There is also a lack of model programs demonstrating the best practices in production and delivery of AIM, either at the local or state level. The stakes are high both for NCLB school accountability and for the right of students to access the general curriculum under IDEA. Failure to provide quality accessible instructional materials is likely to result in students not meeting the state academic standards therefore reducing their likelihood of graduating with a standard diploma. Having training and experience with accessible reading materials is also one of the foundations of postsecondary success, whether it be in education, work, or leisure activities that require access to print materials. Therefore, it is imperative that research in the area be conducted to ensure that all students with print-related disabilities have equal opportunity to succeed in school, employment, and the pursuit of happiness.

Background of the Problem

Holding students with disabilities to the same accountability and performance standards as their nondisabled counterparts is a significant accomplishment in the steady progression of disability policy in the United States that has laid the foundation to

provide accessible instructional materials. Beginning with what Bryant and Bryant (2003) call the era of access and era of empowerment, disability law has influenced the lives of persons with disabilities. One could say that An Act to Promote the Education of the Blind (1879) was the start of the era of access which lasted until the midcentury era of empowerment. That era spanned from the 1970s with the passage of laws such as the Rehabilitation Act of 1973 and Education for all Handicapped Children Act of 1975 to the end the 20th century. During that time federal policy significantly changed the lives of children and adults with disabilities. At the beginning of the 21st century federal policy has entered a new era of accountability, most evident with the 2001 reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965, commonly known as the No Child Left Behind Act. Across these eras, intertwined with disability rights legislation, were laws guiding the production of literary works in accessible formats for individuals with print-related disabilities, most notably An Act to Provide Books for the Adult Blind also known as the Pratt Smoot Act of 1931 (Pub. L. No. 71-787), and the Chafee Amendment to the Copyright Law in 1996 (Copyright Law Amendments, 1996). Disability law, combined with related copyright law, has played a vital role in establishing accessible instructional materials (AIM). A timeline of key legislation across the eras of accessibility, empowerment, and accountability is highlighted in Figure 1. Their significance is explained further in the literature review.

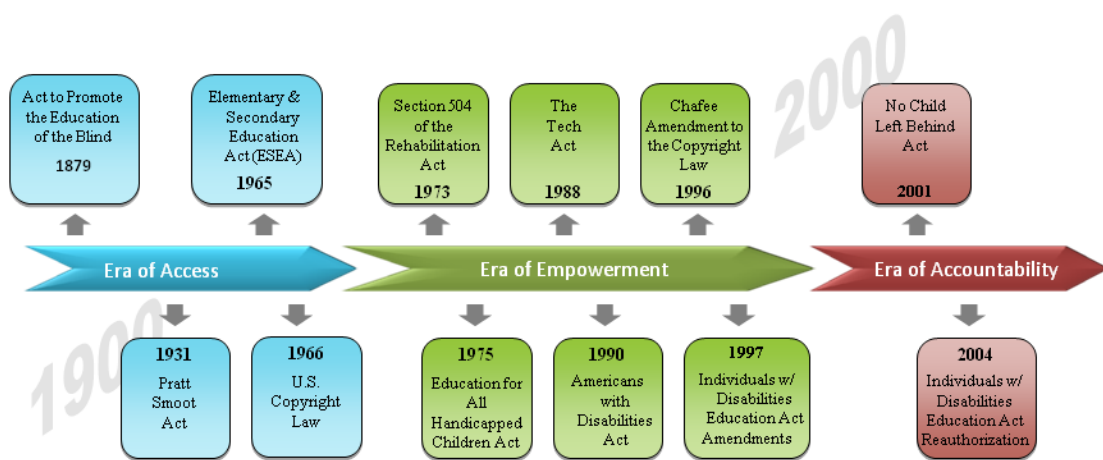


Figure 1. Legislative timeline of disability and related copyright law across three eras.

Inclusion of Students with Disabilities in Accountability

The inclusion of students with disabilities in the No Child Left Behind Act accountability standards was met with criticism across the political spectrum. Under NCLB, each state is required to develop content-based standards or standards of learning (SOL). States must also have an accountability system to measure whether students are making adequate yearly progress (AYP) toward the established standards, with the goal of all students meeting proficiency in reading and math by 2014 as measured by state tests. Schools which fail to meet AYP for two consecutive years face sanctions. Proponents of including students with disabilities in AYP believed that it was an opportunity to address the achievement gap between students with disabilities and general education students. Opponents argued that schools are unfairly punished for the

lack of achievement by students with disabilities, many of whom do not have access to the general curriculum (West, 2005).

Thurlow, Wiley, and Bielinsky (2003) found that an achievement gap exists between students with print-related disabilities and their nondisabled peers. Without timely accessible forms of instructional materials, students with print disabilities do not have the same opportunity to learn and cannot reasonably be held accountable for learning information for which they did not have access. Students with print-related disabilities may therefore not be able to meet the achievement standards required in NCLB, where not only may the materials used to learn the content and skills not be accessible, but the actual tests themselves may lack adequate accessibility.

Access to the General Curriculum

The reauthorization of the IDEA in 1997 with amendments addressed the issue of access to the general curriculum. It required that students with disabilities engage in the same grade-level academic activities with their peers, utilizing materials typically used in general education (Browder et al., 2007). Because the primary medium used to teach the curriculum is still through the use of print-based materials, lack of timely access to them can create significant obstacles to learning for students with print disabilities. Students with print-related disabilities include those who cannot see the words or images on a page; require enlarged, highlighted, or different colors of text and background; cannot turn pages due to a physical disability; or cannot decode the text due to an organic learning disability (Stahl, 2009). Unfortunately, few teachers have the time and expertise to adapt instructional materials to meet the diverse needs of their students (Stahl, 2002).

National Instructional Materials Accessibility Standard (NIMAS)

The reauthorization of IDEA in 2004 included a new provision requiring local education agencies (LEAs) in each state to provide AIM in a timely manner to students with print-related disabilities (Access to Instructional Materials Rule, 2007). It also recognized the challenge of creating accessible textbooks for all students who will need them. Therefore, lawmakers included specifications for a National Instructional Materials Accessibility Standard (NIMAS) in the legislation (IDEA, 2004a).

NIMAS is a technical standard developed in 2002 by a national panel of experts including publishers, educators, disability advocates, and technology experts. The provision requires publishers of textbooks and other instructional materials to create a NIMAS file for any publications from 2006 or later. With the use of conversion tools, the NIMAS files can easily be converted to an accessible format for students with print-related disabilities, including e-pub, DAISY, electronic Braille (.brf), Braille, electronic or hard copy large print, audio, or other e-text formats. IDEA 2004 also established the National Instructional Materials Access Center (NIMAC) in section 674(e). The NIMAC is a repository to house the files (IDEA, 2004b). Only authorized entities can access NIMAS files and convert them to the appropriate format.

Accessible Instructional Materials (AIM)

The Individuals With Disabilities Act defines accessible instructional materials as “print instructional materials that have been transformed into the specialized formats of braille, large print, audio, or digital text” (IDEA, 2004b). New assistive technology applications allow for access to content in printed books and other print materials in a

much more flexible and accessible medium. For students who cannot see the printed text or images, an electronic version can easily be converted to Braille (e.g., electronic braille ready files (.brf)), or voice with text descriptions of the images (e.g., electronic files). Students with limited vision may access content with large print or screen-enlarged electronic formats, voice with text and descriptions, and fully accessible spoken or enlarged text with navigation. For students with physical disabilities who cannot turn the pages of a hard-copy book, a digital book can provide virtual pages that can be turned through the use of a switch or other control device. Students who are unable to decode text due to an organic cognitive impairment or learning disability may have text that can be highlighted and read out loud or text that can incorporate picture symbols (Dalton, Pisha, Eagleton, Coyne, & Deysher, 2001).

These technology tools are not only available through the use of a desktop/laptop computer or specific assistive technology (AT) devices, but also on mobile technologies including smart phones and tablets. With the advent of e-books and the Internet, hard-copy books are starting to be replaced in schools even for the general population. For students with print-related disabilities, built-in accessibility features on computer and mobile devices provide access to the same content in a timely fashion. Thus, technology is moving the field of accessible instructional materials forward. As a result of the focus on accountability and technological advances, teachers are being tasked with understanding how to adapt existing instructional materials (hard copy or print) by either enlarging and digitizing them so that they can be used with assistive technologies, or supporting students with disabilities to use the built-in accessibility features of the

standard devices in order to access such formats as e-pubs. Access to textbooks from publishers in the form of NIMAS files allows for easy conversion into any format needed by the student regardless of the technology they use to access the text.

Challenges to the Implementation of AIM

The repository for textbooks in NIMAS format, the NIMAC, is designed to provide access to textbooks in an accessible format. However, lack of NIMAS files in the NIMAC and inconsistent or outdated eligibility requirements to use the NIMAC create a challenge to implementing AIM. For example, the NIMAC was not implemented until August 2006; many of the textbooks adopted by schools systems were published prior to 2006 and are not available in the NIMAC (Cortiella, 2008). Thus, it is necessary for states to produce AIM from hard-copy print books and materials that were published before 2006.

Inconsistencies in the eligibility requirements between disability law and copyright law make it difficult for many students who could benefit from AIM to access them. To be eligible to use files in the NIMAC a student must: (a) receive services under the IDEA and (b) meet the eligibility requirements under the Chafee Amendment. The Chafee Amendment was enacted in 1996 as an amendment to the Copyright Law (Pub. L. No. 94-553) allowed authorized entities to reproduce and distribute copies of published literary works in *specialized formats* exclusively for use by blind or other persons with disabilities without securing the permission of the copyright holder (Copyright Law Amendment, 1996). Whereas the Chafee Amendment created the ability to produce accessible instructional materials (AIM), the eligibility requirements included in that

same Chafee Amendment have created a roadblock for some students with specific learning disabilities who could benefit from using AIM.

The eligibility requirements under the Chafee Amendment are based on outdated language and disability definitions included in An Act to Provide Books for the Adult Blind, commonly known as the Pratt Smoot Act of 1931 (Pub. L. No. 71-787). It was not until a 1974 amendment to the Pratt Smoot Act that an additional eligibility requirement was added to include individuals with “a reading disability resulting from organic dysfunction” (Pratt Smoot Act Amendment, 1974). Unfortunately; the narrow definition of a reading disability excludes many students who receive services for a learning disability under IDEA. Also excluded from using files from the NIMAC are students with print disabilities who are eligible for special education services under Section 504 of the Rehabilitation Act (1973) rather than the IDEA. For these students, even if NIMAS files exist and they have a disability covered under the Chafee Amendment, they may not use files from the NIMAC. Despite the large groups of students excluded from using NIMAS files, combined with the number of print materials in use that were published prior to 2006 and for which the NIMAS files do not exist, the responsibility for creating the files still falls to the LEA. Moreover, this responsibility usually falls to the teachers of the children needing AIM—teachers who often have little time, expertise, and technology available to create effective accessible instructional materials.

Providing Accessible Instructional Materials (AIM)

Each state is approaching the requirement to provide AIM differently. Some states continue to utilize resources such as the National Foundation for the Blind (NFB) and

Learning Ally to get large-print, Braille, and recorded text, as well as requiring teachers to adapt their own materials. In contrast, other states have developed, or are in the process of developing, centralized services for providing AIM within their states. The following section provides an in-depth description of the Accessible Instructional Materials Project (AIM-VA), the project implemented in the Commonwealth of Virginia beginning May 12, 2008, to provide accessible instructional materials (Cannaday, 2008) that was the focus of this study.

AIM Virginia

Virginia is a diverse state, consisting of small rural school districts as well as large suburban school districts, which serve over 163,000 students with 24,000 students served through special education services (“Educating Children with Disabilities Fairfax County, Virginia,” 2013). In 2006, the Commonwealth of Virginia began the process of developing a statewide program to provide accessible instructional materials (AIM) in accordance with new regulations in IDEA. The Virginia Department of Education, in collaboration with the Kellar Institute for Human disAbilities at George Mason University, developed a unique project designed to best meet the needs of students with disabilities while minimizing obstacles. The Accessible Instructional Materials – VA (AIM-VA) project was developed to provide accessible educational media under standards set by NIMAS. The project provides AIM to students who meet the federal requirements for print disabilities, outlined in the U.S. copyright law, as well as all students who require access to accessible materials under Part B of IDEA and Virginia law (Wright, 2012).

AIM-VA goals. The overall goals of the AIM-VA project are to (a) provide a statewide library system for accessible instructional materials, (b) produce accessible educational materials consistent with NIMAS requirements, and (c) provide materials at no or low cost to LEAs for students under IDEA, in a timely fashion. To the extent possible, AIM-VA provides any appropriate educational print material not available in the NIMAC. To date, AIM-VA has produced over 3,500 accessible textbooks and instructional materials and made many thousands more titles available to students across Virginia (Kellar Institute for Human disAbilities, 2011).

Partnerships. Several partnerships have been developed to assist AIM-VA in producing accessible instructional materials. The partnerships help to provide a one-stop shop for LEAs. Partnerships include state agencies and organizations as well as assistive technology vendors and services. A brief description of the partnership roles are provided in the following section.

Learning Ally. Learning Ally (formerly RFB&D) has partnered with AIM-VA to provide all required digital audio books. Through this partnership, LEAs have access to over 50,000 digital audio books created by Learning Ally. Orders for digital audio books are processed through the AIM-VA library (Kellar Institute for Human disAbilities, 2011).

The Virginia Department of the Blind and Visually Impaired (VDBVI). VDBVI serves as an accessible media producer for the development of hard copy and electronic Braille materials for students who qualify for their services. They contract with

professionals certified as Braille translators to create textbooks (B. McCarthy, personal communication, August 17, 2011). All Braille textbooks are ordered through AIM-VA.

Don Johnston Inc. AIM-VA has also worked collaboratively with Don Johnston Inc. to provide options and services to eligible students in VA. First, the partnership allows schools statewide access to the text-to-speech software, ReadOutloud. This agreement allows qualifying students to use the software on school computers, as well as on home computers, in order to access electronic text-based instructional materials for tasks within school and for homework (Don Johnston Inc., 2011).

The partnership with Don Johnston also includes the use of the Digital Accessible Information System (DAISY)-to-ePub conversion software which enables AIM Production to convert existing electronic files into new ones, offering students additional format options. The statewide ePub distribution software, BookStream, through Don Johnston, provides access to AIM-VA ePub files saved in the cloud. Using the Internet, students access these files on mobile devices or computers and read them using either the accessible text reader provided with BookStream or any other student-preferred text reader. BookStream also provides access to over 50,000 out-of-copyright trade books and instructional materials developed by schools and teachers, which can be uploaded to the cloud. Data on student access is collected automatically through BookStream and is available for AIM research efforts.

Bookshare. Bookshare and AIM-VA have a collaborative partnership to offer greater access to both DAISY and electronic Braille-ready (.brf) textbooks for over 170,000 books. Bookshare is an online library that makes print material available for

people with print disabilities. Through the partnership, AIM Production can access DAISY and/or Braille-ready files for distribution to eligible students throughout the state (Bentech, 2013).

Personnel. A number of people work for AIM-VA in various positions. A listing of personnel and a brief description of their roles and responsibilities are provided in the following section. AIM-VA's personnel positions can be broken into three domains: (a) management, (b) technical support, and (c) production. Approximately 20 people currently work, both full and part-time, with the project (Kellar Institute for Human disAbilities, 2011).

Management. The overall management of the project is the responsibility of the project director and statewide NIMAS coordinator. The project director is also the director of the Kellar Institute which houses AIM-VA. The primary role of the project director is to manage the budget and oversee projects. The statewide NIMAS coordinator works for the Virginia Department of Education (VDOE) and is primarily responsible for coordination and collaboration with VDOE and LEAs (Kellar Institute for Human disAbilities, 2011).

Programming. Individuals in two positions have the programming responsibilities of managing and updating AIM-VA's online ordering database, the lead programmer and the programming graduate assistant. The AIM-VA lead programmer is responsible for the day-to-day management of the ordering database. The person in this position must manage every aspect of the database as daily orders are submitted and issues arise within yearly ordering periods. Additional responsibility includes annual

updates of the ordering database as modifications and additions are made in AIM-VA and its objectives from one year to the next. The lead programmer also supervises a graduate assistant. The majority of the responsibilities of the programming assistant are to help in the daily requirements of the ordering system, making certain that all is running properly at any given time. Other tasks, as assigned, are completed throughout the year as tasks and objectives change (Kellar Institute for Human disAbilities, 2011).

Production. Several positions are needed to adequately run the production of AIM-VA materials. They include a production coordinator and production assistants. The production coordinator is responsible for the day-to-day operations of the project. The person in this position must manage every aspect of the workflow, from the time the initial request is received from the LEA through the conversion process ending with the delivery of the materials back to the LEAs. The production coordinator also supervises a number of employees who act as production assistants.

The majority of production assistants are graduate and undergraduate student workers from George Mason University. They are responsible for assisting with a variety of tasks including scanning hard-copy textbooks; printing large-print materials; editing and formatting Word and PDF files; downloading and converting NIMAS files to HTML, RTF, and ePub formats; downloading DAISY and brf files, and shipping materials and quality control. Figure 2 shows the production process for AIM-VA (Kellar Institute for Human disAbilities, 2011).

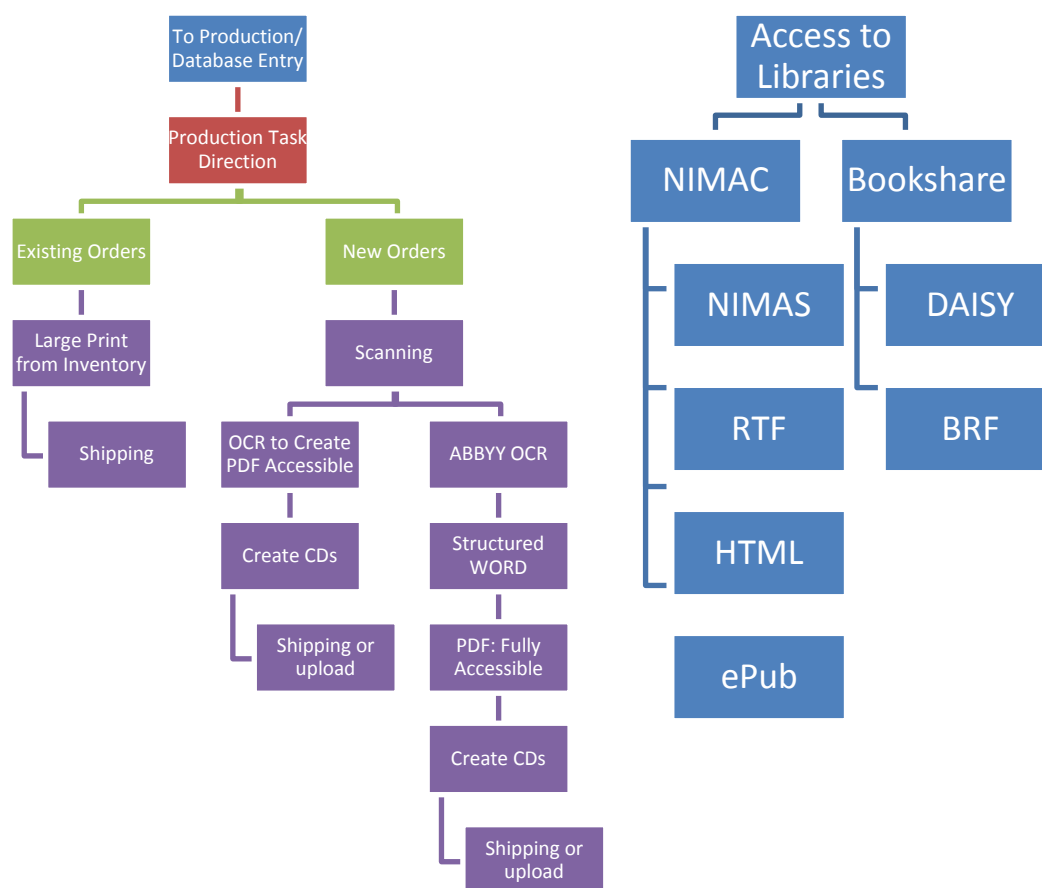


Figure 2. The Accessible Instructional Materials – Virginia (AIM-VA) production process.

Technical Support. Technical support for the project is provided through a training coordinator, librarian, and help desk support technician. The training specialist is responsible for developing and delivering training and technical assistance to school personnel on the policies, procedures, and use of AIM-VA services and materials. The librarian makes sure the materials are correctly cataloged and available for browsing and check out. The help desk support technician is responsible for fielding questions that are called in or emailed to AIM-VA, generally from digital rights managers (DRMs), on a

daily basis. The help desk maintains a log of calls and uses that information to create FAQs for the AIM-VA Web site.

Communication with LEAs. AIM-VA, in cooperation with VDOE, asks each school system to assign a digital rights manager (DRM) for each school system. The number of DRMs identified in a school system varies. In some cases, one DRM serves the entire system. In other school systems, multiple DRMs are assigned.

Each DRM is assigned a login ID and password to access the AIM-VA ordering database and is responsible for certifying that students are eligible for alternate formats of educational materials. The DRM is also responsible for requesting materials from AIM-VA and ensuring that materials are returned or destroyed when no longer needed. The AIM-VA project is a unique model designed to provide accessible instructional materials to students with print-related disabilities statewide. At the time it was developed there were no other models available act as a guide for Virginia.

Purpose of this Study

The purpose of the study was two-fold: (a) to explore the implementation of federal education policy at the state level through the AIM-VA project, and (b) to provide evidence of and recommendations for best practices in providing accessible instructional materials (AIM) for students with print-related disabilities in grades Pre-K to 12. The AIM-VA project was funded in 2006 by the Virginia Department of Education in an effort to meet the new mandates included in IDEA 2004 which require states and LEAs to provide accessible instructional materials to students with print-related disabilities. The researcher solicited the knowledge and perceptions of local and national experts in the

field of accessible instructional materials through the use of the Delphi technique. The research used a combination of semistructured interviews and questionnaires to gain consensus on the advantages and challenges associated with providing AIM through a centralized statewide system and then to identify recommendations to overcome consensus issues.

The AIM-VA project is located at the Kellar Institute for Human disAbilities at George Mason University and serves the entire Commonwealth of Virginia. The study's specific research questions are addressed in the subsequent section.

Research Questions

1. What are the advantages and challenges associated with producing and disseminating AIM-VA materials?
 - a. What issues exist with producing each of the formats provided (e.g. Braille, large print, audio books, e-text)?
 - b. What issues exist in delivering AIM-VA materials (Braille, large print, audio books, e-text, etc.)?
2. What are the advantages and challenges associated with utilizing AIM-VA materials in the classroom?
 - a. What are the issues in determining eligibility to use AIM-VA materials with students?
 - b. What are the issues in determining the appropriate AIM format to meet the needs of students?
 - c. What are the issues with teaching students to use AIM-VA materials?

- d. What are the issues with using technology (hardware and software) to access the materials provided?
3. What recommendations do experts in the field of accessible instructional materials have for addressing the issues identified?

Definition of Terms and Acronyms

Accountability: A term used in education and education law to describe the ability of a student to demonstrate knowledge of a topic or ability to complete a skill at a predetermined level to show mastery.

Assistive Technology Device: Any item or piece of equipment used to increase, maintain, or improve the functional capabilities of a person with disabilities.

Audio Books: An accessible text format that provides auditory output, either in human voice or synthesized voice.

Auxiliary Aids: The term used in Section 504 of the Rehabilitation Act (1973) to describe assistive technology devices that could be used to accommodate the needs of individuals with disabilities.

Bookshare: A private nonprofit organization that provides access to books to registered users with print-related disabilities. Books that have been converted into accessible formats (including BRF, ePub, HTML, and Word) can be downloaded to the user's computer or mobile device.

Bookstream: A cloud-based delivery system developed by Don Johnston Inc. to provide access to electronic books to students with print-related disabilities through the

Internet. This system is used by AIM-VA to deliver accessible textbooks for students in Virginia and track their usage.

Braille: A tactile system of reading and writing developed for people who are blind.

Letters and words are formed using a series of six dots arranged in cells.

Braille Embosser: A hardware device that can be connected to a computer or electronic note-taking device that is used to create hard-copy Braille from an electronic Braille Ready File on the device.

Braille Ready Files: These are often created using a Braille translation software program installed on the computer or note-taking device and which can be read with an electronic Braille device.

Cloud System: An electronic data delivery system provided over the Internet or a network-based infrastructure.

ePubs: A term used to refer to electronic publications. A universal standard for electronic books compatible with most e-readers such as Amazon's Kindle or Apple's iBooks.

E-Text: A universal term used to describe any electronic text that can be read by the computer, such as Rich Text Format (RTF), American Standard Code for Information Exchange (ASCII), Hypertext Markup Language (HTML), or Digital Accessible Information System (DAISY).

Large Print: Any print that is larger than typically used by the general public. Students who use large print typically need 18-24 point text fonts.

Refreshable Braille Display: An electronic device that can be used with a computer or may be part of an electronic note-taking device that displays Braille characters using small retractable pins that change dynamically depending on the location of the cursor.

2. REVIEW OF LITERATURE

The Accessible Instructional Materials Center in Virginia (AIM-VA) explored through this study began operations on May 12, 2008 (Cannaday, 2008). The requirement to provide accessible instructional materials (AIM) to students with print-related disabilities was included in Part B of Individuals With Disabilities Act of 2004 (Pub. L. No. 108-446). The initial regulations were published in the Federal Register on August 14, 2006 (71 FR 46753, 2006) but the final regulations did not become effective until December 31, 2008. Virginia was among the first states to create statewide system to meet these requirements. There is an established research base for the effectiveness of Accessible materials, but very little research to guide best practices for the systematic production, dissemination, and use of accessible instructional materials in schools. An extensive search of relevant databases and resources including JSTOR, Education Research Complete, PsycINFO, and the National Center on Accessible Instructional Materials annotated bibliography was used to search for relevant literature. The search yielded few results, providing further evidence to support the need for this research project.

This literature review is divided into four areas to provide context needed to understand the advantages and challenges related to implementing a statewide program to provide accessible instructional materials in accordance with provisions in the IDEA. The

review includes (a) history of legislation that led to the regulations requiring AIM, (b) technology for accessible instructional materials and research-based support, (c) providing accessible instructional materials nationwide, and (d) the Delphi technique used in this study.

History of Legislation Related to Individuals With Print-Related Disabilities

The history of special education tells an inspiring story of the progression of legislation in the United States. Bryant and Bryant (2003) identifies three periods beginning with the establishment period, then an era of access (c. 1900-1972), progressing to an era of empowerment (c. 1973-2000). Since the turn of the century the era of accountability (c. 2000-present) has emerged. The legislative history provides evidence showing that society moved steadily toward increased access, independence, and ultimately accountability for individuals with disabilities. Through the development of new legislation and amendments to existing legislation, the emergence of accessible instructional materials can be seen. Technology to access instructional materials has also emerged over time (See Appendix A). However, it was not until the era of accountability— through high-stakes testing introduced in the NCLB Act (Pub. L. No. 107-110)—that the need for accessible instructional materials became a critical issue, arguably causing a tipping point that resulted in the AIM regulations being included in the reauthorization of IDEA in 2004.

Disability-Related Legislation

While the concept of federal support for access might be traced back to An Act to Promote the Education of the Blind (1879), the right of children with disabilities to attend

school and receive an education began in earnest with the advent of the civil rights movement in the 1950s and 1960s. It was during this era of access when litigation guaranteeing the equal rights of minorities, including those with disabilities, was at the forefront. The emphasis at this time was to gain the right for people with disabilities to attend the same schools as their nondisabled peers. The movement began with *Brown v. Board of Education*.

Brown v. Board of Education (1954). In 1954, a landmark case, *Brown v. Board of Education*, challenged the right of state-mandated schools to deny minority students admission to schools. The plaintiffs believed that the practice of segregating schools was inherently damaging to the educational opportunities of minorities and that the constitutional rights under the 14th Amendment were therefore violated. The Supreme Court ruled that state-required or state-sanctioned segregation solely because of a person's "unalterable characteristics" (*Brown v. Board of Education*, 1954, p. 496) (arguably, race or disability) was unconstitutional. Chief Justice Earl Warren stated,

in these days, it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity, where the state has undertaken to provide it, is a right that must be made available to all on equal terms. (*Brown v. Board of Education*, 1954, p. 493)

Brown v. Board of Education provides the underlying concept of equal opportunity being applicable to students with disabilities. It was later applied to children with disabilities judicially in several federal district courts, most notably *Mills v. Board of Education* in 1972.

Mills v. Board of Education (1972). *Mills v. Board of Education* was filed by the parents of seven children, who had a variety of disabilities, against the District of Columbia's Board of Education on behalf of all out-of-school students with disabilities. The seven children were certified as a class, thereby representing over 18,000 students with disabilities in Washington, DC. The case was also based on the 14th Amendment, charging that students with disabilities were improperly excluded from school without due process of law (Zettel & Ballard, 1982). The case resulted in a judgment against the District of Columbia's Board of Education. It mandated that the board provide all children with disabilities a publicly supported education and develop procedural safeguards including (a) the right to a hearing with representation, (b) a record, (c) an impartial hearing officer, (d) the right to appeal, (e) the right to have access to records, and (f) the requirement of written notice at all stages of the process. These safeguards were ultimately included in the due process component of the Education for All Handicapped Children Act (EHA) in 1975 discussed later in this chapter (Yell, Rogers, & Rogers, 1998). One year after *Mills v. Board of Education*, Congress passed the Rehabilitation Act of 1973, a law that protects the rights of not only children in school but also adults with disabilities benefiting from federal programs.

Section 504 of the Rehabilitation Act (1973). This provision began as an amendment to the Civil Rights Act of 1964. The amendment was proposed by Congressman Vanik of Ohio and Senator Humphrey of Minnesota. It ultimately was passed as an amendment to the Rehabilitation Act (P.L 93-112) in 1973 (Yell et al., 1998). The amendment states that

no otherwise qualified individual with a disability in the United States, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. (Rehabilitation Act, 1973a)

The Rehabilitation Act defined *disability* as “a physical or mental impairment which substantially limits one or more major life functions” (Rehabilitation Act, 1973b).

Learning is considered a major life function. The legislation also stipulates that reasonable accommodations must be provided to ensure equal access to programs and services. The provisions specify that adjustments to programs be made in order to provide “an equal opportunity to obtain the same result, to gain the same benefit, or to reach the same level of achievement in the most integrated setting appropriate to the person’s needs” (Discrimination Prohibited Rule, 2000). The regulations ensured that students with disabilities under the definition provided in the law were entitled to a Free and Appropriate Public Education (Free and Appropriate Public Education Rule, 2000).

Auxiliary aids and services. The definition of auxiliary aids and services was an important piece of the section 504 provision. With the introduction of the term *auxiliary aids and services*, we see the introduction of a concept which includes *assistive technology*. Auxiliary aids under section 504 may include adjustments in academic requirements, including Braille, large-print or recorded textbooks and materials, increased time to complete exams if indicated, and sign language interpreters for individuals who are deaf (Academic Adjustments Rule, 2000). This is the beginning of the story of accessible text, which is now considered an accessible instructional material

(AIM). Initially, section 504 applied only to programs or activities receiving federal funds, such as public elementary, secondary, and higher education programs or other activities that received federal funding. In 1978, the Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (PL 95-602) broadened its scope to include the executive branch agencies of the federal government (Rehabilitation Act, 1973 as amended). The Rehabilitation Act provided the framework for the Americans with Disabilities Act (ADA) of 1990 (Federal Communications Commission, 2003).

Elementary and Secondary Education Act (ESEA) Amendments (1965). The passage of the Elementary and Secondary Education Act (ESEA) (Pub. L. No. 89-10) in 1965 formed the basis for special education legislation (Yell et al., 1998). It was designed to ensure that all children have the opportunity to obtain a quality education (Elementary and Secondary Education Act, 1965). Subsequent reauthorizations in 1965, 1966, and 1970 authorized funds and programs to improve the education of certain categories of students, including those with disabilities (Elementary and Secondary Education Act Amendments, 1965). The amendments in 1966 authorized funds for educating students with disabilities in local schools (Elementary and Secondary Education Act Amendments, 1965). Title VI, The Education of the Handicapped Amendments of 1974 was added to the ESEA and authorized funds for programs to provide education service to students with disabilities. Provisions were included for due process procedures and least restrictive environment (LRE). However, many advocates did not believe the

requirements were sufficiently enforceable for students with disabilities (Weber, 1992). Title VI became The Education of All Handicapped Act of 1975 (Pub. L. No. 94-142).

The Education for All Handicapped Children Act (1975). In 1975, the Education for All Handicapped Children Act (EAHCA) changed the landscape for students with disabilities. It began an era of empowerment by providing parents with input into how their children would be educated. This landmark piece of legislation also addressed the concerns of advocates who spoke out in response to the lack of enforceability in the Education Amendments of 1974. The purpose of the law was not just to guarantee access; it ensured equal access to the educational opportunities provided to all students in the United States with or without disabilities (Turnbull & Turnbull, 1998). The words of Senator Harrison Williams, principal author of the Education for All Handicapped Children Act (EAHCA), illustrate this point:

We must recognize our responsibility to provide education for all children with disabilities which meets their unique needs. The denial of the right to education and to equal opportunity within this nation for handicapped children—whether it be outright exclusion from school, the failure to provide an education which meets the needs of a single handicapped child, or the refusal to recognize the handicapped child's right to grow—is a travesty of justice and a denial of equal protection under the law. (Congressional Record, 1974, p. 15272)

Provisions in the EAHCA ensured that all students with disabilities be provided a free and appropriate public education (FAPE) in the least restrictive environment (LRE). In addition, it mandated the development of an Individualized Education Plan (IEP) for

each student by an interdisciplinary team of knowledgeable educational professionals, including but not limited to the child's teacher, an agency representative, and especially the parent (Turnbull & Turnbull, 1998). Children were to be given free appropriate educations, including appropriate instructional materials and strategies (EAHCA, 1975). In 1975, there was no specific mention of assistive technology to assist students with disabilities in accessing educational materials. The term *assistive technology* was not defined until the Technology-Related Assistance Act of 1988.

Technology-Related Assistance Act for Individuals With Disabilities (1988).

The passage of the Technology-Related Assistance Act for Individuals With Disabilities in 1988 (Pub. L. No. 100-407) demonstrated the importance of assistive technology to level the playing field for all persons with disabilities, including students. It also laid the foundation for the development of *accessible instructional materials*. The Technology-Related Assistance Act provided funding to states to provide programs to help citizens gain access to both assistive technology devices and services. It also defined the terms *assistive technology device* and *assistive technology service*, respectively:

any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities. . . . any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device. (Technology Related Assistance Act, 1988)

These definitions were subsequently included in future special education law including the Individuals With Disabilities Education Act and the Americans With Disabilities Act of 1990.

Americans With Disabilities Act (1990). The Americans With Disabilities Act (ADA) advanced the civil rights of individuals with disabilities, providing protection from discrimination based on disability from employment and access to public services (Baker & Caves, 2008). It was, in essence, an expansion of the Rehabilitation Act by providing the same protections to citizens with disabilities seeking employment and access to programs and services in both the public and private sectors. ADA required that the employers provide reasonable accommodations to employees with disabilities in the form of assistive technology devices and or services, if needed, to complete the essential functions of the job. These accommodations may include access to information in an accessible format (e.g., Braille, large print, electronic version) (ADA, 1990).

Reauthorization of 94-142, Individuals With Disabilities Education Act (IDEA) (1990). The EAHCA was reauthorized in 1990 and renamed the Individuals With Disabilities Education Act (IDEA). This name change reflected an effort to focus on students as individuals first before the disability. The reauthorization included new regulations requiring LEAs to provide assistive devices and services (IDEA, 1990), if required, to ensure access to a free and appropriate public education in the least restrictive environment for the student with a disability.

Rehabilitation Act Amendments of 1992. Two years after the passage of IDEA, an amendment to the Rehabilitation Act (Pub. L. No. 102-569) carried forward the ideal

of empowerment. The foundation of the amendment was built on a set of principles, including that “disability is a natural part of life and in no way diminishes the right of individuals to live independently; make choices; contribute to society; and, pursue meaningful careers” (Button, 1993). Provisions increased requirements for regular assistive technology assessments and funding for assistive technology devices, and mandated funds to finance AT for people with disabilities receiving vocational rehabilitation services in order to pursue and maintain successful employment (Button, 1993).

Telecommunications Act (1996). The Telecommunications Act of 1996 (Pub. L. No. 104-104) was an amendment to the Communications Act of 1934. The passage of the Telecommunications Act in 1996 began the discussion of what standards were required to ensure the accessibility of devices used for communication and the sharing of the information technology infrastructure. The legislation empowered individuals to use mainstream technologies like pagers, personal digital assistants (PDAs), and cell phones by ensuring that they would be compatible with assistive technology software and devices. This act also mandated funding for telecommunications to schools and libraries and gave individuals with disabilities access to telecommunication systems and devices, further empowering them to compete in a high-tech society (Smith, Longenecker Rust, Lauer, & Boodey, 2002).

Reauthorization of Individuals With Disabilities Education “Improvement” Act (1997). The reauthorization of IDEA in 1997 reflected another shift in special education policy. It focused on increasing access to the general curriculum for students

receiving special education services and began the discussion of accountability for learning. The reauthorization of IDEA in 1997 reflected the focus on increased access and accountability in the text of the law:

over 20 years of research and experience has demonstrated that the education of students with disabilities can be made more effective by having high expectations for such children and ensuring their access in the general curriculum to the maximum extent possible. [emphasis added] (IDEA,1997a)

Further evidence of the intent of lawmakers can be found in the Senate version of the reauthorization bill which stated in part that the bill: “is intended to produce attention to the accommodations and adjustments necessary for disabled children to access the general education curriculum and the special services which may be necessary for appropriate participation in particular areas of the curriculum...” (S. Rep. No. 105-17, 1997). The regulations to accompany the reauthorization of IDEA in 1997 specifically required public schools to adapt the content in general education classrooms to meet the learning needs of students receiving special education services (IDEA, 1997). The new regulations also mandated that assistive technology devices and services be considered in the development of every student’s IEP. This mandate further demonstrated the role that assistive technology would play in the field of accessible instructional materials.

Assistive Technology Act of 1998. This reauthorization of the Technology-Related Assistance Act in 1998 (Pub. L. No. 108-364) responded to the increased demands to use assistive technology in schools and in the workplace. It authorized additional funding to promote awareness of assistive technology and provide technical

assistance and outreach in all 50 states. The 1990s also brought widespread use of cell phones and the Internet to gather and distribute information. To address the accessibility of the Internet and other sources of electronic information, an amendment was added to the Rehabilitation Act (Pub. L. No. 93-112) in 1998.

Section 508 of the Rehabilitation Act of 1998. Section 508 of the Rehabilitation Act further addressed the issue of accessible information technology that began with the Telecommunications Act. The need for people with disabilities to access information technology tools including computers, automatic bank machines, telecommunications, and the Internet was essential to empower people with disabilities. Section 508 spelled out technical standards that must be adhered to in order to insure that people using assistive technology can access the information technology tools needed to function fully in society. However, similar to section 504, only federal agencies and programs receiving federal funding were required to adhere to the standards.

No Child Left Behind Act of 2001. In 2001, four years after the 1997 reauthorization of IDEA, Congress reauthorized the Elementary and Secondary Education Act. Renamed as the No Child Left Behind Act (NCLB), the expressed purpose was “to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and State academic assessments” (NCLB, 2001). Provisions in this reauthorization included students with disabilities. This focus on accountability in public education was the tipping point that helped move special education policy and implementation from the empowerment era to an era of

accountability for students with disabilities. It was clear that the authors of the legislation always intended to include students with disabilities in the requirements: IDEA was noted in the law. Language was included recognizing the need for aids and services to make the content accessible to students with disabilities. The regulations stated that assessments should “be designed to be valid and accessible for use by the widest possible range of students, including students with disabilities” (State Responsibilities for Assessment Rule, 2007).

However, one of the main issues with requiring students with disabilities to meet the same standard as those without disabilities was the lack of availability to accessible instructional materials including textbooks, class worksheets, and standardized testing materials. The requirements in NCLB initiated a discussion of accessible instructional materials (AIM) for students with print-related disabilities. Without AIM, it would be difficult or impossible for students with disabilities to earn a standard diploma, which in turn would ultimately affect their ability to pursue higher education and employment. This issue was addressed in a very concrete way with the introduction of H.R. 490, the Instructional Materials Accessibility Act, to the 108th Congress (Adler, 2002).

H.R. 490, the Instructional Materials Accessibility Act (IMAA) of 2002. In 2002, the IMAA was proposed to help facilitate the conversion of textbooks and other print instructional materials into accessible specialized formats for students with print-related disabilities in an effort to ensure more timely availability of materials for elementary and secondary school students. The IMAA never was passed into law.

However, many of the provisions outlined in IMAA were incorporated into the reauthorization of the IDEA in 2004 (IMAA, 2002).

Reauthorization of IDEA of 2004. The IDEA was reauthorized in 2004, renamed the Individuals With Disabilities Education Improvement Act (Pub. L. No. 108-446). The most notable addition related to providing accessible instructional materials was included in §1412(a)(23)(B) requiring that LEAs ensure that all students be provided with accessible instructional materials in a timely manner, including textbooks, worksheets, and exams. To help meet that requirement, a National Instructional Materials Accessibility Standard (NIMAS) was developed (Stahl, 2009).

National Instructional Materials Accessibility Standard (NIMAS). The NIMAS is a technical standard required to be used by publishers to produce source files in eXtensible Mark-up Language (XML) for textbooks and other materials used for instruction. The structure created in the source file allows the content to be converted and presented in a variety of formats including Braille, large print, HTML, DAISY talking books, and audio files. The source file, in most cases, will need to be manipulated further to be represented in the format needed by the end user (Stahl, 2009).

National Instructional Materials Accessibility Centers (NIMAC). The NIMAC was put into place to act as a central repository for NIMAS files. It is located at the American Printing House for the Blind. The NIMAC provides an automated system allowing publishers to submit NIMAS files, which are cataloged on a Web-based database. The database can be searched and files downloaded by authorized professionals (Pisha & Stahl, 2005).

Legislation Related to Copyrighted Materials

With the requirement of LEAs to provide high-quality accessible instructional materials in a timely manner, copyright issues moved to the forefront for AIM. At the time this provision was included in IDEA, there were already several copyright laws in place to allow for the reproduction of literary works for use by people with disabilities. This section will discuss the history of copyright legislation and issues that have arisen as a result of special education policy.

The Pratt-Smoot Act of 1931. The *Pratt-Smoot Act* was the first piece of legislation aimed at providing an alternative to printed materials for individuals with disabilities (Pub. L. No. 89-522). It was championed in 1912 by J. Robert Atkinson, who was blinded as a result of a gunshot accident. After the accident he became frustrated by the lack of books available in Braille and lobbied for the passage of the Pratt-Smoot Act of 1931, also known as An Act to Provide Books for the Adult Blind (Pub. L. No. 89-522). This legislation led Congress to establish the Division for the Blind within the Library of Congress, now known as the National Library Service (NLS), to provide Braille and audio books to adults who were blind. In 1952, the program was expanded to include children who were blind and was expanded again in 1966 to include individuals with physical impairments that prevent the ability to access standard print materials. Initially, this program was dependent upon the cooperation of authors and publishers to grant NLS permission to select and reproduce copyrighted works in special formats without royalty. Many factors would dictate the period of time required to produce the text in a specialized format. However, one of the most significant causes for delay would

be the process of obtaining permission from the copyright holder. This issue was addressed through the Chafee Amendment to the Copyright Act in 1996 (Perl, 2002).

Chafee Amendment (1996). The Chafee Amendment was included in the 1996 revisions to the Copyright Law (Pub. L. No. 94-553). It provides exceptions to the copyright provisions requiring that all users of copyrighted materials gain permission prior to reproducing the material. The Chafee Amendment to the Copyright Law of 1996 (Pub. L. No. 104-197) added section 121, “Limitations on exclusive rights: Reproduction for blind or other people with disabilities.” It permits an authorized entity to reproduce or distribute copies of copyrighted works in specialized formats for exclusive use by people who are blind or have other print-related disabilities. An *authorized entity* is defined as “a nonprofit or government agency that has a primary mission to provide specialized services related to training, education or adaptive reading or information access needs of blind or other persons with disabilities” (U.S. Copyright Act of 1996, §121).

The regulations defining eligibility based on disability for the Chafee Amendment came directly from the eligibility guidelines used in the Pratt-Smoot Act to access materials through the National Library Service. The regulations define *blind and other persons with disabilities* as

- Blind persons whose visual acuity, as determined by competent authority, is 20/200 or less in the better eye with correcting glasses, or whose widest diameter of visual field subtends an angular distance no greater than 20 degrees.

- Persons whose visual disability, with correction and regardless of optical measurement, is certified by competent authority as preventing the reading of standard printed material. Persons certified by competent authority as unable to read or unable to use standard printed material as a result of physical limitations.
- Persons certified by competent authority as having a reading disability resulting from organic dysfunction and of sufficient severity to prevent their reading printed material in a normal manner. (Loans of Library Materials Other Physically Handicapped Persons Rule, 2005a)

The definition of a *competent authority* varies by disability. In the case of blindness, visual impairment or physical disability, a competent authority can include a wide range of medical and/or educational professionals including medical doctors, therapists, teachers, social workers, and rehabilitation professionals. In certifying someone with an organic reading disability, a competent authority is defined as a medical doctor (Loans of Library Materials for Blind and Other Physically Handicapped Persons Rule, 2005b).

Discrimination of students with learning disabilities. The Chafee Amendment has allowed for converting copyrighted materials for individuals with print-related disabilities, however, several concerns have also arisen regarding discrimination of some individuals with learning disabilities. On April 9, 2009, Steve Noble, on behalf of the Learning Disabilities Association of America, submitted comments to the Federal Register Notice of Inquiry of March 26, 2009 on the topic of facilitating access to copyrighted works for “blind and other persons with disabilities.” The comment focused

on the language defining eligibility for services (Loans of Library Materials and Other Physically Handicapped Persons Rule, 2005b). Noble contended that the definition of learning disability from *organic dysfunction* is a medical diagnosis that has the potential to exclude people who have a reading disability that has not been diagnosed by a doctor. The definition is also in conflict with the eligibility requirements under the Individuals With Disabilities Education Act (IDEA) and the civil rights mandates of the Americans With Disabilities Act (ADA) (Noble, 2009).

The main issue lies in who has the authority to identify someone as having a learning disability under the Act. The Pratt-Smoot Act, and subsequently the Chafee Amendment, specify that a person must be found eligible for services by a competent authority. The problem arises in the differing definitions of a competent authority. In cases of blindness, visual disability, or physical limitation a competent authority can include doctors of medicine, optometrists, registered nurses, therapists, professional staff of institutions, and welfare agencies (social workers and case workers, teachers including librarians) (Loans of Library Materials and Other Physically Handicapped Persons Rule, 2005b). By contrast, in cases of a learning disability, the definition of a competent authority is much more restrictive, providing the basis for discrimination. The regulations identify a learning disability as an “organic dysfunction which can only be certified by a doctor of medicine who may consult with colleagues in associated disciplines” (Loans of Library Materials and Other Physically Handicapped Persons Rule, 2005b).

Technology for Accessible Instructional Materials and Research-Based Support

Accessible instructional materials are defined as “materials that are published for the purpose of instruction and created in specialized formats used by and with print-disabled learners and include Braille, audio large print, and electronic text” (IDEA, 2004b). Assistive technology devices and software are available to access each of these formats in a variety of ways. The following section discusses each of the specialized formats, describes the technology used to access them, and provides a brief overview of the research that supports their use.

Due to the nature of their disability, it is clear that standard textbooks are not accessible to students who are blind or have low vision without access to a specialized format. Braille and large-print books are commonly used among this group of students. Assistive technology such as electronic magnifiers and electronic Braille displays are also used by some students. The following section provides an overview of the literature on Braille and large-print materials.

Braille

There are two main specialized formats in which to access Braille. One is hard copy or embossed Braille. The second is electronic Braille, often provided through Braille-ready format electronic files created in grade II Braille. Grade II Braille, or contracted Braille, uses a system of contractions to reduce space and potentially speed the process of reading (American Foundation for the Blind [AFB], 2013). Most standard textbooks are embossed in Grade II Braille. Braille-ready files can be read or embossed

easily when used in conjunction with common Braille devices including Braille embossers and refreshable Braille displays (Presley & D'Andrea, 2009).

Braille embossers. A Braille embosser is basically a printer that embosses, or prints, Braille. Embossers use a computer along with Braille translation software to format and emboss a hard copy of electronic content in Braille. Most embossers can also create basic tactile graphics. More advanced embossers are capable of creating both print and embossed Braille on the same sheet of paper. Embossers are expensive, and not always readily available in schools (Presley & D'Andrea, 2009).

Hard-copy Braille is typically used when students learn Braille. Once they have mastered the code, they may prefer to use a refreshable Braille display rather than carry a large Braille book. The size of Braille books is considerably larger than print books. For example, the Braille version of *Harry Potter and the Deathly Hollows* consumes 1,100 Braille pages and spans over 10 separate volumes, compared to one print book of 759 pages (Samuels, 2008). Braille books are created in volumes, so many times students have to return to their locker in the middle of class to get the next volume. Refreshable Braille displays provide a much more efficient way to manage this amount of information.

Refreshable Braille display. A refreshable Braille display is an electro-mechanical device for displaying Braille characters in the shape of a typical Braille cell by raising and lowering small plastic pins through holes in a flat surface. The devices are often designed to sit under a regular computer keyboard, and are also available on some models of personal notetakers for students who are blind (Banks & Coombs, 2005). A

personal notetaker is similar to a small computer, but without a screen. Notetakers provide the ability for students to take electronic notes in class, access the Internet, email, calendar, and calculator functions. Personal notetakers can have a typical QWERTY keyboard or a six-key Braille keyboard. They can also include a smaller Braille display, ideal for reading books on the subway or bus (Banks & Coombs, 2005).

Research on Braille. Braille is the primary medium used among blind students for reading and writing. Research on producing Braille has shown it to be cumbersome and expensive (Wall & Corn 2002; Wall Emerson, Corn, & Siller, 2008). Increased access to electronic textbooks provided through the NIMAC and the growth of assistive technology devices to access text in alternative formats has provided many more options to students who are blind and may be a viable option to hard-copy Braille. Earlier studies indicate that hard-copy Braille is not more effective in teaching reading than other mediums (Hughes, 1979; Tuttle, 1974). However, Schroeder found evidence that having the ability to read Braille is important to developing self-esteem (1996). The following summarizes pertinent research on the efficacy of Braille.

Braille production. In 2000, Wall and Corn (2002) conducted three national surveys to examine the production of textbooks and materials for students with visual impairments in the United States. Forty-nine of the 50 states returned data, but the data were usable from 45 states. The results indicated a shortage of qualified Braille transcribers to produce Braille materials. Many states also cited lack of funding as a major barrier. Of the production models provided, a centralized production center was determined to be the most effective. It was also determined that delivery of materials in a

timely manner was difficult, and often would not occur at the beginning of the school year due to late requests. Only about 45% of requests for Braille books received by July first would be delivered to the student on time in school systems without a textbook adoption process (Wall & Corn, 2002).

In a follow-up study Emerson, Corn, & Siller (2006) again looked at statewide practices in producing and distributing Braille and large-print books, including both hard copy and electronic files. The survey tool used in the 2000 study by Wall and Corn (2002) was adapted to include newer methods of textbook production and delivery. The survey was sent to individuals in all 50 states with extensive knowledge of production facilities in their state. Data from 45 of the 50 states were represented. Results indicated that many states have limited funds and personnel to produce large-print and Braille textbooks and have a need for Braille transcribers. Respondents noted that electronic files from publishers were more readily available to school systems, however, most felt they did not have the knowledge necessary to use them appropriately (Emerson et al., 2006). Considering both personnel and material costs of producing Braille and the difficulty delivering books in a timely manner, alternative options should be considered.

Braille and reading. One of the first studies to explore the efficacy of Braille over other reading mediums was completed by Tuttle (1974), who compared three reading media: (a) Braille, (b) normal recorded speech, and (c) compressed speech. A total of 100 students were included in the study. All participants were Braille literate, ages 14 to 21, and attended school in California. The Reading Versatility Test was administered to all subjects in each of the three media. Tuttle found no differences in the level of

comprehension among the three formats. However, Braille took almost twice as long as listening to a normal recording and three times as long as listening to compressed speech. Tuttle concluded that compressed speech was more efficient than either Braille or normal recording. This research may lead to providing evidence of e-text being an efficient way of accessing text, as the student can control the speed at which the text is read.

Similarly, Hughes (1979) conducted a study with 30 adults who were legally blind to determine whether significant differences occurred in the amount of knowledge gained as a result of using Braille as opposed to compressed speech. All subjects were Braille readers, and the study found no significant differences in achievement scores when using Braille or compressed speech as learning modes. These studies suggest that the use of other reading media is just as effective as using Braille for students who are legally blind. More recent studies investigated newer technologies, such as DAISY books and refreshable Braille displays, to see if they rendered the same results. Whereas Braille does not appear to be a superior medium when compared to compressed speech, Schroeder (1996) found evidence that suggests there may be advantages associated with using Braille.

Schroeder (1996) conducted qualitative case study interviews with eight adults who were legally blind. The goal of the research was to explore the value of Braille in their lives. The participants had various levels of remaining vision and proficiency in reading Braille, from very proficient to functional to non-Braille readers. The study resulted in differences in attitudes toward Braille. Subjects with some remaining usable vision had neutral attitudes toward Braille. For participants with no remaining usable

vision, Braille represented competency and played a central role in developing their self-esteem. With this in mind, the ability to have more efficient ways to provide Braille could, arguably, improve the educational outcomes of students who are legally blind. In 2010, 75% of people who were blind or had low vision were not in the work force, which includes those who are actively looking for work as well as those who are not actively looking for work (NFB, 2010). Findings in some research studies have shown that legally blind adults who are Braille literate are employed at disproportionately higher rates than those who do not read Braille (Kirchner, McBroom, Nelson, & Graves, 1992; National Library Service for the Blind and Physically Handicapped [NLS], 1983). Refreshable or electronic Braille provides access to Braille without the costs associated with producing hard-copy Braille, and research on the viability of refreshable Braille as an alternative to hard-copy Braille is promising (D'Andrea, 2012; Farnsworth & Luckner, 2008; Bickford & Falco, 2012).

In a multiphase mixed method study conducted by D'Andrea (2012), the current use of paper-based Braille and assistive technology among students age 16 to 22 enrolled in high school and college was explored. The 12 participants used Braille as their primary medium, and used at least one assistive technology device. The first phase of the study consisted of 12 structured interviews with students across the United States. The interview questions probed the students' practices using Braille and preferences for completing schoolwork using hard-copy Braille and technology. Researchers found that participants used a wide range of technology. All participants reported using a computer with screen reading technology. Most ($n = 10$) also used some form of a personal data

assistant (PDA) compatible with Braille (e.g., Braille notetaker). Several students mentioned using their mobile phone while in class for calendar and notetaking tasks. Eight participants also mentioned using electronic textbooks. Students in high school reported that most of their books were provided in hard-copy Braille. For both college and high school, students typically wrote documents in print rather than Braille and submitted them electronically. College students had very little access to hard-copy Braille unless they specifically requested a chart or tactile graph, which was created by the disability resource center. Participants preferred using mainstream products whenever possible, and said they would recommend a laptop over a Braille notetaker. College students said they primarily used electronic textbooks, but did not distinguish between listening to them and reading them using a refreshable Braille display. All students preferred using Braille for math and science courses. The results support the need to provide students with as many tools as possible to allow them access to materials in a variety of formats, depending on their preferences and what is available. Considering that college students do not typically have access to hard-copy Braille textbooks, it may be especially important to provide alternatives to embossed Braille to high school students to facilitate their transition to college and likelihood for success.

A qualitative case study by Farnsworth and Luckner (2008), conducted over a period of 5 months, looked at the efficiency of electronic assistive technology in creating curriculum materials for a Braille-reading student in middle school. The study showed evidence that access to technology reduced the student's dependence on the vision teacher and paraprofessionals. The technology allowed for direct communication between

the regular classroom teacher and the student, as the technology could simultaneously provide both Braille on the refreshable Braille display and print on an LCD screen or printed out on a standard printer for the sighted reader to view (Farnsworth & Luckner, 2008). Digitized formats allow for a larger amount of information to be available for conversion into Braille by individuals who are Braille literate. In addition, using refreshable Braille on personal notetakers, and with computers, allows students to be more independent and less reliant on paraprofessionals and vision teachers to provide materials (Banks & Coombs, 2005).

Bickford and Falco (2012) investigated whether there was a difference in Braille reading fluency for students who use traditional hard copy, Braille, or refreshable Braille. In addition, the researchers explored the perceptions of students and teachers in using both forms of Braille learning media. Nine students, ages 6 to 8, who were using the *Patterns Reading Series* to learn Braille, were included in the study. Participants were enrolled in both public and residential schools. In addition, four vision teachers participated and instructed the students in Braille. Researchers used an alternating treatment design. In one treatment, students were instructed in Braille using the traditional method of hard-copy Braille and a Perkins Braille writer. In the second condition, students used the same instructional program, but used a PacMate electronic Braille notetaker with a 20-cell refreshable braille display. Each condition was implemented for a 1-week period over a total of 18 weeks. All students gained knowledge of Braille letters and contractions during the 18 weeks. Results revealed no consistent differences in student reading and writing performance using one medium over

the other. However, students were motivated to use the refreshable Braille displays over the Perkins Braille writers. Teachers commented that the keys on the PacMate were easier to press, which was helpful, but sometimes resulted in the accidentally pressing keys, causing errors. The study suggests that following some initial training on the technology, students and teachers could use electronic Braille notetakers effectively for instruction in Braille. Additionally, students are motivated to use the devices (Bickford & Falco, 2012).

Large Print

Large print is generally defined as print that is larger than print sizes commonly used by the general population, which is 8 to 12 points in size. Some use a guideline for defining large print as 18 points or larger (Kitchel, n.d). Textbooks that are created in large print for students are generally much larger and difficult or impossible to carry in a backpack. The images can also be distorted due to enlargement. Video magnifiers or closed circuit televisions (CCTV) are often used to enlarge standard-size print for students with low vision.

Video magnifier/CCTV. A CCTV is a common technology used by individuals with low vision. It contains a camera, video display, and dials that allow the user to zoom in on text or objects that are placed under the camera. The image is shown on the video display. There are several model types available, including desktop and portable units and handheld units. The desktop version is used most in schools; it allows for the highest level of magnification (Robitaille, 2010).

Research on large print. Existing research shows that the reading rates of students with low vision are slower than are those of their peers who read regular-size print; however, reading comprehension is comparable to that of their sighted peers (Gompel, van Bon, & Schreuder, 2004). Print size is an important factor in maximizing reading speeds and minimizing decoding errors and omissions (Corn & Ryser, 1989; Lueck et al, 2003). Optimal print size must be determined on an individual basis. Since large-print textbooks are typically produced with a standard 18-point font, large-print hard-copy books do not allow teachers to make adjustments to print size. Several studies conclude that using optical aids to enlarge standard-size text increases reading speed and comprehension, without increasing eye fatigue (Farmer & Morse, 2007; Koenig, Layton, & Ross, 1992). Research findings in this area seem to suggest that using optical aids to enlarge regular-size text may be a better alternative than providing large-print materials (Corn et al., 2003).

In an early study, Corn and Ryser (1989) conducted a statewide survey of 109 teachers and 351 students with low vision between the ages of 4 to 22 with visual acuities ranging from 20/60 to 20/400. Data were compiled regarding working distance, fatigue, reading speed, and use of optical devices. Results showed that the reading rates of students who used optical aids with regular-size print increased throughout their schooling. This was not evident for the large print users. There was no evidence to show that students who used large print fatigued more quickly than those who used regular-size print with optical aids. Evidence seems clear that using optical aids does not hinder

reading speed and comprehension, and for many has the potential to increase reading performance. Optimal print size appears to be an important factor in reading success.

Koenig et al. (1992) compared the reading performance of six students with low vision in elementary, middle, and high school using large print and standard print with optical devices. Areas of reading performance compared included oral reading rate and miscues, silent reading rate, and working distances. All students were competent in the use of their optical devices. Using the New Macmillan Reading Program, reading rates were calculated. Performances of four of the six participants under both conditions were comparable. One participant increased his or her reading rate when using the optical aid (CCTV); one increased speed using large print. No noticeable differences in reading distance or fatigue were observed through objective comparison (Koenig et al., 1992).

In 2003, Corn et al. explored whether training on optical devices improved their effectiveness. The researchers studied the reading comprehension rates of 185 students with visual impairments in Tennessee. All participants in the study received low vision evaluations and were prescribed an optical device and trained to use the device. Prior to receiving the devices, reading speeds and comprehension rates were tested. Only students with comprehension rates of at least 80% were included in the analysis. The study showed a significant increase in comprehension during silent reading. Reading speeds also increased after a period of consistent use with the optical aids, suggesting that being a proficient user of optical aids has a positive effect on reading fluency (Corn et al., 2003).

Lueck et al. (2003) explored the effect of text size on reading speed and fluency. In addition, they compared reading performance within passages as well as with words in isolation using large print presented in three different sizes. In the first experiment of this study, six fourth graders with low vision were asked to read both unrelated words and text in sentences in a variety of print sizes. In the second experiment, the participants read aloud from the same word charts with different print sizes, and read aloud from an excerpt presented in three sizes. Reading speeds were calculated in words per minute for both experiments. Results indicated that participants read faster when they read text in passages than when they read nonrelated words. Reading rates decreased as the print sizes decreased. These results are further evidence that the use of video magnifiers that provide flexibility to view materials at the optimum size for students with low vision may be a better option than large-print books. Farmer and Morse explored this idea.

Farmer and Morse (2007) compared the reading and comprehension rates of 16 students with low vision. The students were broken into two groups. Group 1 consisted of students who used magnifiers to read books with standard-size text ($n = 9$). Group 2 was comprised of students who used large-print books ($n = 7$). Participants in both groups were matched by age and visual acuity. Results on the oral reading test showed that eight of the nine students using magnifiers increased their reading rate, and five increased their comprehension scores. In the large-print group, all but one student increased reading speed, but there was no change in comprehension scores among the large-print group (Farmer & Morse, 2007).

Electronic Text (eText)

E-text is digital text that can be read by a computer. It includes formats such as a Microsoft Word file, Rich Text Format (RTF), American Standard Code for Information Interchange (ASCII), and Hypertext Markup Language (HTML). E-text can be easily read aloud by synthetic speech on most computers. Users can read letters, words, phrases, sentences, paragraphs, and sections while sequentially highlighted as the text is read, providing both auditory and visual feedback (National Center on Accessing the General Curriculum [NCAC], 2009).

Content provided in e-text format is also presented in a style that looks and functions like a print book would. These files are often referred to as e-books. DAISY (Digital Accessible Information System) formatted digital books and ePubs are two examples which are presented here as a subset within the e-text category. Some e-books may also provide audio through a recorded human voice file or audio file, while others provide digitized computer-generated speech through tools available in the e-book player. E-books are already becoming the norm in our society as large numbers of people now download books for leisure reading to their mobile device rather than going to a bookstore. However, hard-copy textbooks are still the norm in most classrooms. For students with print-related disabilities, eText and eBooks are more than a convenience. Paired with the correct software or mobile device, they can offer access to information anytime and anywhere that is otherwise all but impossible with the inherent inflexibility of hard-copy books.

eBook/eText readers. Several software applications and hardware devices are available to read e-text. Some are specialized programs to aid people with reading difficulties; others are built into mainstream software programs that have text-to-speech capabilities built in like Adobe Reader and Microsoft Word. Specialized software programs generally have more advanced options available to the user, such as dictionary features, notetaking tools, and custom highlight colors. Examples include Read Outloud, Read and Write Gold, and Kurzweil 3000. Mobile devices are also available to read e-text and eBooks. The most popular mainstream devices include Kindle, Nook, and iPad (with eReader app). Mainstream devices have begun to include features to make them more accessible to people with disabilities. However, there are also specialized eReader devices available to persons with disabilities, such as the Victor Stream, which is designed for individuals who are visually impaired or blind. The Classmate has a visual interface designed for individuals with learning disabilities.

Research on eText. Research covered in this section primarily explores the effectiveness of developing literacy skills for specific features commonly provided by eText readers. Features such as text-to-speech, synchronized highlighting, dictionary, and navigation have been addressed. The research has focused on reading fluency, comprehension, and access to grade-level content for students with print-related disabilities. Interestingly, there is a paucity of research on students with vision problems. The research found was primarily with students who had print-related disabilities that included autism; traumatic brain injury; and intellectual, emotional, and learning

disabilities (Dawson, Venn, & Gunter, 2000; Douglas, Ayres, Langone, Bell, & Meade, 2009; Esteves, 2008; Fasting & Lyster, 2005).

Fluency and comprehension. For struggling readers, the standard textbook provides a formidable barrier (Boone & Higgins, 2007). The ability to use text-to-speech technology to access the information in textbooks provides a way to level the playing field for these students. Fluency is an important factor in improving reading comprehension: Students who struggle with fluency must use all of their working memory to decode text and, therefore, are unable to focus on the meaning of words (Hacker, 2004). The text-to-speech features available on most eText readers can aid in developing fluency and also help to remove the cognitive demands required for poor readers to decode. Several studies were identified relating to the effectiveness of text-to-speech as an effective tool to aid poor readers.

Research has shown that speech feedback paired with synchronized highlighting helps students who have difficulty reading to decode words more effectively. Fasting and Lyster (2005) used a computer program, MultiFunk, designed to improve reading skills by providing highlighting and text-to-speech reading supports. The study investigated if the program would improve the reading and spelling abilities of struggling readers. The participants included 52 students in grades 5, 6, and 7 who were below-average readers with poor spelling skills. Subjects were randomly assigned into the experimental and control groups with 26 students in each group. Pre- and posttests were completed after the intervention. In addition, 114 students who were average readers were included to compare literacy development during the intervention. Results showed a significant

increase in reading and spelling skills in the experimental group over the control group. The text-to-speech component demonstrated a significant impact on the development of reading and spelling skills of the students with particularly poor skills. In addition, the control group showed a slower rate of growth in reading development when compared to the experimental and average readers.

In a study that examined the reading fluency and accuracy of four students with emotional and behavioral disorders, Dawson et al. (2000) provided one of three conditions to the students prior to asking them to read a passage aloud: (a) no model: students read a passage independently the first time, (b) teacher model: teacher read a passage before the student, and (c) computer model: student used a computer with text-to-speech to read the passage before reading it independently. Researchers found that students read more words per minute with fewer errors with both the teacher model and the computer model than with no model provided. Students performed best under the teacher model. Dawson et al. suggest that the poor quality of synthesized speech available at the time may account for the differences.

Another study (Esteves, 2008) compared the use of digital audiobooks against the traditional practice of sustained silent reading with upper elementary students in terms of reading fluency. All participants had identified reading disabilities. The study measured reading fluency rates and reading attitude scores. Participants in the control group selected literature and read silently for 20- to 30-minute sessions, four to five times per week. The students in the treatment group selected literature from a list of audiobooks and engaged in audio-assisted reading with digital audiobooks downloaded on MP3

players for the same amount of time. Data were collected over an 8-week implementation period. Students in both groups were assessed using oral reading fluency measurements and the Elementary Reading Attitude Survey during both pre- and posttreatment. The results showed growth in reading fluency for both groups; however, the growth of the treatment group was significantly better than that of the control group. There were no significant differences between the groups in reading attitude scores (Esteves, 2008).

The effectiveness of eText supports provided through digital media (text-to-speech, text highlighting, video summaries, and graphic organizers) was further investigated in a series of six single-subject design studies by related groups of researchers which explored the usefulness of eText supports on the reading and listening comprehension of students with moderate intellectual disabilities. Overall, the findings demonstrated the effectiveness of text read aloud, either through synthesized text-to-speech supports or recorded voice. The studies also demonstrated the importance of providing specific instructions on how to use eText supports to increase success (Douglas et al., 2009). The six studies are summarized below.

Study 1. The first study, conducted by Mead, Ayres, Langone, Douglas, and Bell (2008), evaluated the effectiveness of audio and video supports on the comprehension of leisure reading materials. Participants included 11 high school students with mild to moderate intellectual disabilities. In the study, the first two chapters of *Harry Potter and the Sorcerer's Stone* were adapted by simplifying the text. The simplified passages were broken into segments of 109 to 167 words, recorded, and placed onto PowerPoint slides. Video clips from the movie were inserted at the beginning of each segment as prereading

support, along with the passages. Each daily reading session consisted of a video or nonvideo session (depending on the phase of the study). In all phases, participants were provided with audio support. After each session, students were asked what they remembered about the story and answered five multiple choice questions, each with three choices presented. Six of the 11 participants performed better when video supports were provided; five performed better with audio supports alone. Thus digitized speech alone has been shown to be effective in increasing comprehension by nonreaders and low-level readers (Mead et al., 2008). The next study explored this further to determine if it holds true for students with intellectual disabilities.

Study 2. In the second study, Ayres, Langone, Douglas, Mead, and Bell (2008) studied the effects of text-to-speech with highlighting with eight students with mild to moderate intellectual disabilities from one middle and one high school. The materials included short passages of text, between 40 to 50 words each, focused on an aspect of daily living skills (e.g., cooking, laundry). Dependent variables included number of words read correctly and story retell. Alternating conditions were presented (e.g., text-to-speech and synchronized highlighting with text-to-speech). Results suggested that highlighting did not significantly increase the reading ability or comprehension of students with mild to moderate intellectual disabilities, although some improvements were apparent. Researchers noted that it is possible that participants were not watching the highlighting even when it was provided, which may have affected the results. Participants in the study were not provided with training on the use of the supports provided (Ayres et al., 2008). Current educational practice suggests that listening to

passages multiple times improves comprehension and retention of information for individuals with intellectual disabilities (Therrien, 2004).

Study 3. This study by Douglas et al. (2009) explored whether using text-to-speech supports to facilitate repeated readings of text would have a similar effect on comprehension for three participants with mild to moderate intellectual disabilities. In this third study, the materials included passages similar to those in the previous study. The dependent variable was the percentage of correct “retell” after using the text-to-speech feature to read the passage multiple times. Participants were asked to recall the story by providing details after each of four readings. There were no significant differences in the percentage of correct retell after multiple readings. Douglas et al. (2009) suggest that results may have been different if the passages were longer and participants were provided with explicit instructions on the use of the text-to-speech support.

Study 4. Ayres, Langone, Douglas, and Bell (2009) investigated the effects of four levels of support (text alone, text-to speech, photographic, and video) on student comprehension of written directions. Eleven students with mild to moderate intellectual disabilities participated in the study. They were asked to complete tasks after reading directions using one of the four supports listed previously. A set of 100 different directions was selected across five trials for each task. Responses were scored as correct or incorrect. Directions were short and simple in order to reduce demands on short-term memory. Results showed that 5 of the 11 students performed best with text-to-speech

support. For 3 students, the mean percentage of correct responses was the same for both audio and video support (Ayres et al., 2009).

Study 5. Douglas, Ayres, Langone, and Bramlett (2011) took into consideration evidence that individuals with intellectual disabilities benefit from both audio and visual supports in their study, “The Effectiveness of Electronic Text and Pictorial Graphic Organizers to Improve Comprehension Related to Functional Skills.” They investigated whether students with intellectual disabilities could use computer-based instruction (using text-to-speech supports) to learn to use graphic organizers, and whether students could use the graphic organizers to help them follow a text-based recipe. A pretest was provided to establish baseline, which required students to use text-to-speech supports to read directions for a recipe and then make a milkshake. Intervention sessions used PowerPoint presentations in which the first two slides listed the ingredients and appliances needed using pictures along with words. Students were instructed through text on the PowerPoint to place pictures on the table’s graphic organizer into the appropriate columns. The results showed that the participants were able to learn to use graphic organizers through computer-aided instruction. Furthermore, after using the graphic organizer to complete the recipe without specific text-based instructions, all students improved their comprehension and recall (Douglas et al., 2011).

Study 6. This study, by Douglas et al. (2009) was conducted with three students with mild to moderate intellectual disabilities. It investigated whether using a graphic organizer would improve comprehension after reading or listening to a story. The researchers again used passages from *Harry Potter* and presented the passages using

PowerPoint slides. Baseline consisted of the passages alone with text-to-speech support. During the intervention, the passages included images above key words, along with the text-to-speech support. After reading the passage, directions were provided to place pictures on the table into the correct columns in a graphic organizer. Columns on the graphic organizer included Who, What, Where, When, and How. After the instruction was complete, students answered open-ended questions about the passage and were asked again the following day. Responses were marked as correct or incorrect. All three students significantly improved their comprehension scores after creating the graphic organizer, reaching 90% or above for 3 of 5 trials. Students were also able to recall the information the following day using the graphic organizer (Douglas et al., 2009).

Access to content. To achieve success, secondary students must read textbooks independently, demonstrate a mastery of content information, and apply previously acquired knowledge to new learning situations. However, high readability levels of the textbooks can result in students' frustration with reading and, hence, with the subject (Twyman & Tindal 2006). Secondary students with high-incidence cognitive disabilities often struggle to meet the demands of the general education curriculum due to poor reading skills. A number of studies focus on the use of etext and audio books to assist students who are poor readers attain content knowledge (Boyle et al., 2003; Isso, Yurick, & McArrell, 2009; Twyman & Tindle, 2006).

In a study conducted by Twyman and Tindle (2006), twelve 11th to 12th grade students with learning disabilities in reading and writing were provided with a computer-adapted history text. The computerized text included a table of contents with links,

overview of the chapter, simplified text, and graphic organizers in addition to problem-solving assessments. The control group consisted of 12 students who received the same content via a regular textbook. Measures included tests of vocabulary, matching activities in which students were required to match words to the definition, cloze activities in which students had to fill in 10 to 16 blanks within a passage of 250 words given a word bank, and an extended-response essay (which had to include two parts: summarization and explanation to measure problem-solving skills). Results showed no significant difference on the comprehension measures. However, students using the computer-adapted text significantly outperformed students in the control group on the essay. Further analysis using a posthoc power analysis determined that, if the sample size was larger, computer-adapted text would have been shown to be more effective in improving vocabulary learning. Finally, a postintervention interview with the teacher revealed that students in the experimental group appeared to be more engaged with the text than those in the control group (Twyman & Tindal, 2006).

A study by Isso et al. (2009) examined the use of eText supported with text-to-speech on the achievement of high school students with disabilities. The study included seven high school students with various disabilities including high functioning autism, traumatic brain injury, and learning and emotional disabilities. All participants received academic support in a resource room setting. The materials used in the study included text-to-speech software and an online computer-based transition curriculum program (EnvisionIT) which integrates reading and writing with instruction on areas related to technology skills and career development. EnvisionIT curriculum includes 10 units with

both content and activity sections. Thus, the independent variable included the use of the text-to-speech software (Click Speak) to read eText content presented on the computer screen. Researchers collected data using a cloze task, requiring students to read a passage of text (150 to 400 words). Participants were asked to fill in blanks throughout the text, with one of three choices offered in parentheses. Participants also completed two 10-item multiple choice quizzes per unit. During baseline conditions, students completed units without the use of text-to-speech supports. A reversal design was used to measure the effects of text-to-speech on student achievement. Results showed that text-to-speech support increased unit quiz scores and reading comprehension with large effect sizes ($ES = 1.2$) (Isso et al., 2009).

Boyle et al. (2003) addressed the challenge of accessing grade-level content for students with learning disabilities by examining the effects of audio text on the acquisition of secondary level content-rich history classes. Participants were placed under one of three conditions for the 6-week intervention. The groups used (a) the audio textbook (including audio CD with embedded navigational DAISY markups) combined with a SLiCK strategy (Set it up, Look Ahead, Comprehend and Keep it together), (b) the audio textbook alone, or (c) a control condition using a regular textbook. Students who used audio text with and without the SLiCK strategy performed significantly higher on quizzes and cumulative test scores than those who used the standard textbook. There was no evidence that the use of the SLiCK strategy improved performance. Based on these results it appears that providing audio access to students with reading difficulties helps them to gain access to content knowledge (Boyle et al., 2003).

In summary, the research to support the use of accessible instructional materials provides evidence of many advantages for each of the main formats including Braille, large print, and eText. One theme that has emerged from the research literature on Braille is that electronic Braille files that are used with refreshable Braille displays are equally effective as hard-copy Braille in teaching students to read. Electronic Braille, once transcribed, is easier to produce and distribute in a timely fashion than hard-copy Braille texts which are costly and bulky to print and use. Large-print research suggests that libraries of 18-point standard fonts are not as optimal for reading rate and comprehension as large print optimized for user needs. Using assistive technology including CCTVs for hard copy and computers and mobile devices that provide electronic enlargement that can be optimized in size, background, and color for individual users is equally or more effective in applications of AIM. Again, similar advantages include timely distribution and reduced bulk and access to materials when and where the user chooses. Finally, the research suggests that eText results in improved decoding and spelling when highlighting is used. Reading fluency is improved with audio output, either human speech or computer-generated speech. Finally, access to content for low or nonreaders is improved related to comprehension when audio and highlighting is used. These findings suggest that accessible instructional materials that emphasize electronic formats are as effective as—or more effective—than traditional hard-copy accessible formats of Braille and large print.

AIM Services in Other States

In the summer of 2010, the National Center on Accessible Instructional Materials (NCAIM), conducted a survey to determine the current status of systems that support the implementation of the National Instructional Materials Accessibility Standard related to accessible instructional materials. The survey looked at seven quality indicators of AIM including: (a) methods for acquiring AIM, (b) students served, (c) definition and tracking of “timely manner,” (d) written guidelines, (e) training and technical assistance, (f) data collection, and (g) allocation of resources (NCAIM, 2011).

The survey was sent to a designee in each of the 50 states and 4 outlying territories. A total of 54 responses were received. Analysis of the results indicate high levels of variation on virtually every element considered critical to an equitable, sustainable system for providing AIM according to the quality indicators for providing AIM which were developed and validated by the AIM Consortium.

Overall services and collaboration. Only 13 states reported using a centralized system for providing AIM with the primary responsibility at the state level. In addition, most states (more than 80%, $n = 47$), reported serving only students who have a print disability as defined in copyright law. Eighteen states served students not deemed to have a print-related disability under the requirements of copyright law. Most states identified “a timely manner” to mean “as soon as needed.” All respondents reported coordinating with the NIMAC; 50% collaborate with Bookshare, and 31% collaborate with Learning Ally (RFB&D) to help create and deliver AIM in a timely manner. All respondents indicated some level of training and technical support, most often delivered through the

Web and printed materials, and directed toward LEAs. Only 26 respondents reported having comprehensive written guideline for providing AIM. The results of this survey suggest that there are many areas in need of improvement to ensure the quality and equity of AIM services across the United States.

Therefore, the current study sought to explore the AIM-VA project to identify issues associated with implementing AIM on a state level in accordance with new regulations. The Delphi technique was the proposed research method.

The Delphi Technique

The research method used in this study was the Delphi technique. The following section describes the Delphi technique, illustrates the three main types of Delphi methods, and explains which method was chosen for this proposed study.

The Delphi technique was first introduced in the 1950s in a research study with the RAND Corporation (Lang, 1994; Linstone & Turoff, 1975; Moore, 1987; Uhl, 1983). It provides a systematic method for soliciting opinions and judgments from a group of experts on a given topic. According to Martino (1972), the Delphi research method is best suited to explore complex real-life issues with little historical context that requires expert opinions to fully understand underlying issues.

The Delphi technique was designed to structure collective problem solving in a way that capitalizes on its strengths while minimizing its weaknesses (Hiltz & Turoff, 1993). The strengths of the Delphi technique lie in its ability to (a) provide anonymity to respondents, (b) control feedback, and (c) the ability to use a variety of statistical analysis techniques to interpret data (Dalkey, 1972; Ludlow, 1975). It also avoids some of the

difficulties from traditional group interactions (i.e., pressure to conform and dominance by one or two members of the group) (Dalkey, 1972). In addition, the questionnaires allow participants adequate time to reflect on their own thinking and respond to the questionnaires thoughtfully (Franklin & Hart, 2007).

Delphi Technique Structure

The Delphi technique provides a general structure and process to examine an issue beginning with (a) the selection of participants to make up the expert panel, (b) the development of the initial or “Round one” questionnaire and, (c) the analysis, development, and distribution of subsequent surveys. Each time a survey is sent to the expert panel to complete is referred to as a round. The number of rounds required depends on the desired level of agreement or consensus. Experts in the Delphi technique provide guidelines to follow in each step to increase the validity and reliability of the process. Selecting an appropriate expert group is essential.

Selection of the expert panel. Selecting the expert panel is very important to the validity of the study (Moore, 1987; Stewart & Shamdanasi, 1990). In a Delphi study, participants should not be limited to “experts” in the strict sense of the word, but should include people with knowledge and direct experience with the issue being studied (Hiltz & Turoff, 1993). It is thus also important to clearly define the criteria for selecting the “experts” included in the expert panel or focus group (Eggers & Jones, 1998; Sackman, 1975). Once the expert panel is formed, the first questionnaire can be distributed. The initial questionnaire can be developed in a variety of ways.

Development of the initial questionnaire. Depending on the topic of the study, the initial questionnaire may be developed through an exhaustive literature review, often seen in policy Delphi studies, or through an open-ended questionnaire completed by participants in the expert group. The initial survey may also be developed by a separate group of experts with extensive knowledge and experience in the topic of study. As stated earlier, the initial questionnaire is followed by subsequent questionnaires until an acceptable level of consensus is formed. Each subsequent survey is revised based on feedback from respondents. This feedback is analyzed and interpreted by the researcher. In subsequent surveys, it can be very helpful to provide both statistical and textual information from the group as a whole to encourage reflection on the part of the respondent by providing the ability to compare to their own responses to those of the group (Lang, 1994).

Analysis of feedback from questionnaires. Analysis of questionnaires is often provided through a combination of both qualitative and quantitative analysis. Constant comparative analysis helps the researcher to identify themes and group responses into categories for further exploration. Statistical analysis of responses is typically gathered from responses on Likert scale ratings. The ratings are calculated for central tendencies and level of agreement to determine the level of consensus amongst the expert panel. The structure for the Delphi technique explained previously remains fairly consistent; however, there are four main types of Delphi methods identified by Lang (1994) that are often used depending on the nature of the research question addressed in the study.

Types of Delphi Models

Lang (1994) describes three models of Delphi research methods: (a) conventional, (b) policy, and (c) decision making. Each method has a specific purpose, but many studies, like this one, use a modified approach to the models provided.

Conventional Delphi technique. The conventional form of the Delphi acts as a forum to forecast timelines and developments of unknown parameters, typically in the fields of science, over the long term (Lang, 1994). The goal of the conventional form of Delphi is to form a consensus among experts on projected developments. This is very different from the purpose of a policy Delphi.

Policy Delphi. The purpose of a policy Delphi is not necessarily consensus, but rather seeks to generate opposing views on the resolution of an issue. It functions as a forum for generating ideas resulting in list of pros and cons for each option. Its goal is to “examine and estimate the acceptability of any given option” (Turoff, 1975, p. 87). Clearly, it is a tool that could be useful in a political setting. A policy Delphi study generally begins with a set of ideas generated from a review of the literature (Martino, 1972). This current study used some aspects of the policy Delphi method in the final rounds to identify possible policy and practice solutions for the main issues determined in earlier rounds of the study. The final Delphi method identified by Lang (1994) is the decision-making Delphi.

Decision-making Delphi. The decision-making Delphi model is used to help in the decision-making process among a diverse group of people with different and sometimes conflicting interests in the issue at hand. The issue is typically highly

contested and complex, thus a structured group discussion forum is necessary to insure all opinions are shared and all options for a solution are considered (Martino, 1972). A modified decision-making model of the Delphi technique was the primary model used in this current study.

Delphi Model Used for This Study

This study primarily employed a modified decision-making Delphi to explore research questions 1 and 2. For question 3 the Delphi questionnaire was designed to ask for possible solutions to the main issues identified in earlier rounds. The goal at that point in the study was to suggest a number of possible solutions to the issues identified rather than form a consensus. As stated, the policy Delphi method does not aim to form a consensus, but instead identifies a set of acceptable solutions. This is ideal for the purposes of this current study as it allows states to look at options that may meet their specific needs. The main modification to the process was in Round One of the study, in which the expert panelist from Virginia was interviewed to develop the initial questionnaire. The next chapter describes the methodology used in this current study.

3. METHODOLOGY

Description of Research Methodology

This study employed a four-round modified Delphi technique to build a consensus among experts in the field of accessible instructional materials (AIM). The main modification to the traditional Delphi technique included the use of semistructured phone interviews to gather information from participants in Round One of the study. In addition, Round Three and Round Four were combined. Rounds Two, Three, and Four followed the typical Delphi process.

Through this structured Delphi process, both qualitative and quantitative data were collected and analyzed to explore the advantages and challenges associated with providing AIM in Virginia. Providing AIM to allow access to text-based materials to students with print-related disabilities in grades Pre-K to 12 is a new requirement in the latest reauthorization of the Individuals With Disabilities Act (IDEA, 2004). To date, there is little guidance in the legislation and even less research in the area to draw upon as individual states try to determine the most effective and efficient way to provide services in this area. Experts with a vested interest in improving the quality and availability of AIM to students with print-related disabilities in grades Pre-K to 12, including policy makers, production specialists, and teachers working in Virginia and nationwide, participated in the study.

The Delphi method was selected for this study due to its ability to provide a structure for collective problem solving that ensured that all participants' knowledge, experiences, and opinions were considered equally; provided anonymity to respondents; and avoided pressure to conform (Hiltz & Turoff, 1993). Multiple iterations of questionnaires allowed participants adequate time to reflect on their own thinking and respond thoughtfully (Franklin & Hart, 2007). These factors are important when exploring a complex, highly contested real-life issue with very little historical context to draw upon (Helmer, 1994; Martino, 1972).

Analyses of qualitative and quantitative data collected through the interviews in Round One of the study and the Delphi technique in Rounds Two, Three, and Four were used to answer research questions 1 and 2, specifically:

1. What are the advantages and challenges associated with producing and disseminating AIM-VA materials?
 - a. What issues exist with producing each of the formats provided (Braille, large print, audio books, eText)?
 - b. What issues exist in delivering AIM-VA materials (Braille, large print, audio books, eText)?
2. What are the advantages and challenges associated with utilizing AIM-VA materials in the classroom?
 - a. What are the issues in determining eligibility to use AIM-VA materials with students?

- b. What are the issues in determining the appropriate AIM format to meet the needs of students?
- c. What are the issues with teaching students to use AIM-VA materials?
- d. What are the issues with using technology (hardware and software) to access the materials provided?

In addition, the analysis of the qualitative data collected through open-ended questions in the last round of the study was used to answer research question 3:

- 3. What recommendations do experts in the field of accessible instructional materials have for addressing the issues identified?

Participants

Participants in this study formed the Delphi panel of experts. The following section briefly explains the criteria and the basic procedures used to select the panel of experts, and also describes the participants on the panel and review team.

Delphi Panel Selection

The makeup of the expert panel is the most critical aspect of a Delphi study, as it directly relates to the quality of the results generated (Judd, 1972; Taylor & Judd, 1989; Skulmoski et al., 2007). Delbecq, Van de Ven, and Gustafson (1975) specifically state that three groups of people are well qualified to be subjects of a Delphi study: “(a) the top management decision makers who will utilize the outcomes of the Delphi study; (b) the professional staff members together with their support team; and (c) the respondents to the Delphi questionnaire whose judgments are being sought” (p. 85).

Participants in this study were divided into two groups. Group 1 included 13 local experts in the field of accessible instructional materials (AIM) who worked directly with the AIM-VA project. Group 2 was comprised of seven national experts in the field of AIM who were located outside of the AIM-VA project, and were associated with AIM services in other states. Group 1 participated in Round One of the Delphi process. Both groups participated in the remaining three rounds.

All participants in the study included experts specializing in one or more of the following domains as they relate to AIM: policy development and training (top management), production, delivery (digital rights managers), and use (teachers/assistive technology specialists). The selection of experts for the panel also met the following criteria: (a) demonstrated knowledge and experience in the area of AIM, (b) willingness to participate, (c) commitment to provide sufficient time to complete all rounds, (d) effective communication skills (Skulmoski et al., 2007), and (e) an openness to reconsider initial or previous judgments for the purpose of attaining consensus (Oh, 1974; Pill, 1971).

To find appropriate panelists for the study, the researcher asked members of the AIM-VA Advisory Board to nominate experts from Virginia for Group 1. National leaders from the Center for Applied Special Technology (CAST) were asked to nominate national experts for Group 2. Nominations continued until 13 local participants agreed to participate (Group 1) and 7 national experts agreed to participate (Group 2), creating a total of 20 participants. Whereas theory on the size of the expert panel varies, literature

suggests reliability and validity is strongest when at least 13 participants are included in the panel (Clayton, 1997; Linstone & Turoff, 2002).

The participants included 5 male and 15 female experts from varied geographic locations in Virginia (Fairfax Co., Henrico Co., Richmond, Stafford Co., Virginia Beach, Wythe Co.) and nationally (MD, MI, MN, ID, WY). All 20 experts had extensive experience in the field of AIM. There were four main categories of expertise among the participants: policy and training ($n = 5$), digital rights management ($n = 4$), production ($n = 3$), and use of each of one or more of the accessible formats including Braille, large print, audio books, and electronic text ($n = 4$). The remaining 4 participants were national experts with strong knowledge of and experience in a combination of policy, production, and use of AIM.

Obtaining Informed Consent

All participants were provided an electronic consent form via email communication and asked to review the information. A fax number and mailing address were also provided as alternative ways to return the signed informed consent forms. Eighteen participants digitally signed and returned the informed consent through email. Two local participants provided signed copies to the researcher at the time of their interview.

Review Team

A three-member review team of experts with experience with AIM and Delphi methodology was formed to advise the researcher on the development of the initial interview questions in Round One and the questionnaire for Round Two of the study. The

review team also approved the list of nominated experts. At the time of the study, the members of the review team were:

- Dr. Michael Behrmann is a professor in special education in the College of Education and Human Development (CEHD) at George Mason University (GMU) and the principal investigator of the AIM-VA grant. He is also the director of the Kellar Institute for Human disAbilities and is a national leader/innovator in special education with over 35 years devoted to improving services and personnel preparation in the field of special education and assistive technology. Dr. Behrmann was a member of the national file format committee and is currently leading the AIM-VA team.
- Dr. Penelope M. Earley is a professor and director of the Center for Education Policy and Evaluation in the CEHD at GMU. Prior to coming to Mason she was vice president at the American Association of Colleges for Teacher Education in Washington, DC. At AACTE, her responsibilities included federal and state governmental relations, policy analysis, and gender equity. She specializes in research and evaluation.
- Dr. Anya Evmenova is an assistant professor in special education in the CEHD, GMU. She is faculty on the AIM-VA grant, supporting the design and implementation of AIM-VA research agenda. To date, she has conducted a number of qualitative and quantitative exploratory and intervention studies to investigate the use and benefits of AIM-VA materials for students with various print disabilities.

Research Procedures

The discussion of the research procedures for this study is organized into four sections: data sources, study timeline, pilot process, and data collection procedures.

Data Sources

Data sources for this study consisted of both qualitative and quantitative information. Qualitative sources included (a) AIM-VA staff and advisory meeting notes; (b) field notes from phone interviews; (c) digital audio recordings from phone interviews; (d) interview transcripts; (e) data from open-ended questions on Delphi questionnaires from Rounds Two, Three, and Four; and (f) email or phone communication between the expert panelists and the researcher. Quantitative data were collected from the following sources: (a) responses from structured questions on the Round One interview protocol, and (b) responses to Likert rating scales on the Delphi questionnaires from Rounds Two, Three, and Four. Figure 3 illustrates the data sources that were used in the study.

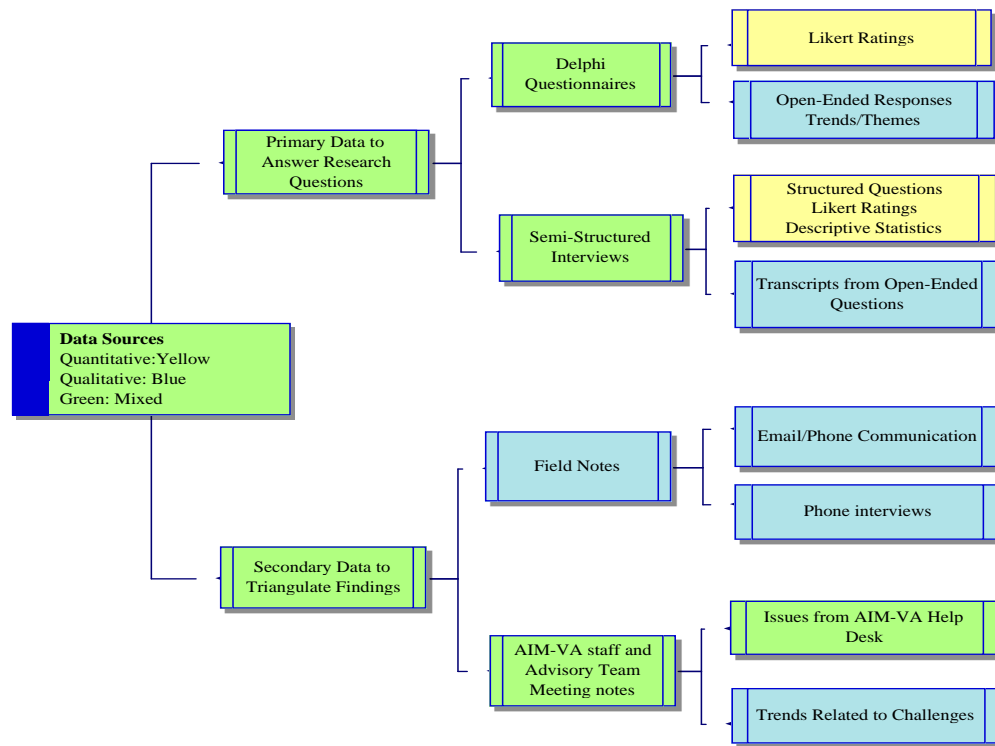


Figure 3. Data sources and type.

As mentioned earlier, 13 AIM-VA experts participated in Round One of the study. Eleven participants were interviewed over the phone; two requested face-to-face interviews (the interview protocol used is available in Appendix B). Both the qualitative and quantitative data from the interviews were analyzed and used to develop the Delphi questionnaire used in Round Two (see Appendix C). All expert panelists, those from the AIM-VA project (Group 1) and the national group (Group 2), participated in Rounds Two, Three, and Four to form a consensus of opinion among the expert panelists. Consistent with a typical Delphi study, the results of the Round Two questionnaire determined the content of the combined Rounds Three and Four questionnaires. Due to

time constraints, Rounds Three and Four were combined, asking participants to both rank issues as well as provide suggestions to address identified challenges. Each questionnaire was developed by the researcher with input and guidance from the review team and then piloted before being distributed to the expert panel (see Appendix D for Rounds Three and Four questionnaires).

Study Timeline

The Delphi study was conducted over a period of 21 months (see Figure 4). Upon approval of the Human Subject Review Board (HSRB), the panel of experts was set up in April and May 2011. The data collection process for all rounds of the study took 18 months (June 2011 - November 2012) to complete, with the final summation of the results completed in November. See Figure 4 for specific details regarding the study timeline.

To expedite data collection, participants were asked to provide feedback to questionnaires online; they were also provided with a version of the questionnaire in Word format for those who had unreliable Internet access or preferred to return the questionnaire via email or facsimile. As a result, 17 questionnaires were submitted using the Web interface, 2 questionnaires were completed using the accessible Word document, and 1 participant submitted the questionnaire in hard copy via facsimile.

To encourage timely completion of each round, participants had an opportunity to receive entries in a drawing to win one of two Apple iPads that were raffled off at the completion of the data collection process. Additional entries for the drawing were provided to participants who completed the questionnaires within the 2-week period

provided in each round. Participants received one entry when they agreed to participate and returned the signed informed consent form. Participants who dropped out at any point before the data collection process was completed were not eligible for the drawing.

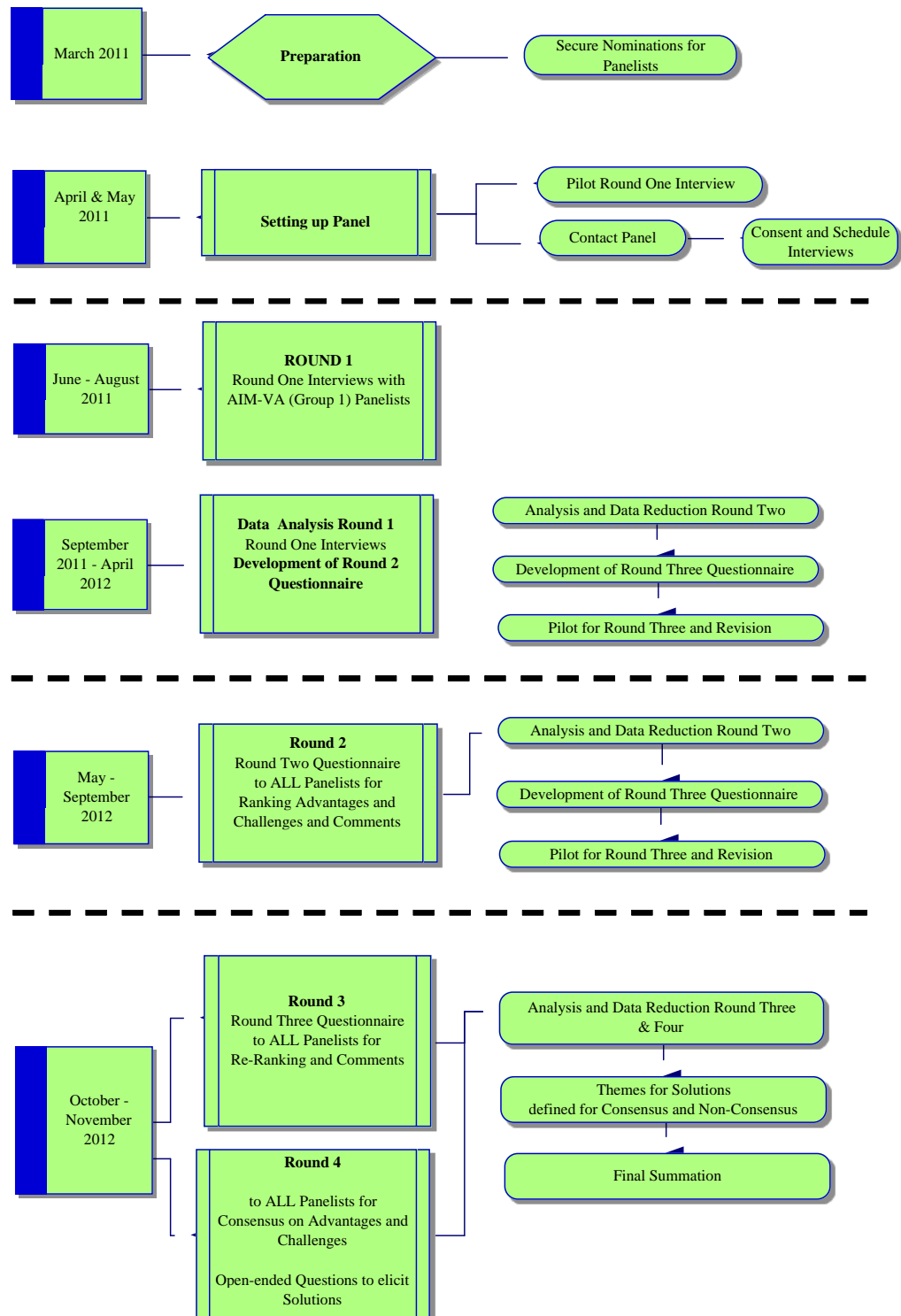


Figure 4. Timeline for the Delphi study.

Piloting Process

The pilot process was conducted for each round of the Delphi study. Before the questionnaire for each round was sent to the expert panel, it was given to the review team for approval. Following approval it was and then sent to pilot participants.

Review team. The review team provided feedback on tone and content as well as provided guidance related to data collection procedures (e.g., Likert scales, rank ordering of items). The initial interview protocol was approved without changes from the review team. After reviewing the questionnaire for Round Two, a content change was suggested. The review team suggested adding an additional field to allow participants to rank order the issues within each domain area.

Pilot participants. The pilot participants included two people, one teacher/assistive technology specialist and one former AIM-VA production specialist. Both provided feedback to clarify wording and placement of items, and tested the online questionnaire and the accessible Word document to ensure that there were no technical issues with the instruments. Minor wording changes were suggested by the pilot participants for both the interview protocol and each round of questionnaires. Additional volunteers, who were unrelated to the study, also tested the online questionnaire before each round to ensure that data were recorded properly. Once all feedback was received from both the review team members and pilot participants, appropriate changes were made. The final version of the instrument was then distributed to the expert panelists.

Data Collection Procedures

The data collection procedures were conducted in stages that incorporated the four-round Delphi process. The stages included, (a) setting up the panel of experts, (b) Round One interviews, (c) Round Two questionnaire, (d) combined Round Three and Four questionnaires, and (e) Final Summation. Procedures for each stage are discussed below.

Setting up the panel. Once the nominations for panel members were made and approved by the review committee, the researcher contacted each nominee by phone to invite them to participate. For nominees who could not be reached by phone, an email was sent. The initial contact with the nominees was to request their participation, explain the purpose of the study, and explain the scope of their involvement, including (a) proposed timeline for the study (see Figure 4), (b) the primary expertise they bring to the study (including whether they were part of the VA-AIM group or the national group), and (c) the best method of communication (email, phone, or fax). The researcher also gathered some preliminary demographics on potential panelists, including additional contact information, title, and their role in the field of accessible instructional materials (AIM). To recognize the time commitment required and encourage participation, nominees were told of the possibility of winning one of two Apple iPads that were raffled off after all stages of data collection were completed.

Nominees who agreed to participate were provided with an informed consent form to sign. A follow-up email message was sent to nominees who had not responded to the phone message. If a response was not received after the follow-up email, a phone call

was made. Nominees who decided not to participate were asked if they could nominate someone in their place.

Round One administration: Interviews. An interview date was established at the time of the initial contact with the local AIM-VA experts. All of the interviews were scheduled and completed over a 3-month period (June 2011 - August 2011). Following the initial scheduling, the researcher recorded the interview date on a master calendar and sent a follow-up email to confirm the interview date with the AIM-VA participants.

Two days prior to the interview, the participants were sent an email to remind them of the interview date and time. They were also provided with a Word document listing the interview questions to allow them an opportunity to review the questions and consider their thoughts prior to the interview and expedite the interview process. It also allowed the participants the ability to reread questions as needed during the interview, to reduce the possibility that questions are misinterpreted. This was particularly helpful for structured questions that contained a Likert scale, to ensure that ratings were not reversed. The protocol consisted of both open-ended and structured questions, yielding both qualitative and quantitative data (the interview protocol is provided in Appendix B).

Two of the 13 local experts were interviewed in person; the remaining 11 participants were interviewed over the phone. The average duration of the interview was 1 hour and 15 minutes. All participants were asked for permission to record the interview. The researcher obtained verbal permission to record before moving forward with the interview. In addition to collecting basic demographic information, the interviews probed into areas including utilizing AIM services, training, production, delivery, and use of the

materials in the classroom. The objective of the interview was to elicit specific experiences and opinions regarding the advantages and challenges of providing accessible instructional materials through a statewide program, as observed by experts who have firsthand knowledge of the AIM-VA project.

Round Two development and administration. The Round Two questionnaire was developed based on responses to open-ended questions on the interview protocol. Items included on the questionnaire were verified using quantitative data gathered from rating scales that were also included in the interview, as well as from call logs gathered from the AIM-VA help desk. The data analysis resulted in a list of advantages and challenges, organized into domain clusters.

The Round Two questionnaire was created using Snap Survey software hosted and administered by the Kellar Institute for Human disAbilities at George Mason University. In this round, local AIM-VA expert participants (Group 1; $n = 13$) and national AIM expert participants (Group 2; $n = 7$) were asked to rate the level to which they believed each item was an advantage or challenge associated with providing accessible instructional materials (AIM). Each item was rated on a 4-point Likert scale (Strongly Agree, Agree, Disagree, and Strongly Disagree). Panelists were also asked to briefly explain their rating in the space provided after each item. At the end of each domain cluster, space was available for participants to provide any additional items that they believed should be included in the discussion. Once the questionnaire was posted, it was sent to the review committee for approval. The committee suggested adding a field to the questionnaire to ask participants to rank order the advantages and challenges within

a given domain cluster. Rank ordering forced participants to make a choice when Likert responses were the same. This enabled the researcher to gather additional information about the level of importance of specific advantages and challenges.

Following the final approval from the review team, the Round Two questionnaire was sent to all participants ($N = 20$). Beginning on May 3, 2012, participants were individually sent an email to indicate the beginning of Round Two. The email message provided a link to the online questionnaire and a predetermined participant code for confidential tracking purposes. During the development of the online questionnaire, it was noted that participants would be required to complete the online questionnaire in one sitting, without closing the Internet browser window. Thus, considering the length of the questionnaire, the researcher also provided the questionnaire in Microsoft Word format as an attachment. The Word documents had the participant code on them. Participants were told that they could use the Word document to complete the questionnaire prior to going to the online version to enter the data. This also allowed participants with unreliable access to the Internet to return the questionnaire via email, fax, or through the postal service.

Participants were initially afforded 14 days to complete the survey. Those who submitted the survey within the 14 days were given an additional entry for the iPad raffle. Periodic email reminders were sent to encourage timely submission. Eleven of the 13 local expert participants submitted Round Two questionnaires. One questionnaire was returned after the data were synthesized for the combined Round Three and Four

questionnaire. All 7 national expert participants submitted questionnaires for Round Two, resulting in a total of 18 questionnaires submitted and analyzed in Round Two.

Rounds Three and Four combined: Development and administration.

Consistent with the Delphi method, the Round Three questionnaire was developed based on the results of the Round Two questionnaire. Due to time constraints and a high percentage of agreement already established on many items included in the Round Two questionnaire, the researcher decided to combine Rounds Three and Four into one final round questionnaire which addressed objectives of both Round Three and Round Four.

Part 1: Reconsidering challenges. This section of the questionnaire included an adjusted list of advantages and challenges, again organized into domain clusters. Items included in this section had not yet reached a level of agreement of 75% or higher. Items were listed in rank order of importance from highest to lowest. Participants were asked to reconsider their ratings on these challenges. To assist panelists in making an informed decision, information gathered from Round Two was included, such as frequency percentages, level of agreement, and the mean rank order of each item within the domain cluster. In addition, a summary listing of comments was provided.

After reviewing the information, participants were provided with radio buttons to indicate whether they believed the issue presented should be addressed. They were asked to respond using one of four options: (a) Yes—on a local level, (b) Yes—on a national level, (c) No, and (d) N/A. Participants who responded by selecting “yes” (item a or b in the previous list) were asked to provide suggestions for addressing the issue. If (c) “No” was selected, they moved to the next question. Participants who did not feel they had

enough knowledge or experience to adequately respond to the item were asked to select “N/A.”

Part 2: Suggesting solutions to established challenges. This part of the questionnaire listed challenges that had reached a level of agreement that was 75% or higher, indicating that the majority of participants agreed that these items were indeed challenges. As with Part 1, participants were provided with radio buttons to indicate whether they believed the issue presented should be addressed. They were asked to respond using one of four options: (a) Yes—on a local level, (b) Yes—on a national level, (c) No, and (d) N/A. Participants who responded by selecting “yes” (a or b in the previous list) were asked to provide suggestions for addressing the issue. If they selected (c) “No,” they moved to the next question. Participants who did not feel they had enough knowledge or experience to adequately respond to the item were asked to select “N/A.”

Part 3: Considering NEW challenges. The final section of the questionnaire listed any new advantages and challenges that were identified in the Round Two questionnaire. In this section of the questionnaire, participants were asked to rate the level to which they believe the new item was an advantage or challenge to providing AIM at the statewide level, using the same 4-point Likert scale used in the Round Two questionnaire. As in Part 2, they were also asked to indicate whether they believed the item was a challenge that should be addressed on the local or national level and to provide suggestions to address the challenge.

The combined Rounds Three and Four began October 12, 2012. Each participant who completed the Round Two questionnaire was sent a personalized email indicating

the beginning of the combined Rounds Three and Four Questionnaire (Group 1; $n = 11$) and (Group 2; $n = 7$). The email message contained a link to the online questionnaire as well as a Microsoft Word version of the questionnaire, with participant codes noted. Participants were informed that Rounds Three and Four were combined and would be the final round of the study. As an added incentive to complete the questionnaire within a 2-week period, they were reminded of the opportunity to increase their chances to win one of two iPads by completing the questionnaire by October 28th.

Final summation and analysis. After the combined Rounds Three and Four questionnaires were returned, the final data analysis was conducted. During this stage, the researcher contacted the participants to clarify responses to the final questionnaire as well as to member check consolidated results. Once the last questionnaire was received, participants were sent an email message to thank them for responding to the final round; inform them that the data collection for the study was completed; and ask for permission to contact them, if needed, to clarify responses to the final questionnaire. The letter also identified the date for the iPad raffle drawing and indicated how many entries they had in the drawing. Finally, they were informed that a final report of findings would be sent to them.

Data Analysis

The data sources collected through the modified Delphi technique in this study allowed for the use of both qualitative analysis techniques and statistical analysis to answer the research questions. Qualitative data collected throughout the study were

explored using constant comparative analysis. The researcher engaged in a series of three processes described by Miles and Huberman (1994).

1. Data Reduction: In this process, the researcher selected, compiled, and transformed information from data sources (interview transcripts, field notes, email communication, questionnaires, etc.) to begin the initial stages of coding and categorization.
2. Data Display: In this process, the researcher moved beyond the initial codes and categories developed during data reduction. At this stage, the use of matrices, charts, and graphs allowed the researcher to discern systematic patterns and interrelationships. As a result, additional, higher-order categories or themes emerged.
3. Conclusion Drawing and Verification: In this process, the researcher explored what the analyzed data meant and assessed their implications for the research questions posed. Data were analyzed by revisiting as many times as necessary to cross-check or verify these emergent conclusions.

Quantitative data collected throughout the study were analyzed using SPSS to determine central tendencies (mean, median, and mode) as well as determine the level of dispersion (standard deviations) and level of agreement for items that were rated using a Likert scale. Table 1 lists the specific data sources that were used to explore individual research questions.

Table 1

Analysis Plan for Main Research Questions

Question 1: What are the advantages and challenges associated with producing AIM-VA materials?

Question 2: What are the advantages and challenges associated with utilizing AIM-VA materials in the classroom?

Data Sources	Data Management	Data Analysis
1. Round One Interviews a. Transcripts	Transcripts saved as Word files, organized in NVivo	Constant comparative analysis to develop themes
b. Descriptive Statistics and Ratings	Ratings entered into SPSS	Descriptive statistics, central tendencies, levels of agreement
2. Rounds Two, Three, and Four Questionnaires a. Quantitative Ratings	Results downloaded into SPSS/Excel	Descriptive statistics, central tendencies, level of agreement
b. Qualitative Justification for Ratings and Additional Items Included	Responses compiled into Word files	Constant comparative analysis to triangulate and verify findings
3. Field Notes (interviews/email and phone communication, AIM-VA Meeting Notes)	Document compiled into notebook for review	Constant comparative analysis to triangulate and verify findings

Question 3: What recommendations do experts in the field of Accessible Instructional Materials have for addressing the issues identified?

Data Sources	Data Management	Data Analysis
1. Rounds Three and Four Questionnaires a. Quantitative Ratings	Results downloaded into SPSS/Excel	Descriptive statistics, central tendencies, level of agreement
b. Qualitative Justification for Ratings and Additional Items Included	Responses compiled into Word files	Constant comparative Analysis to develop themes
2. Field Notes (email and phone communication)	Documents compiled into notebook for review	Constant comparative Analysis to triangulate and verify findings

Data Analysis of Round One Interviews

The Round One interviews were digitally recorded. In addition, the researcher jotted down notes and reflections during and immediately following each interview. Digital recordings were also transcribed and saved as individual Word files using the participant code for the file names. The researcher used NVivo software to store and organize transcribed files and complete the initial stages of coding and categorization. For the initial coding, the researcher used the broad categories covered in the interview protocol as a starting point to explore the transcribed interviews. Words, phrases, and statements were identified that represented possible advantages and challenges within the broad categories. In the second round of coding, the researcher aggregated the data by grouping similar phrases across all interviews and pulling these statements into Word files. Subsequently, these phrases were transferred onto sticky notes, which allowed the researcher to physically manipulate similar statements into groups and experiment with different grouping options to further refine categories of advantages and challenges. Further analysis included visual displays using graphic organizers to further clarify emerging themes/domains that ultimately generated the questionnaire used in Round Two of the study.

To verify the initial list of advantages and challenges, the researcher used quantitative data gathered from Likert scale items included in the interview protocol, as well as meeting notes from AIM-VA staff and advisory board meetings.

Data Analysis of Round Two, Three, and Four Questionnaires

Data in Rounds Two, Three, and Four were analyzed to identify convergence of opinion among the panelists. For these rounds, central tendencies (mean, medians, and mode) and level of dispersion (standard deviation) were calculated for all items using SPSS software. In addition, a percentage of agreement was determined with a *priori* of 75% or higher (Clayton, 1997). The qualitative data collected in each questionnaire were compiled into Word documents and organized by domain area to sort and analyze for additional emerging themes.

Credibility and Reliability

Credibility of findings was supported through triangulating multiple data sources and types (qualitative and quantitative). In addition, the use of a four-round Delphi afforded respondents the opportunity to modify and refine their judgments based on reflective thought and the collective feedback from other experts in the group (Mitroff & Turoff, 1975). The researcher addressed credibility by comparing repeating responses from each round. Cyphert and Gant (1971), Brooks (1979), Custer, Scarcella, and Stewart (1999), and Ludwig (1997), point out that three iterations are often sufficient to collect the needed information and to reach a consensus in most cases. Fewer rounds can also be acceptable, depending on the level of agreement desired.

The research design afforded a high level of procedural reliability. According to Dagenais (1978), the Delphi technique has a highly acceptable level of process reliability. Furthermore, Dalkey (1972) indicates that when the number of participants per group is greater than 13, the question of process reliability can be answered to a satisfactory level.

A total group of 20 participants participated in all rounds consisting of Delphi questionnaires, exceeding the number of participants required to obtain an acceptable level of reliability for a Delphi study. The next chapter presents the results for this Delphi study.

4. RESULTS

This chapter presents the results of the Delphi study exploring the implementation of one component of federal education policy at the state level through the AIM-VA project as well as providing recommendations for best practices in providing accessible instructional materials (AIM) for students with print-related disabilities in grades Pre-K to 12. The data collected in four rounds of the Delphi study were analyzed using descriptive statistics (e.g., mean, median, mode, standard deviation, and percentage of agreement) and qualitative data analysis. During the process of analyzing the data, the researcher did not find the mean, median, and mode to be directly useful in answering the research questions; however, the data were included in the tables to provide data that may be useful for future inquiry into specific advantages and challenges identified by the participants. The findings are organized by each round of the study.

Round One

Round One was designed to gather information in an effort to identify potential challenges and advantages related to providing accessible instructional materials (AIM) using a statewide coordinated system in Virginia. Data were collected from interviews with 13 local AIM-VA experts. Each interview was approximately 90 minutes in length. Interview participants were asked both open-ended and structured questions in three

distinct areas: (a) utilizing AIM-VA services, (b) file formats provided through AIM-VA, and (c) training provided through AIM-VA (see Appendix B for interview protocol).

Qualitative Data

Through the analysis of over 13 hours of interviews with 13 local experts, the researcher collapsed the raw data from the interview transcripts by first identifying meaningful text (e.g., statements, ideas, thoughts) that (a) appeared to address a research concern, (b) helped to understand the participants' frame of references, or (c) "seemed important" at the time (Auerbach & Silverstein, 2003). The resulting text passages were organized into one of the three main areas of exploration provided through the interview protocol. Data were initially coded using NVivo software to identify repeating phrases and statements. Repeated phrases were then grouped together to form a list of issues which were categorized as an advantage and or challenge. Similar advantages and challenges were combined and paraphrased to accurately represent an issue. Redundant statements were eliminated. Sample phrases and statements used to develop advantages and challenges are provided in Table 2, sorted by subdomain.

Table 2

Round One: Sample Statements to Support Advantages and Challenges in Subdomains

Domain: Using AIM in the Classroom	
Advantage Subdomains	Challenge Subdomains
<p><i>Multiple formats available to meet student needs</i></p> <ul style="list-style-type: none"> • “one size does not fit all” • “there are features in every single one of the formats that we provide that are beneficial for a variety of things, whether it be the computer system, the age level of the student, the disability area, the teachers expertise, whether they take it home.” • “we have choices. And I think that’s the most positive. There are States that [only] provide one” 	<p><i>Technology-based challenges</i></p> <ul style="list-style-type: none"> • “it is hard with the FTP downloads” • “We have school systems and schools that are not able to do that for whatever reason. They’re not allowed by their IT Department to download” • “each [school district] has their own policies and procedures about what they will and will not allow and how to install that stuff.” • “Because everybody has different computer systems—some of them are server-based and some of them—individual classrooms have their own computers.”
<p><i>Technology tools</i></p> <ul style="list-style-type: none"> • “So we’ve set up this new contract with Don Johnston to really move away from software-delivered content, to more of the hardware-delivered content.” • “I’m very excited about it because, I mean, everywhere you turn now people are talking about Cloud delivery of content and storage.” 	<p><i>Eligibility-based challenges</i></p> <ul style="list-style-type: none"> • “It’s really for me the lack of clear federal policy and in the policy outdated references to World War I criteria. So they use the Library of Congress definitions back from when soldiers from World War I returned with head injuries and they use outdated terms.” • “we should be seeing probably 30-40,000 kids using this system. And we’re probably at about four or five thousand in terms of orders. So I think we’re still nowhere near the capacity that we could be.” • “actually the definition of organic dysfunction and how vague it is in the federal law.”
<p><i>More students provided with accessible text books—eligibility</i></p> <ul style="list-style-type: none"> • “The Department of Education was very kind in relaxing the federal interpretation of that because what the federal law actually says is that it needs to be determined by medical personnel through diagnostic tests that a student has an organic dysfunction.” • “I do appreciate that the Department of Education has attempted to further define organic dysfunction and that definition is available on the Web site, but it still leaves a significant number of questions for IEP teams 504 teams who are working with the students.” 	<p><i>File format-based challenges</i></p> <ul style="list-style-type: none"> • “just not even knowing that there is accessible materials.” • “It’s more of a general lack of awareness.” • “It’s the same issue with any other education. It’s having information filter down to the teacher, the end user, is a problem.” • “Plus a lot of them had never heard of this material when they went through their training programs to get their degree in teaching. This stuff never existed then for many teachers.” • “it’s just a matter of training those end users or the...teachers on how to integrate that into the classroom setting and things like that....”

(continued)

Table 2. Round One: Sample Statements to Support Advantages and Challenges in Subdomains (continued)

Domain: Producing AIM Materials	
Advantage Subdomains	Challenge Subdomains
	<ul style="list-style-type: none"> • “we really need to go in the back way to this and really approach the time with the teachers. And, then...how do we get the teachers into training.” • “The files [PDF] are so big that we have to go in and we have to chop them up in order for us to process them into the format that we can use for our readers.”
Domain: Ordering and Delivering AIM	
<p><i>Strong level of communication among stakeholders</i></p> <ul style="list-style-type: none"> • “in the first year we had a lot of problems. But since we’ve created a new database....” • “For ordering, they have really done a good job of listening to us and streamlining it.” 	<p><i>Coordination and communication with digital rights managers</i></p> <ul style="list-style-type: none"> • “I would love to see someone who has technology skills as a requirement.” • “it’s our DRM, the organizational skills of them, and their own personal knowledge of technology and other disability areas.” • “it is 100% the organizational skills of a DRM. We have people that we ask ‘can you then please give us the tracking number?’ They’ve never written it down so we cannot even go onto UPS to find out if it was delivered” • “This is a job on top of their responsibilities” • “Materials get lost in schools when the DRM does not reside in that school.” • “In the summer time, we have no contact with eighty percent of them, and we have questions.”
<p><i>Effective database for management and tracking</i></p> <ul style="list-style-type: none"> • “Now, they have a nice little library on file, so that ninety-five percent of the stuff that I order is already on file.” • “The database that they have built into this new system makes life so much easier for me.” • “hassle-free in the sense that once a DRM learns the system and understands it” 	<p><i>Delivery of books electronically</i></p> <ul style="list-style-type: none"> • “They’re not allowed by their IT Department to download” • “Many of the FTP sites can be blocked by the local IT folks or...their Internet connection is not strong enough and it takes forever to download the FTP. They sometimes have to download it overnight.” <p><i>Retention of books</i></p> <ul style="list-style-type: none"> • “helpdesk spends many, many hours on the phone locating materials for DRMs.” • “UPS says they delivered and perhaps a janitor gets that box and it gets put somewhere and then that DRM who is not a local school person doesn’t have a clue where it is.”

(continued)

Table 2. Round One: Sample Statements to Support Advantages and Challenges in Subdomains (continued)

Domain: Ordering and Delivering AIM	
Advantage Subdomains	Challenge Subdomains
	<i>Ordering – miscellaneous</i>
	<ul style="list-style-type: none"> • “In some cases it made more sense, the desire for what was needed was just download it directly from the individual membership for the students.”
Domain: Producing AIM Materials	
<i>Availability of AIM files in a timely manner</i>	<i>Creating quality AIM files in a timely manner</i>
<ul style="list-style-type: none"> • “There’s a single point of entry. In the past people had to turn to five different places to get materials.” • “I think just knowing that there is this resource in Virginia that many other states don’t have access to, and that local school divisions don’t have to spend the hours upon hours of time that they used to have to spend trying to hunt down these resources or create them in-house.” 	<ul style="list-style-type: none"> • “The problem has been that we never got a lot of the source files from the publisher. It’s been having to recreate the digital texts from scratch.” • “Most of our textbooks in Virginia were outside of the NIMAS regulations.” • “So it’s going to take a monumental effort—just human beings spending 40 hours to 80 hours scanning the text and then marking it all up.”
<i>Access to expertise in the development of file formats</i>	<i>Lack of training and research on the best technology tools to use for production of AIM</i>
<ul style="list-style-type: none"> • “We had a little bit of guidance, because I had access to a person who did it at higher education that would come in and consult.” • “The advantages are that we’ve had folks that really have expertise. The folks at the Department of the Blind and Vision Impaired, they’re experts in Braille production.” • “The folks from Recordings for the Blind and Dyslexic do a phenomenal job with audio recordings.” 	<ul style="list-style-type: none"> • “We don’t have math books, and math is hard for our kids. We don’t have physics books. We don’t have chemistry books; the symbols are not there.” • “we had decisions made at the spur-of-the-moment, wrong decisions about equipment. There was no plan.”
<i>Cost of Production and delivery</i>	<i>Cost of production</i>
<ul style="list-style-type: none"> • Large-Print Policy: Items included in this area were added based on the discussion of the costs of producing large print at the AIM-VA Advisory Board Meeting and AIM-VA staff meetings. 	<ul style="list-style-type: none"> • “the type of paper that we print on, the binding, and we’re oftentimes at the mercy of whatever we can afford, versus printing on the absolute best heavy paper with the best binding.”
Training on AIM-VA Services and Implementation	
	<i>Limited time available for training</i>
	<ul style="list-style-type: none"> • “Teachers aren’t being released [to go to training] now.” • “information that is provided through AIM Virginia needs to filter down to [teachers].” • “it was too much information [Recorded Webinars]. And I say that too much information in the one video. It is like it needed to be broken apart”—“I felt like it needed to be broken down into smaller pieces.”

Potential challenges and advantages were sorted and resorted using a graphic organizer to provide a visual representation of the data. A sample graphic that was created to explore the domain of ordering and delivery is provided in Figure 5.

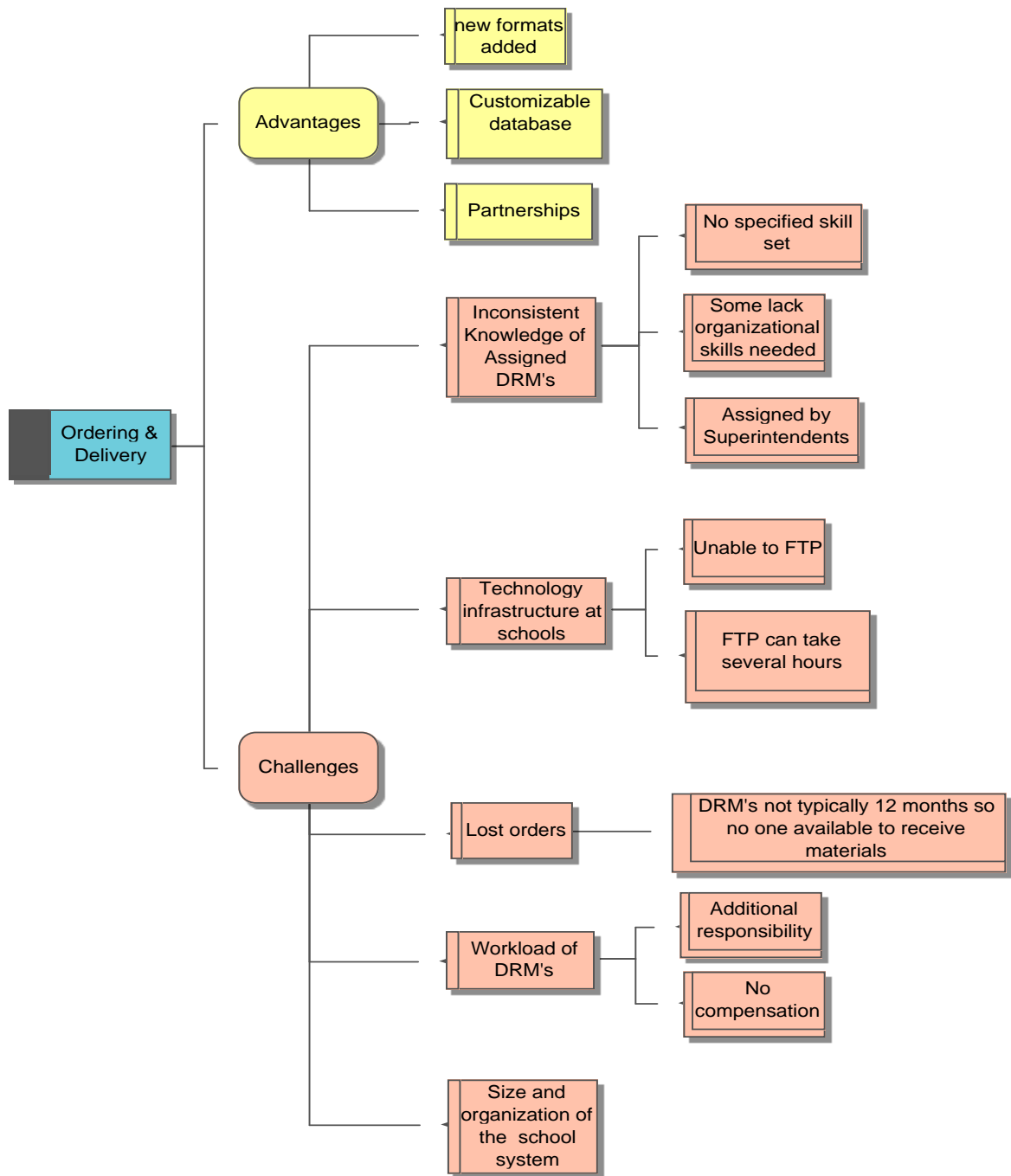


Figure 5. Graphic representation of the ordering and delivering domain.

The initial analysis of the interviews resulted in six overarching domains: (a) using AIM in the classroom, (b) ordering and delivering AIM, (c) producing AIM, (d) training, (e) communication, and (f) policy. After additional sorting and review of the repeating ideas under the communication and policy domains, they were absorbed into one of the first four domains listed previously. Communication was included as a subdomain under ordering and delivery and policy issues were dispersed across many domains and subdomains. The resulting broad domains are defined as follows.

Domain 1: Using AIM in the classroom. This domain is focused on the potential challenges and advantages to implementing accessible instructional materials for students participating in activities that take place in the classroom.

Domain 2: Ordering and delivering AIM. This domain is focused on the potential challenges with the process of ordering and delivering AIM file formats between school systems and the AIM-VA Project including AIM-VA partners.

Domain 3: Producing AIM materials. This domain is focused on the potential challenges and advantages to implementing AIM related to the production and quality of file formats provided by AIM-VA and their partners.

Domain 4: Training on AIM-VA services and implementation. This domain is focused on the potential challenges and advantages to implementing AIM in relation to current training practices used to inform stakeholders on the services provided by AIM-VA and the process required to receive services.

A total of 40 potential advantages and 64 potential challenges were identified. Potential advantages were divided into 3 domains and 8 subdomains. The potential challenges were divided into 4 domains and 11 subdomains. Thus, Domains 1 to 3 were used to categorize both advantages and challenges within unique subdomains. Domain 4 was only used to categorize challenges. No advantages that were noted in the first round of data analysis appeared to fit under Domain 4.

A complete list of advantages and challenges organized by domain and subdomain are provided in the subsequent section.

Initial list of advantages. A number of advantages emerged from the interviews.

Domain 1: Using AIM in the classroom. Advantages under Domain 1 were divided into three subdomains.

Subdomain: Multiple formats available to meet student needs.

1. More than one accessible format for the same book can be ordered for the same student.
2. Students can access books in different environments (e.g., on the bus using iPhone and in the classroom using accessible PDF).
3. Students can access information using their dominant or preferred learning style.
4. Students can access information using their preferred technology.
5. It is free and easy for teachers to provide accessible textbooks statewide for students in the classroom.

6. It saves teachers the time of producing accessible text by providing a statewide program.

Subdomain: Technology tools.

1. Providing multiple formats allows schools to use the technology for which they have access.
2. Partnership with Don Johnston provides access to Read Outloud to all schools in Virginia.
3. AIM-VA files can be used on student-owned technology tools (iPads, iPhone, laptops, CD players provided by Learning Ally or DBVI).
4. Partnerships with assistive technology companies/vendors continue to move technology forward and provide easier access to students (e.g., Don Johnston—BookStream).

Subdomain: More students provided with accessible text books—eligibility.

1. Virginia Department of Education (VDOE) interpretation of eligibility requirements for AIM allows students identified as having a learning disability to use AIM-VA services without requiring a diagnosis from a medical doctor.
2. VDOE interpretation of eligibility requirements allows students being served through a 504 plan, as a result of a print-related disability, to use AIM-VA services.
3. Eligibility decisions are made by the IEP team.

Domain 2: Ordering and delivering AIM. Advantages under Domain 2 were divided into two subdomains.

Subdomain: Strong level of communication among stakeholders.

1. The AIM-VA Advisory Group allows a strong level of stakeholders' involvement.
2. AIM-VA production and policy staff are highly responsive to the needs of stakeholders.
3. DRMs act as liaisons between school systems (administrators, teachers, IEP teams and AIM Production—single point of contact).
4. Full-time help desk for technical troubleshooting, just-in-time training, and process issues is helpful.
5. AIM-VA Web site is comprehensive for quick information.

Subdomain: Effective database for management and tracking.

1. AIM-VA database is specifically programmed for the project with a full-time programmer to make adjustments as needed.
2. All AIM formats can be ordered from the same database system (one-stop shop).
3. Large library of existing AIM files has been developed and is available to teachers.
4. Database is easy to use.
5. Partnership with UPS provides a familiar, reliable, and inexpensive delivery system.

6. The ability to report data on student use of AIM that was previously available through multiple databases from multiple providers has increased.

Domain 3: Producing AIM materials. Advantages under Domain 3 were divided into three subdomains.

Subdomain: Availability of AIM files in a timely manner.

1. Large library of existing AIM files has been developed and is available.
2. Maintaining a partnership with Learning Ally adds to the library of immediately available books.
3. Maintaining a partnership with Virginia Department for the Blind and Vision Impaired (DBVI) adds to the library of immediately available books.
4. Maintaining a partnership with Bookshare adds to the library of immediately available books.
5. Development of Word files created and edited by AIM-VA production will provide quality files to translate into Braille.

Subdomain: Access to expertise in the development of file formats.

1. A partnership with Learning Ally is maintained to produce audio books.
2. A partnership with DBVI is maintained to produce Braille formatted books.
3. Location of major production of formats at a university (special education unit) provides expertise regarding the needs of students with print-related disabilities.
4. Systematic—"assembly line" approach is used to develop materials (computer-savvy student workers become experts in their assigned jobs).

5. University personnel constantly researching and experimenting with new formats to keep up with advancements in technology (e.g., ePub files).

Subdomain: Cost of production and delivery.

1. State-funded program provides shared resources.
2. University location provides unlimited access to student wage workers, reducing personnel costs.
3. Partnerships with major production houses reduce personnel costs.
4. UPS statewide contract provides very low delivery costs.
5. Free delivery of electronic files is possible through the use of an FTP server.
6. Partnerships with assistive technology companies reduce the cost of software used for production.

Initial list of challenges. A number of advantages emerged from the interviews.

Domain 1: Using AIM in the classroom. Challenges under Domain 1 were divided into three subdomains.

Subdomain: Technology-based challenges.

1. Inconsistent level of technology in classrooms is observed (new vs. outdated technology).
2. A decision about what technology should be used by a student who needs AIM is based on what is available, not what is most beneficial to the student.
3. Little research is available to justify the use of AIM.
4. Teachers are not adequately trained on assistive technology or AIM at the preservice level.

5. Even with training, it is difficult for teachers to keep up with the advances in technology.
6. Restrictive school-based policies for installing software exist.
7. Quality of technology tools (hardware, software, etc.) available across school systems varies.
8. Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities.
9. Read Outloud software (available to all schools in Virginia) does not read Word documents.

Subdomain: Eligibility-based challenges.

1. Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.
2. Outdated eligibility regulations are based on the Chaffee Amendment.
3. Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness.
4. Information about the availability of AIM services is not reaching classroom teachers.
5. Information about the availability of AIM services is not reaching parents.
6. DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.
7. Eligibility requirements are inconsistent across school districts.

8. Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality.

Subdomain: File format-based challenges

1. Teachers and IEP teams are unaware of all of the formats that are available to help their students.
2. Teachers and IEP teams are confused about the multiple formats available.
3. Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.
4. Teachers do not use textbooks often in the classroom.
5. Most of the materials used for instruction in the classroom are not provided through AIM.
6. Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.
7. Many school systems do not have the proprietary CD players needed to play Learning Ally files (schools are currently unable to download files directly from Learning Ally).
8. PDF files provided by AIM-VA are too large to open in many programs (e.g., Kurzweil) and require too much time to break into parts to use in the classroom.
9. Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology-based options.

10. Electronic Braille format is not widely used due to lack of availability of refreshable Braille display technology.

Domain 2: Ordering and delivering AIM. Challenges under Domain 2 were divided into four subdomains.

Subdomain: Coordination and communication with digital rights managers (DRMs).

1. There is not a standard skill set required of personnel designated as digital rights managers (DRMs).
2. DRMs are assigned differently depending on the school system.
3. DRM assignments change regularly without notifying AIM-VA.
4. Compensation is not provided to DRMs for the added responsibility of managing the order and delivery of AIM materials.
5. DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.
6. Assigning contractors as DRMs makes communication and training difficult.
7. DRMs are not typically 12-month employees—leaving no designated person to receive books during the summer months.
8. AIM-VA closes for a period of time to new orders, making it difficult to get books for new or transferring students.

Subdomain: Delivery of books electronically.

1. Security systems in place in schools prevent DRMs from downloading files from FTP servers.

2. It is difficult for some DRMs to find a computer that will allow them to save files (e.g., many school systems require a password to save files).
3. Slow Internet connections in more rural systems time out before files are fully downloaded.
4. DRMs download files from personal computers to bypass security restrictions.

Subdomain: Retention of books.

1. Students using AIM materials do NOT always return books to the school.
2. DRMs develop a “personal library” of AIM files to possibly use for another student in the future, thus compromising copyright.
3. AIM-VA policy prohibits DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM.
4. Books are lost because DRMs in large school systems lose track of where books are within the district.

Subdomain: Ordering—miscellaneous.

1. DRMs order books that are not needed or not used.
2. Some books are ordered through individual student memberships (e.g., Learning Ally, Bookshare), bypassing AIM-VA.

Domain 3: Producing AIM materials. Challenges under Domain 3 were divided into three subdomains.

Subdomain: Creating quality AIM files in a timely manner.

1. It is very time consuming to develop an accessible textbook from scratch.

2. NIMAS files in large part are not available.
3. Many NIMAS files are of poor quality and hard to use.
4. Hard-copy textbooks provided by schools for scanning purposes are often in poor condition.
5. The level of quality control for Braille formats is inconsistent.
6. The level of quality control of Bookshare files is inconsistent.

Subdomain: Lack of training and research on the best technology tools to use to produce AIM.

1. Decisions about technology used to produce AIM are most often done on the fly.
2. It is time consuming to train AIM-VA staff on technology tools and updates for production.
3. Student-wage staff must make decisions regarding accessibility features (e.g., when and how to describe images).
4. There is a lack of staff capable of describing high-level math content.
5. There is a lack of technology available to create accessible math textbooks.
6. It is necessary to keep staff up to date on technology upgrades for creating accessible text.

Subdomain: Cost of production

1. Partnership contracts are expensive and may only provide a small percentage of books to eligible students.
2. Printing costs associated with large print can be expensive.

3. Reprinting costs for large-print textbooks that are not returned or are returned in poor condition can be expensive.

Domain 4: Training on AIM-VA services and implementation. Challenges under Domain 4 were categorized into one subdomain.

Subdomain: Limited time available for training.

1. Too much information is provided in online trainings.
2. There is a lack of “just-in-time” training on new policies and procedures.
3. There is a lack of release time or teacher workdays available for AIM training. Available days are needed for professional development requirements in other areas.
4. Information and training provided to DRMs is not reaching teachers.

Quantitative Data

Analysis of the ratings from Likert scale items included in the interview protocol were used to probe for information regarding AIM-VA services, file formats, and training. The data were analyzed using SPSS to calculate central tendencies, frequency percentages, and level of agreement statistics among the 13 local experts with direct experience with the AIM-VA project. These data were used in part to help triangulate findings from the analysis of qualitative data. The results are included in Tables 3 through 6.

Table 3

Round One: Utilizing AIM-VA Services: Ratings From Local Experts

Interview Statement	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A	Level of Agreement
a. It is easy to locate information about how to use AIM-VA services.	3.31	.63	38.50%	53.80%	7.70%	0.00%	0.00%	92.30%
b. I understand which students are eligible for AIM-VA services.	3.00	.91	38.50%	23.10%	38.50%	0.00%	0.00%	61.60%
c. I understand the differences between the file formats available through AIM-VA.	3.31	.75	46.20%	38.50%	15.40%	0.00%	0.00%	84.70%
d. I can determine the most appropriate format for students.	2.38	1.19	7.70%	53.80%	23.10%	0.00%	15.40%	61.50%
e. The process for ordering materials is working well.	3.31	.48	30.80%	69.20%	0.00%	0.00%	0.00%	100.00%
f. The process of receiving materials through the mail is working well.	3.31	.48	30.80%	69.20%	0.00%	0.00%	0.00%	100.00%
g. The process of downloading files from the FTP server is working well.	1.77	1.54	15.40%	23.10%	15.40%	15.40%	30.80%	38.50%
h. The process of returning materials to AIM-VA is working well.	3.00	1.00	23.10%	69.20%	0.00%	0.00%	7.70%	92.30%
i. I receive my materials in a timely manner	3.08	.49	15.40%	76.90%	7.70%	0.00%	0.00%	92.30%
j. The AIM-VA help desk has been helpful to me.	3.38	1.12	61.50%	30.80%	0.00%	0.00%	7.70%	92.30%

Note. *n* = 13.

Table 4

Round One: Level of Satisfaction With the Quality of AIM Formats: Ratings From Local Experts

Interview Statement	<i>M</i>	<i>SD</i>	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A	Level of Agreement
a. PDF: Accessible	2.62	1.56	30.80%	46.20%	0.00%	0.00%	23.10%	77.00%
b. PDF: Fully Accessible	1.77	2.01	38.50%	7.70%	0.00%	0.00%	53.80%	46.20%
c. Microsoft Word Document	.77	1.48	7.70%	15.40%	0.00%	0.00%	76.90%	23.10%
d. Braille	1.23	1.69	15.40%	15.40%	7.70%	0.00%	61.50%	30.80%
e. Braille Ready File (.brf)	.62	1.19	0.00%	15.40%	7.70%	0.00%	76.90%	15.40%
f. Large Print	2.54	1.66	38.50%	30.80%	0.00%	7.70%	23.10%	69.30%
g. Audio Recording (RFB&D)	3.08	1.55	69.20%	0.00%	15.40%	0.00%	15.40%	69.20%
h. NIMAS	.38	.96	0.00%	7.70%	7.70%	0.00%	84.60%	7.70%
i. Digital Talking Book	.77	1.54	15.40%	0.00%	7.70%	0.00%	76.90%	15.40%

Note. NIMAS = National Instructional Materials Accessibility Standard; *n* = 13.

Table 5

Round One: Level of Satisfaction With the Time it Takes to Produce/Receive AIM-VA Formats: Ratings From Local Experts

Interview Statement	<i>M</i>	<i>SD</i>	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A	Level of Agreement
a. PDF: Accessible	2.77	1.64	46.20%	30.80%	0.00%	0.00%	23.10%	77.00%
b. PDF: Fully Accessible	1.69	1.93	30.80%	15.40%	0.00%	0.00%	53.80%	46.20%
c. Microsoft Word Document	.31	.86	0.00%	7.70%	0.00%	7.70%	84.60%	7.70%
d. Braille	1.50	1.73	16.70%	25.00%	0.00%	8.30%	50.00%	41.70%
e. Braille Ready File (.brf)	0.00	0.00	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
f. Large Print	2.54	1.61	38.50%	23.10%	15.40%	0.00%	23.10%	61.60%
g. Audio Recording (RFB&D)	3.17	1.59	75.00%	0.00%	8.30%	0.00%	16.70%	75.00%
h. NIMAS	.62	1.19	0.00%	15.40%	7.70%	0.00%	76.90%	15.40%
i. Digital Talking Book	.69	1.49	15.40%	0.00%	0.00%	7.70%	76.90%	15.40%

Note. NIMAS = National Instructional Materials Accessibility Standard; *n* = 13.

Table 6

Round One: AIM-VA Training Ratings From Local Experts

Interview Statement	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure	Level of Agreement
a. There is adequate training for administrators on AIM-VA policies and procedures.	2.31	1.44	23.10%	30.80%	15.40%	15.40%	15.40%	53.90%
b. IEP teams are adequately trained to determine eligibility for AIM-VA materials.	1.54	1.05	0.00%	23.10%	23.10%	38.50%	15.40%	23.10%
c. Teachers/IEP teams are adequately prepared to determine the appropriate formats to request.	1.62	.77	0.00%	7.70%	53.80%	30.80%	7.70%	7.70%
d. Teachers are adequately prepared to match technology applications with the format provided.	2.00	1.08	7.70%	23.10%	38.50%	23.10%	7.70%	30.80%
e. Teachers are prepared to implement AIM-VA materials with students in their classroom.	1.92	1.12	7.70%	23.10%	30.80%	30.80%	7.70%	30.80%
f. Digital Rights Managers are adequately prepared to facilitate the ordering and delivery of AIM Materials.	2.77	1.36	30.80%	46.20%	7.70%	0.00%	15.40%	77.00%

Note. IEP = Individualized Education Plan; *n* = 13.

Round One Summary

In summary, qualitative and quantitative data collected from over 13 hours of semistructured interviews conducted with the 13 local experts with the AIM-VA project were used to identify an initial set of advantages and challenges to providing AIM through a state-funded project. The data from Round One of the study resulted in the identification of 40 potential advantages and 64 potential challenges. This list of advantages and challenges were the basis for the first Delphi questionnaire distributed to both local and national experts in an effort to form consensus.

Advantages and challenges were organized into four main domain areas used in the initial stages of the study to address the research questions. Subdomains were also developed to help structure the questionnaire (see Appendix B). Domain 1: *Using AIM in the Classroom* included 13 advantages and 27 challenges, subdivided into 3 unique domains. Domain 2: *Ordering and Delivering AIM* included 11 advantages categorized into 2 subdomains and 18 challenges categorized into 3 subdomains. Domain 3: *Producing AIM Materials* included 16 advantages categorized into 3 subdomains. Finally, Domain 4: *Training and Delivery* included 4 challenges.

Round Two

In Round Two, 11 of the 13 local AIM-VA experts and 7 national experts completed the questionnaire. Participants were asked to rate the level of agreement that a potential issue (advantage or challenge) should be included in the final list of identified challenges and advantages, using a 4-point scale (Strongly Agree, Agree, Disagree, and Strongly Disagree). Participants were also asked to rank the order of importance within each subdomain. The questionnaire for Round Two is included in Appendix B.

Quantitative Data

The raw data from the Round Two surveys were downloaded from Snap Survey Software. The quantitative data were analyzed using SPSS for each statement of advantage or challenge. The mean, median, mode, standard deviation, frequencies, and level of agreement were determined for each. The advantages and challenges were organized by domain area and ordered by rank from highest to lowest. A rank of 1 represented the most important challenge or advantage among the items listed within the

subdomain. Standard deviation values were used to rank items with equal average rank within a given domain area. Tables 7 through 14 provide a summary of the quantitative findings for all advantages. As can be seen in Tables 7 through 14, all 40 potential advantages (100 %) reached the level of agreement priori of 75% by panelists. Therefore, they were confirmed as advantages and were not included in subsequent rounds. As confirmed advantages, they were provided with reference numbers from A1.1 through A3.16, with the letter “A” representing “Advantage” followed by the number assigned to the broad domain. The digits following the period indicated the number of the advantage within the broad domain. Thus, confirmed advantages are listed in Tables 7 through 9. Tables 15 through 25 summarize the quantitative findings for all potential challenges presented in Round Two. Challenges were not numbered after Round One because they had not yet reached a level of agreement priori of 75% by panelists.

Table 7

Round Two Domain: Using AIM in the Classroom: Multiple Formats Available to Meet Student Needs: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A1.1. Students can access information using their dominant or preferred learning style.	1.00	1	1.35	.49	64.70%	35.30%	0.00%	0.00%	100.00%	2.82	1.55
A1.2. More than one accessible format for the same book can be ordered for the same student.	1.00	1	1.24	.44	76.50%	23.50%	0.00%	0.00%	100.00%	2.88	1.45
A1.3. Students can access books in different environments (e.g., on the bus using iPhone and in the classroom using accessible PDF).	1.00	1	1.47	.62	58.80%	35.30%	5.90%	0.00%	94.10%	3.06	1.39
A1.4. Students can access information using their preferred technology.	1.00	1	1.53	.72	58.80%	29.40%	11.80%	0.00%	88.20%	3.35	1.73
A1.5. It saves teachers the time of producing accessible text by providing a statewide program.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	4.24	2.05
A1.6. It is free and easy for teachers to provide accessible textbooks statewide for students in the classroom.	2.00	2	1.94	.83	29.40%	52.90%	11.80%	5.90%	82.40%	4.65	1.37

Note. *n* = 18.

Table 8

Round Two Domain: Using AIM in the Classroom: Technology Tools: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A1.7. AIM-VA Files can be used on student-owned technology tools (iPads, iPhones, laptops, CD players provided by Learning Ally or DBVI).	1.00	1	1.53	.62	52.90%	41.20%	5.90%	0.00%	94.10%	2.06	1.03
A-1.8. Providing multiple formats allows schools to use the technology for which they have access.	2.00	2	1.94	.83	29.40%	52.90%	11.80%	5.90%	82.40%	2.35	1.22
A1.9. Partnership with Don Johnston provides access to Read Outloud to all schools in Virginia.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	2.65	1.06
A1.10. Partnerships with assistive technology companies/vendors continue to move technology forward and provide easier access to students (e.g., Don Johnston—BookStream).	2.00	2	1.65	.49	35.30%	64.70%	0.00%	0.00%	100.00%	2.94	1.09

Note. DBVI = Virginia's Department of the Blind and Visually Impaired; $n = 18$.

Table 9

Round Two Domain: Using AIM in the Classroom: More Students Provided With Accessible Text Books: Eligibility Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A1.11. Virginia Department of Education (VDOE) interpretation of eligibility requirements for AIM allows students identified as having a learning disability to use AIM-VA services without requiring a diagnosis from a medical doctor.	1.00	1	1.47	.72	64.70%	23.50%	11.80%	0.00%	88.20%	1.76	.90
A1.12. Eligibility decisions are made by the IEP Team.	1.00	1	1.29	.47	70.60%	29.40%	0.00%	0.00%	100.00%	1.82	.81
A1.13. VDOE interpretation of eligibility requirements allows students being served through a 504 plan, as a result of a print-related disability, to use AIM-VA services.	1.00	1	1.41	.50	58.80%	41.20%	0.00%	0.00%	100.00%	2.41	.62

Note. IEP = Individualized Education Plan; *n* = 18.

Table 10

Round Two Domain: Ordering and Delivering AIM Materials: Strong Level of Communication Among Stakeholders: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A2.1. Full-time help-desk for technical trouble-shooting, just-in-time training and process issues is helpful.	1.00	1	1.24	.44	76.50%	23.50%	0.00%	0.00%	100.00%	2.35	1.22
A2.2. AIM-VA production and policy staff are highly responsive to the needs of stakeholders.	2.00	2	1.65	.61	41.20%	52.90%	5.90%	0.00%	94.10%	2.41	1.18
A2.3. AIM-VA Web site is comprehensive for quick information.	1.00	1	1.41	.51	58.80%	41.20%	0.00%	0.00%	100.00%	3.00	1.37
A2.4. AIM-VA Advisory Group allows a strong level of stakeholders' involvement.	2.00	1	1.65	.79	47.10%	47.10%	0.00%	5.90%	94.10%	3.29	1.72
A2.5. DRMs act as liaisons between school systems (administrators, teachers, IEP teams, and AIM Production—single point of contact).	2.00	2	1.88	.60	23.50%	64.70%	11.80%	0.00%	88.20%	3.94	1.03

Note. DRM = Digital Rights Manager; *n* = 18.

Table 11

Round Two Domain: Ordering and Delivering AIM Materials: Effective Database for Management and Tracking: Advantages

Advantage	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A2.6. All AIM formats can be ordered from the same database system (one-stop shop).	1.00	1	1.24	.44	76.50%	23.50%	0.00%	0.00%	100.00%	1.71	1.21
A2.7. Large library of existing AIM files has been developed and is available.	1.00	1	1.35	.49	64.70%	35.30%	0.00%	0.00%	100.00%	2.53	1.28
A2.8. Database is easy to use.	2.00	2	1.76	.66	35.30%	52.90%	11.80%	0.00%	88.20%	3.35	1.27
A2.9. AIM-VA database is specifically programmed for the project with a full-time programmer to make adjustments as needed.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	3.82	1.51
A2.10. Ability to report data on student use of AIM than was previously available with multiple databases from multiple providers has increased.	2.00	1	1.59	.62	47.10%	47.10%	5.90%	0.00%	94.10%	4.53	1.42
A2.11. Partnership with UPS provides a familiar, reliable, and inexpensive delivery system.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	5.06	1.14

Note. *n* = 18.

Table 12

Round Two Domain: Producing AIM Materials: Availability of AIM Files in a Timely Manner: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A3.1. Large library of existing AIM files has been developed and is available.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	1.12	.33
A3.2. Maintaining a partnership with Learning Ally adds to the library of immediately available books.	2.00	2	1.53	.51	47.10%	52.90%	0.00%	0.00%	100.00%	2.94	1.03
A3.3. Maintaining a partnership with Virginia Department for the Blind and Vision Impaired (DBVI) adds to the library of immediately available books.	2.00	2	1.65	.49	35.30%	64.70%	0.00%	0.00%	100.00%	3.41	1.00
A3.4. Maintaining a partnership with Bookshare adds to the library of immediately available books.	2.00	2	1.71	.69	41.20%	47.10%	11.80%	0.00%	88.20%	3.41	1.23
A3.5. Development of Word files created and edited by AIM-VA production will provide quality files to translate into Braille.	2.00	2	1.94	.75	23.50%	64.70%	5.90%	5.90%	88.20%	4.12	1.22

Note. *n* = 18.

Table 13

Round Two Domain: Producing AIM Materials: Access to Expertise in Development of File Formats: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A3.6. University personnel is constantly researching and experimenting with new formats to keep up with advancements in technology (e.g., ePub files).	1.00	1	1.41	.51	58.80%	41.20%	0.00%	0.00%	100.00%	2.12	1.36
A3.7. Partnership with Learning Ally is maintained to produce audio books.	1.00	1	1.35	.49	64.70%	35.30%	0.00%	0.00%	100.00%	2.71	1.45
A.3.8. Systematic—"assembly line" approach to the development of materials is used (computer-savvy student workers become experts in their assigned jobs).	2.00	2	1.88	.60	23.50%	64.70%	11.80%	0.00%	88.20%	3.24	1.44
123 A.3.9. Partnership with DBVI is maintained for the production of Braille formatted books.	1.00	1	1.47	.62	58.80%	35.30%	5.90%	0.00%	94.10%	3.35	1.22
A3.10. Location of major production of formats at a University (Special Education Unit) provides expertise regarding the needs of students with print-related disabilities.	2.00	2	1.76	.56	29.40%	64.70%	5.90%	0.00%	94.10%	3.59	1.28

Note. Virginia's Department of the Blind and Visually Impaired; $n = 18$.

Table 14

Round Two Domain: Producing AIM Materials: Cost of Production and Delivery: Advantages

Advantage	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
A3.11. State-funded program provides shared resources.	1.00	1	1.29	.47	70.60%	29.40%	0.00%	0.00%	100.00%	1.12	.33
A3.12. Partnerships with major production houses reduce personnel costs.	1.00	1	1.47	.51	52.90%	47.10%	0.00%	0.00%	100.00%	3.47	1.18
A3.13. Free delivery of electronic files through the use of an FTP server.	2.00	1	1.76	.90	47.10%	35.30%	11.80%	5.90%	82.40%	3.88	1.65
A3.14. University location provides unlimited access to student wage workers, reducing personnel costs.	2.00	2	1.76	.66	35.30%	52.90%	11.80%	0.00%	88.20%	4.00	1.28
A3.15. Partnerships with assistive technology companies reduce the cost software used for production.	1.00	1	1.47	.62	58.80%	35.30%	5.90%	0.00%	94.10%	4.00	1.66
A3.16. UPS Statewide contract provides very low delivery costs.	2.00	1	1.59	.62	47.10%	47.10%	5.90%	0.00%	94.10%	4.53	1.46

Note. $n = 18$.

Table 15

Round Two Domain: Using AIM in the Classroom: Technology-Based Challenges

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Teachers are not adequately trained on Assistive Technology or AIM at the preservice level.	1.00	1	1.35	.60	70.60%	23.50%	5.90%	0.00%	94.10%	2.18	2.00
A decision about what technology should be used by a student who needs AIM is based on what is available not what is most beneficial to the student.	2.00	2	2.12	.78	23.50%	41.20%	35.30%	0.00%	64.70%	3.41	2.37
Even with training it is difficult for teachers to keep up with the advances in technology.	2.00	2	1.82	.73	35.30%	47.10%	17.60%	0.00%	82.40%	3.88	1.93
125 Restrictive school-based policies for installing software exist.	2.00	1	2.06	1.03	35.30%	35.30%	17.60%	11.80%	70.60%	5.29	2.14
Quality of technology tools (hardware, software, etc.) available across school systems varies.	2.00	3	2.29	.77	17.60%	35.30%	47.10%	0.00%	52.90%	5.35	1.54
The level of technology in classrooms is inconsistent (new vs. outdated technology).	2.00	2	2.12	.70	17.60%	52.90%	29.40%	0.00%	70.60%	5.41	1.97
Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities.	2.00	2	2.24	.83	17.60%	47.10%	29.40%	5.90%	64.70%	5.47	2.58
Little research is available to justify the use of AIM.	3.00	3	2.47	.80	11.80%	35.30%	47.10%	5.90%	47.10%	5.94	2.46
Read Outloud software (available to all schools in Virginia) does not read Word documents.	3.00	3	3.18	.73	0.00%	17.60%	47.10%	35.30%	17.60%	8.06	1.68

Note. *n* = 18.

Table 16

Round Two Domain: Using AIM in the Classroom: Eligibility-Based Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.	1.00	1	1.59	.80	52.90%	41.20%	0.00%	5.90%	94.10%	2.65	1.66
Information about the availability of AIM services is not reaching classroom teachers.	2.00	2	1.82	.73	35.30%	47.10%	17.60%	0.00%	82.40%	2.65	1.66
Information about the availability of AIM services is not reaching parents.	2.00	2	1.71	.69	41.20%	47.10%	11.80%	0.00%	88.20%	3.65	1.41
126 Outdated eligibility regulations are based on the Chaffee Amendment.	2.00	2	2.00	.87	29.40%	47.10%	17.60%	5.90%	76.50%	4.65	2.64
DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.	2.00	2	2.24	.90	17.60%	52.90%	17.60%	11.80%	70.60%	4.94	2.28
Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness.	3.00	3	2.53	.87	11.80%	35.30%	41.20%	11.80%	47.10%	5.18	1.94
Eligibility requirements across school districts are inconsistent.	2.00	2	2.29	.99	23.50%	35.30%	29.40%	11.80%	58.80%	5.59	2.03
Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality.	3.00	3	2.71	1.11	23.50%	5.90%	47.10%	23.50%	29.40%	6.24	1.72

Note. *n* = 18.

Table 17

Round Two Domain: Using AIM in the Classroom: File Format-Based Challenges

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.	1.00	1	1.53	.62	52.90%	41.20%	5.90%	0.00%	94.00%	3.06	2.14
Teachers do not use textbooks often in the classroom.	2.00	2	2.06	.56	11.80%	70.60%	17.60%	0.00%	82.40%	3.82	2.72
Teachers and IEP teams are unaware of all of the formats that are available to help their students.	2.00	1	1.65	.70	47.10%	41.20%	11.80%	0.00%	88.00%	4.00	3.28
Teachers and IEP teams are confused about the multiple formats available.	2.00	1	1.71	.77	47.10%	35.30%	17.60%	0.00%	82.40%	4.18	2.56
Most of the materials used for instruction in the classroom are not provided through AIM.	2.00	2	2.29	.77	5.90%	70.60%	11.80%	11.80%	76.00%	4.82	2.22
Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.	2.00	2	1.94	.75	29.40%	47.10%	23.50%	0.00%	76.00%	5.41	1.97
Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology-based options.	2.00	2	1.94	.75	29.40%	47.10%	23.50%	0.00%	76.50%	6.82	2.16
PDF files provided by AIM-VA are too large to open in many programs (e.g., Kurzweil) and require too much time to break into parts to use in the classroom.	2.00	2	2.24	.83	17.60%	47.10%	29.40%	5.90%	64.70%	7.12	2.50

(continued)

Table 17. Round Two Domain: Using AIM in the Classroom: File Format-Based Challenges (continued)

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Many school systems do not have the proprietary CD players needed to play Learning Ally files. (Schools are currently unable to download files directly from Learning Ally).	2.00	3	2.18	.88	29.40%	23.50%	47.10%	0.00%	52.90%	7.76	1.92
Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology.	2.00	2	2.24	.83	17.60%	47.10%	29.40%	5.90%	64.70%	8.00	2.06

Note. IEP = Individualized Education Plan; *n* = 18.

Table 18

Round Two Domain: Ordering and Delivering AIM Materials: Coordination and Communication with Digital Rights Managers (DRMs): Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.	2.00	2	1.94	.83	29.40%	52.90%	11.80%	5.90%	82.40%	2.53	1.94
There is not a standard skill set required of personnel designated as digital rights managers (DRMs).	2.00	2	1.71	.59	35.30%	58.80%	5.90%	0.00%	94.10%	3.00	2.06
DRM assignments change regularly without notifying AIM-VA.	2.00	2	2.35	.79	1.18%	47.10%	35.50%	5.90%	58.80%	4.18	1.88
DRMs are assigned differently depending on the school system.	2.00	2	1.82	.73	35.30%	47.10%	17.60%	0.00%	82.00%	4.41	2.15
DRMs are not typically 12-month employees, leaving no designated person to receive books during the summer months.	2.00	2	1.94	.90	35.30%	41.20%	17.60%	5.90%	76.50%	4.59	1.81
AIM-VA closes for a period of time to new orders, making it difficult to get books for new or transferring students.	2.00	2	2.65	.93	5.90%	47.10%	23.50%	23.50%	52.90%	5.59	2.09
Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivering of AIM materials.	2.00	2	2.41	.94	17.60%	35.30%	35.30%	11.80%	52.90%	5.59	2.24
Assigning contractors as DRMs makes communication and training difficult.	2.00	2	2.41	1.00	17.60%	41.20%	23.50%	17.60%	58.80%	6.12	1.97

Note. *n* = 18.

Table 19

Round Two Domain: Ordering and Delivering AIM Materials: Delivery of Books Electronically: Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Security systems in place in schools prevent DRMs from downloading files from FTP servers.	2.00	1	1.88	.92	41.20%	35.30%	17.60%	5.90%	76.50%	1.76	1.15
Slow Internet connections in more rural systems time out before files are fully downloaded.	2.00	2	2.18	1.02	23.50%	52.90%	5.90%	17.60%	76.50%	2.35	1.06
It is difficult for some DRMs to find a computer that will allow them to save files (e.g., many school systems require a password to save files).	2.00	2	2.29	.98	23.50%	35.30%	29.40%	11.80%	58.80%	2.47	.87
DRMs download files from personal computers to bypass security restrictions.	2.00	2	2.35	.93	17.60%	41.20%	29.40%	11.80%	58.80%	3.41	.80

Note. DRM = Digital Rights Manager; *n* = 18.

Table 20

Round Two Domain: Ordering and Delivering AIM Materials: Retention of Books: Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
DRMs develop a “personal library” of AIM files to possibly use for another student in the future (compromising copyright).	2.00	2	2.35	.79	5.90%	64.70%	17.60%	11.80%	70.60%	2.12	.99
Students using AIM materials do not always return books to the school.	2.00	2	2.35	.93	17.60%	41.20%	29.40%	11.80%	58.80%	2.12	1.17
Books are lost because DRMs in large school systems lose track of where books are within the district.	2.00	2	2.29	.77	11.80%	52.90%	29.40%	5.90%	64.70%	2.82	1.13
AIM-VA policy prohibits DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM.	3.00	3	2.88	.93	5.90%	29.40%	35.30%	29.40%	35.30%	2.94	1.03

Note. DRM = Digital Rights Manager; *n* = 18.

Table 21

Round Two Domain: Ordering and Delivering AIM Materials: Ordering: Miscellaneous: Challenges

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
DRMs order books that are not needed or not used.	2.00	1	1.94	.82	35.30%	35.30%	29.40%	0.00%	70.60%	1.18	.39
Some books are ordered through student's individual memberships (e.g., Learning Ally, Bookshare), bypassing AIM-VA.	2.00	2	2.29	.99	17.60%	52.90%	11.80%	17.60%	70.60%	1.82	.39

Note. DRM = Digital Rights Manager; *n* = 18.

Table 22

Round Two Domain: Producing AIM Materials: Creating Quality AIM Files in a Timely Manner: Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
It is very time consuming to develop an accessible textbook from scratch.	1.00	1	1.18	.39	82.40%	17.60%	0.00%	0.00%	100.00%	1.47	1.07
NIMAS files in large part are not available.	2.00	2	2.41	.87	11.80%	47.10%	29.40%	11.80%	58.80%	2.82	1.74
Many NIMAS files are of poor quality and hard to use.	3.00	3	2.65	.70	5.90%	29.40%	58.80%	5.90%	35.30%	3.82	1.19
Hard-copy textbooks provided by schools for scanning purposes are often in poor condition.	2.00	2	2.47	.87	11.80%	41.20%	35.30%	11.80%	52.90%	4.06	.96
Level of quality control of Bookshare files is inconsistent.	3.00	3	2.47	.87	17.60%	23.50%	52.90%	5.90%	41.20%	4.18	1.51
Level of quality control for Braille formats is inconsistent.	3.00	3	2.59	1.00	17.60%	23.50%	41.20%	17.60%	41.20%	4.65	1.62

Note. NIMAS = National Instructional Materials Accessibility Standard; *n* = 18.

Table 23

Round Two Domain: Producing AIM Materials: Lack of Training and Research on the Best Technology Tools to Use for Producing AIM: Challenges

Potential Challenge	<i>Mdn</i>	<i>Mode</i>	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
There is a lack of staff capable of describing high-level math content.	2.00	2	1.94	.83	29.40%	52.90%	11.80%	5.90%	82.40%	3.00	1.50
It is time consuming to train AIM-VA staff on technology tools and updates for production.	2.00	2	2.18	.73	17.60%	47.10%	35.30%	0.00%	64.70%	3.29	1.65
Student-wage staff must make decisions regarding accessibility features (e.g., when and how to describe images).	2.00	2	2.12	.70	17.60%	52.90%	29.40%	0.00%	70.60%	3.41	1.50
134 Decisions about technology used for production of AIM are most often done on the fly.	3.00	3	2.47	.87	17.60%	23.50%	52.90%	5.90%	41.20%	3.41	2.24
There is a lack of technology available to create accessible math textbooks.	2.00	2	1.82	.73	35.30%	47.10%	17.60%	0.00%	82.40%	3.88	1.69
It is necessary to keep staff up to date on technology upgrades for creating accessible text.	2.00	2	2.00	.71	23.50%	52.90%	23.50%	0.00%	76.50%	4.00	1.66

Note. $n = 18$.

Table 24

Round Two Domain: Producing AIM Materials: Cost of Production: Challenges

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Printing costs associated with large print can be expensive.	2.00	1	1.88	1.10	47.10%	29.40%	11.80%	11.80%	76.50%	1.59	.62
Partnership contracts are expensive and may only provide a small percentage of books to eligible students.	2.00	2	1.94	.90	35.30%	41.20%	17.60%	5.90%	76.00%	1.88	.93
Reprinting costs for large-print textbooks that are not returned or are returned in poor condition can be expensive.	2.00	2	2.24	.83	17.60%	47.10%	29.40%	5.90%	64.70%	2.53	.62

Note. $n = 18$.

Table 25

Round Two Domain: Training on AIM-VA Services and Implementation: Limited Time Available for Training: Challenges

Potential Challenge	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
There is a lack of release time or teacher workdays available for AIM training. Available days are needed for professional development requirements in other areas.	2.00	1	1.71	.85	47.10%	41.20%	5.90%	5.90%	88.20%	1.76	.75
Information and training provided to DRMs is not reaching teachers.	2.00	2	1.76	.75	35.30%	58.80%	0.00%	5.90%	94.10%	2.06	1.03
There is a lack of “just-in-time” training on new policies procedures.	2.00	2	2.24	.83	17.60%	47.10%	29.40%	5.90%	64.70%	2.47	.87
Too much information is provided in online trainings.	3.00	3	2.76	.83	11.80%	11.80%	64.70%	11.80%	23.60%	3.71	.77

Note. DRM = Digital Rights Managers; *n* = 18.

Panelists reached a level of agreement of 75% or greater on 25 of the 64 potential challenges (39%) in Round Two. These potential challenges, therefore, were confirmed as challenges and are listed in Tables 26 through 29. In the combined Rounds Three and Four, expert panelists were asked to suggest solutions for these challenges through open-ended questions provided on the questionnaire.

Two Potential challenges (.03 %) received a level of agreement among the expert panelists of less than 25%, indicating that 75% of panelists agreed that the potential challenge was not a significant issue. Therefore, these items were eliminated as potential challenges and were not included in the next round. Potential challenges that were removed are listed in Table 30.

Potential challenges with a level of agreement greater than 25% but less than 75% were included in combined Rounds Three and Four for reevaluation. The number of potential challenges to be reevaluated totaled 35 (54%) of the challenges presented. In Round Two, panelists were also asked to provide brief comments explaining their ratings. These comments along with the level of agreement and rank of each challenge were later included in the combined Rounds Three and Four to help build consensus among the group. Potential challenges reevaluated by the panel are listed in Tables 31 through 34 by rank order within subdomains.

Table 26

Round Two Domain: Using AIM in the Classroom: Challenges Confirmed ($\geq 75\%$ Agreement)

Confirmed Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Technology-Based Challenges			
Teachers are not adequately trained on Assistive Technology or AIM at the preservice level.	94.10%	2.18	2.00
Even with training it is difficult for teachers to keep up with the advances in technology.	82.40%	3.88	1.93
Subdomain: Eligibility-Based Challenges			
The number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.	94.10%	2.65	1.66
Information about the availability of AIM services is not reaching classroom teachers.	82.40%	2.65	1.66
Information about the availability of AIM services is not reaching parents.	88.20%	3.65	1.41
Outdated eligibility regulations in the Chaffee Amendment.	76.50%	4.65	2.64
Subdomain: File Format-Based Challenges			
Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.	94.00%	3.06	2.14
Teachers do not use textbooks often in the classroom.	82.40%	3.82	2.72
Teachers and IEP teams are unaware of all of the formats that are available to help their students.	88.00%	4.00	3.28
Teachers and IEP teams are confused about the multiple formats available.	82.40%	4.18	2.56
Most of the materials used for instruction in the classroom are not provided through AIM.	76.00%	4.82	2.22
Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.	76.00%	5.41	1.97

Note. IEP = Individualized Education Plan.

Table 27

*Round Two Domain: Ordering and Delivering AIM Materials: Challenges Confirmed
(≥75% Agreement)*

Confirmed Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Coordination and Communication with Digital Rights Managers (DRMs)			
DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.	82.40%	2.53	1.94
There is not a standard skill set required of personnel designated as digital rights managers.	94.10%	3.00	2.06
DRMs are assigned differently depending on the school system.	82.00%	4.41	2.15
DRMs are not typically 12-month employees, leaving no designated person to receive books during the summer months.	76.50%	4.59	1.81
Subdomain: Delivery of Books Electronically			
Security systems in place in schools prevent DRMs from downloading files from FTP servers.	76.50%	1.76	1.15
Slow Internet connections in more rural systems time out before files are fully downloaded.	76.50%	2.35	1.06

Table 28

Round Two Domain: Producing AIM Materials: Challenges Confirmed ($\geq 75\%$ Agreement)

Confirmed Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Creating Quality AIM Files in a Timely Manner			
It is very time consuming to develop an accessible textbook from scratch.	100.00%	1.47	1.07
Subdomain: Lack of Training and Research on the Best Technology Tools to Use for Production of AIM			
There is a lack of staff capable of describing high-level math content.	82.40%	3.00	1.50
There is a lack of technology available to create accessible math textbooks.	82.40%	3.88	1.69
It is necessary to keep staff up to date on technology upgrades for creating accessible text.	76.50%	4.00	1.66
Subdomain: Cost of Production			
Printing costs associated with large print can be expensive.	76.50%	1.59	.62
Partnership contracts are expensive and may only provide a small percentage of books to eligible students.	76.00%	1.88	.93

Table 29

Round Two Domain: Training on AIM-VA Services and Implementation: Challenges Confirmed ($\geq 75\%$ Agreement)

Confirmed Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Limited Time Available for Training			
There is a lack of release time or teacher workdays available for AIM training. Available days are needed for professional development requirements in other areas.	88.20%	1.76	.75
Information and training provided to DRMs is not reaching teachers.	94.10%	2.06	1.03
<i>Note.</i> DRM = Digital Rights Manager.			

Table 30

Round Two Challenges Removed ($< 25\%$ Agreement)

Removed Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Domain: Using AIM in the Classroom: Technology-Based Challenges			
Read Outloud software (available to all schools in Virginia) does not read Word documents.	17.6%	8.06	1.68
Domain: Training on AIM-VA Services and Implementation: Limited Time Available for Training			
Too much information is provided in online trainings.	23.6%	3.71	.77

Table 31

*Round Two Domain: Using AIM in the Classroom: Potential Challenges to be
Reevaluated in Combined Rounds Three and Four*

Potential Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Technology-Based Challenges			
A decision about what technology should be used by a student who needs AIM is based on what is available, not what is most beneficial to the student.	64.70%	3.41	2.37
Restrictive school-based policies for installing software exist.	70.60%	5.29	2.14
Quality of technology tools (hardware, software, etc.) available across school systems varies.	52.90%	5.35	1.54
Level of technology in classrooms (new vs. outdated technology) is inconsistent.	70.60%	5.41	1.97
Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities.	64.70%	5.47	2.58
Little research is available to justify the use of AIM.	47.10%	5.94	2.46
Subdomain: Eligibility-Based Challenges			
DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.	70.60%	4.94	2.28
Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness.	47.10%	5.18	1.94
Eligibility requirements across school districts are inconsistent.	58.80%	5.59	2.03
Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality.	29.40%	6.24	1.72
Subdomain: File Format-Based Challenges			
PDF files provided by AIM-VA are too large to open in many programs (e.g., Kurzweil) and require too much time to break into parts to use in the classroom.	64.70%	7.12	2.50
Many school systems do not have the proprietary CD players needed to play Learning Ally files. (Schools are currently unable to download files directly from Learning Ally.)	52.90%	7.76	1.92
Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology.	64.70%	8.00	2.06

Table 32

Round Two Domain: Ordering and Delivering AIM Materials: Potential Challenges to be Reevaluated in Combined Rounds Three and Four

Potential Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Coordination and Communication with Digital Rights Managers (DRMs)			
DRM assignments change regularly without notifying AIM-VA.	58.80%	4.18	1.88
AIM-VA closes for a period of time to new orders, making it difficult to get books for new or transferring students.	52.90%	5.59	2.09
Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivering of AIM materials.	52.90%	5.59	2.24
Assigning contractors as DRMs makes communication and training difficult.	58.80%	6.12	1.97
Subdomain: Delivery of Books Electronically			
It is difficult for some DRMs to find a computer that will allow them to save files (many school systems require a password to save files).	58.80%	2.47	.87
DRMs download files from personal computers to bypass security restrictions.	58.80%	3.41	.80
Subdomain: Retention of Books			
There is development of a “personal library” of AIM files by DRMs to possibly use for another student in the future (compromising copyright).	70.60%	2.12	.99
Students using AIM materials do not always return books to the school.	58.80%	2.12	1.17
Books are lost because DRMs in large school systems lose track of where books are within the district.	64.70%	2.82	1.13
AIM-VA policy prohibiting DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM.	35.30%	2.94	1.03
Subdomain: Ordering: Miscellaneous			
DRMs order books that are not needed or not used.	70.60%	1.18	.39
Some books are ordered through student’s individual memberships (e.g., Learning Ally, Bookshare), bypassing AIM-VA.	70.60%	1.82	.39

Table 33

Domain: Producing AIM Materials: Potential Challenges to be Reevaluated in Combined Rounds Three and Four

Potential Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Creating Quality AIM Files in a Timely Manner			
NIMAS files in large part are not available.	58.80%	2.82	1.74
Many NIMAS files are of poor quality and hard to use.	35.30%	3.82	1.19
Hard-copy textbooks provided by schools for scanning purposes are often in poor condition.	52.90%	4.06	.97
Level of quality control of Bookshare files is inconsistent.	41.20%	4.18	1.51
Level of quality control for Braille formats is inconsistent.	41.20%	4.65	1.62
Subdomain: Lack of Training and Research on the Best Technology Tools to Use for Production of AIM			
It is time consuming to train AIM-VA staff on technology tools and updates for production.	64.70%	3.29	1.65
Student-wage staff must make decisions regarding accessibility features (e.g., when and how to describe images).	70.60%	3.41	1.50
Decisions about technology used for production of AIM are most often done on the fly.	41.20%	3.41	2.24
Subdomain: Cost of Production			
Reprinting costs for large-print textbooks that are not returned or are returned in poor condition can be expensive.	64.70%	2.53	.62

Note. NIMAS = National Instructional Materials Accessibility Standard.

Table 34

Round Two Domain: Training on AIM-VA Services and Implementation: Potential Challenges to be Reevaluated in Combined Rounds Three and Four

Potential Challenge	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Limited Time Available for Training			
There is a lack of “just-in-time” training on new policies procedures.	64.7%	2.47	.87

Qualitative Data

Two open-ended questions were included in the Round Two Questionnaire. The first question asked panelists to explain their ranking on each potential advantage and advantage statement. The second was used at the end of each domain to elicit additional items (advantage or challenge) suggested by panelists.

Explanation of rankings. The researcher compiled the comments provided by panelists for each potential challenge to be reevaluated in the combined Rounds Three and Four. Comments from panelists remained in their own words, however, stray comments unrelated to the issue or which demonstrated a clear misunderstanding of the issue were removed. Comments are provided in Part 1 of the combined Rounds Three and Four questionnaire (see Appendix D).

Additional items. Additional items suggested by panelists were compiled into Word documents and reviewed to identify any unique advantages or challenges not already included in the questionnaire. In addition, the researcher reviewed meeting notes from AIM-VA staff and advisory board meetings to identify any repeating issues that presented advantages and or challenges. Four additional challenges were included for panelists to consider:

1. The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.
2. Confusion about how to order text in ePub formats is limiting their use.

3. Confusion about how to access (use) textbooks that are provided in ePub format is limiting the effective use of this format.
4. Lack of consistent and reliable Internet connection makes it difficult or impossible to use Bookstream to access ePub formats.

Round Two Summary

A total of 20 participants (11 local experts and 7 national experts) completed Round Two of the Delphi study. Experts were asked to rate the potential advantages and challenges. Results from the data analysis of the quantitative data indicate that all 40 potential advantages were confirmed. Based on the ratings provided by experts, all advantages reached a level of agreement priori of 75%. Therefore, they were confirmed as advantages to providing AIM at the state level. Experts also reached a level of agreement of 75% or greater on 25 of the 64 potential challenges (39%). Only two potential challenges were removed after receiving a level of agreement of less than 25%; the remaining 35 potential challenges were included on the questionnaire in the final combined Rounds Three and Four (see Appendix D).

Combined Rounds Three and Four

Rounds Three and Four were combined due to time constraints. A total of 16 panelists (11 local and 5 national participants) completed the questionnaire for combined Rounds Three and Four. In the combined Rounds Three and Four data were collected to (a) reach a greater level of consensus among expert panelists on the remaining potential challenges (Tables 31 through 34) and new challenges added, as well as (b) to solicit possible solutions for both confirmed challenges, and any remaining potential challenges

that the participants believed should be addressed at either the local or national level.

Advantages were not included in Rounds Three and Four due to a high level of consensus formed in Round Two of the study. The questionnaire for the combined Rounds Three and Four is provided in Appendix D.

Quantitative Data

In this round, panelists were asked to decide if they believed any the potential challenges listed were worth addressing. The options provided to them were (1) Yes—on a local level, (2) Yes—on a national level, (3) No, and (4) N/A. The N/A option was added in response to feedback from participants in Round Two. It was provided for participants who did not feel they had enough knowledge or experience to properly rate the challenge. The level of agreement reflected the total percentage of participants who responded with Yes (whether on the local level or on the national level). Participants who selected N/A were not included in the calculations. Thus, the total number of participant responses varied for each question and is provided in the subsequent data tables.

The raw data from combined Rounds Three and Four were analyzed using SPSS. Frequency percentages, level of agreement, mean, and standard deviation were determined. Panelists reached a level of agreement of at least 75% on four of the reevaluated potential challenges, confirming them as challenges. Two potential challenges fell below 25% agreement and were eliminated as potential challenges. Tables 35 through 38 provide a summary of the quantitative findings for all challenges that were reevaluated by the panelists in this round. Challenges that reached a level of agreement of 75% or greater are highlighted in bold. Of the new challenges added to the questionnaire

in this round, one was confirmed as a challenge. Level of agreement percentages for new challenges added are listed in Table 39.

At the completion of the combined Rounds Three and Four, 31 of the initial 64 challenges evaluated by the panel (48%) reached a level of agreement of 75%. This confirmed them as challenges. One additional challenge was added to Domain 1: Using AIM in the classroom that also reached consensus by the group.

A complete listing of challenges confirmed by the expert panel is included in Tables 40 through 43. Like confirmed advantages, confirmed challenges were assigned a reference number beginning with the letter “C” followed by the number of the broad domain. The digits following the period indicate the number of the challenge within the broad domain. The tables show the confirmed challenges and the percentage of panelists who believed the challenge should be addressed at the state or national level. The percentages shown in Tables 40 through 43 reflect only participants who indicated on the questionnaire that they believed the challenge should be addressed. Those who selected “No” or “N/A” were excluded from the calculations.

Table 35

Combined Rounds Three and Four Domain: Using AIM in the Classroom: Potential Challenges Reevaluated

Potential Challenge	<i>N</i>	Yes Local	Yes National	No	Level of Agreement	<i>M</i>	<i>SD</i>
Subdomain: Technology-Based Challenges							
Restrictive school-based policies for installing software exist.	16	81.30%	6.30%	12.50%	87.50%	1.31	.71
Decisions about what technology should be used by a student who needs AIM are based on what is available, not what is most beneficial to the student.	16	56.30%	6.30%	37.50%	62.50%	1.81	.98
Level of technology in classrooms (new vs. outdated technology) is inconsistent.	16	50.00%	12.50%	37.50%	62.50%	1.88	.96
Quality of technology tools (hardware, software, etc.) available across school systems varies.	16	50.00%	6.30%	43.8%	56.30%	1.94	1.00
Little research is available to justify the use of AIM.	16	6.30%	50.00%	43.80%	56.30%	2.38	.62
Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities.	16	25.00%	6.30%	68.80%	31.30%	2.44	.89
Subdomain: Eligibility-Based Challenges							
DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.	16	87.50%	.00%	12.50%	87.50%	1.25	.68
Eligibility requirements across school districts are inconsistent.	16	37.50%	37.50%	25.00%	75.00%	1.88	.81
Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness.	16	50.00%	6.30%	43.80%	56.30%	1.94	1.00
Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality.	16	25.00%	0.00%	75.00%	25.00%	2.50	.89

(continued)

Table 35. Combined Rounds Three and Four Domain: Using AIM in the Classroom: Potential Challenges Reevaluated (continued)

Potential Challenge	<i>N</i>	Yes Local	Yes National	No	Level of Agreement	<i>M</i>	<i>SD</i>
Subdomain: File Format-Based Challenges							
PDF files provided by AIM-VA are too large to open in many programs (e.g., Kurzweil) and require too much time to break into parts to use in the classroom.	13	61.50%	0.00%	38.50%	61.50%	1.77	1.01
Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology.	15	33.30%	6.70%	60.00%	40.00%	2.27	.96
Many school systems do not have the proprietary CD players needed to play Learning Ally files. (Schools are currently unable to download files directly from Learning Ally.)	15	26.70%	6.70%	66.70%	33.30%	2.40	.91

Note. Participants who responded with N/A to these items were removed from the calculations; *n* = 16.

Table 36

*Combined Rounds Three and Four Domain: Ordering and Delivering AIM Materials:
Potential Challenges Reevaluated*

Potential Challenge	<i>N</i>	Yes Local	Yes National	No	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Coordination and Communication with Digital Rights Managers (DRMs)							
DRM assignments change regularly without notifying AIM-VA.	14	71.40%	0.00%	28.60%	71.40%	1.57	.94
Assigning contractors as DRMs makes communication and training difficult.	13	69.20%	0.00%	30.80%	69.20%	1.62	.96
AIM-VA closes for a period of time to new orders, making it difficult to get books for new or transferring students.	13	38.50%	0.00%	61.50%	38.50%	2.23	1.01
Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivering of AIM materials.	16	31.30%	0.00%	68.80%	31.30%	2.38	.96
Subdomain: Delivery of Books Electronically							
It is difficult for some DRMs to find a computer that will allow them to save files (many school systems require a password to save files).	16	43.80%	0.00%	56.30%	43.80%	2.13	1.03
DRMs download files from personal computers to bypass security restrictions.	16	31.30%	0.00%	68.80%	31.30%	2.38	.96
Subdomain: Retention of Books							
DRMs develop a “personal library” of AIM files to possibly use for another student in the future (compromising copyright).	16	62.50%	12.50%	25.00%	75.00%	1.63	.89
Students using AIM materials do not always return books to the school.	16	68.80%	0.00%	31.30%	68.80%	1.63	.96
Books are lost because DRMs in large school systems lose track of where books are within the district.	16	62.50%	0.00%	37.50%	62.50%	1.75	1.00

(continued)

Table 36. Combined Rounds Three and Four Domain: Ordering and Delivering AIM Materials: Potential Challenges Reevaluated (continued)

Potential Challenge	<i>N</i>	Yes Local	Yes National	No	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
AIM-VA policy prohibiting DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM.	14	0.00%	0.00%	100.00	0.00%*	3.00	0.00
Subdomain: Ordering: Miscellaneous							
DRMs order books that are not needed or not used.	16	50.00%	6.30%	43.80%	56.30%	1.94	1.00
Some books are ordered through student's individual memberships (e.g., Learning Ally, Bookshare), bypassing AIM-VA.	14	21.40%	7.10%	71.40%	28.60%	2.50	.86

Note. Participants who responded with N/A to these items were removed from the calculations; $n = 16$.

Table 37

Combined Rounds Three and Four Domain: Producing AIM Materials: Potential Challenges Reevaluated

Potential Challenge	<i>n</i>	Yes Local	Yes National	No	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Creating Quality AIM Files in a Timely Manner							
NIMAS files in large part are not available.	16	25.00%	25.00%	50.00%	50.00%	2.25	.86
Hard-copy textbooks provided by schools for scanning purposes are often in poor condition.	16	37.50%	0.00%	62.50%	37.50%	2.25	1.00
Many NIMAS files are of poor quality and hard to use.	16	12.50%	18.80%	68.80%	31.30%	2.56	.73
Level of quality control for Braille formats is inconsistent.	14	7.10%	28.60%	64.30%	35.70%	2.57	.65
Level of quality control of Bookshare files is inconsistent.	16	0.00%	37.50%	56.30%	40.00%	2.69	.60
Subdomain: Lack of Training and Research on the Best Technology Tools to Use for Production of AIM.							
Student-wage staff must make decisions regarding accessibility features (e.g., when and how to describe images, etc.)	12	41.70%	0.00%	58.30%	41.70%	2.17	1.03
It is time consuming to train AIM-VA staff on technology tools and updates for production.	12	25.00%	25.00%	50.00%	50.00%	2.25	.87
Decisions about technology used for production of AIM are most often done on the fly.	12	8.30%	8.30%	83.30%	16.70%*	2.75	.62
Subdomain: Cost of Production							
Reprinting costs for large-print textbooks that are not returned or are returned in poor condition can be expensive.	15	53.30%	0.00%	46.70%	53.30%	1.93	1.03

Note. Participants who responded with N/A to these items were removed from the calculations; NIMAS = National Instructional Materials Accessibility Standard; *n* = 16.

Table 38

Combined Rounds Three and Four Domain: Training on AIM-VA Services and Implementation: Potential Challenges Reevaluated

Potential Challenge	<i>n</i>	Yes Local	Yes National	No	Level of Agreement	Rank <i>M</i>	Rank <i>SD</i>
Subdomain: Limited Time Available for Training							
There is a lack of “just-in-time” training on new policies procedures.	16	31.30%	6.30%	62.50%	64.70%	2.47	.87

Note. Participants who responded with N/A to these items were removed from the calculations; *n* = 16.

Table 39

Combined Rounds Three and Four: New Challenges Considered

Potential Challenge	<i>n</i>	<i>Mdn</i>	Mode	<i>M</i>	<i>SD</i>	Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement
The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.	12	2.00	2	1.92	.70	25.00%	58.30%	16.70%	0.00%	83.30%
Confusion about how to order text in ePub formats is limiting their use.	13	3.00	3	2.62	.96	15.40%	23.10%	46.20%	15.40%	38.50%
Confusion about how to access (use) textbooks that are provided in ePub format is limiting the effective use of this format.	13	2.00	3	2.23	.83	23.10%	30.80%	46.20%	0.00%	53.80%
Lack of consistent and reliable Internet connection makes it difficult or impossible to use Bookstream to access ePub formats.	12	2.00	2	2.33	.83	23.10%	30.80%	46.20%	0.00%	53.80%

Note. *n* = 16.

Table 40

All Confirmed Challenges: Using AIM in the Classroom: Percentage to be Addressed Locally or Nationally

Confirmed Challenge	<i>n</i>	Local	National
C1.1. The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.	10	70.00%	30.00%
Subdomain: Technology-Based Challenges			
C1.2. Teachers are not adequately trained on assistive technology or AIM at the preservice level.	15	46.70%	53.30%
C1.3. Restrictive school-based policies for installing software exist.	14	92.9%	7.1%
C1.4. Even with training it is difficult for teachers to keep up with the advances in technology.	13	69.20%	30.80%
Subdomain: Eligibility-Based Challenges			
C1.5. The number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.	14	57.10%	42.90%
C1.6. Information about the availability of AIM services is not reaching classroom teachers.	15	86.70%	13.30%
C1.7. Information about the availability of AIM services is not reaching parents.	15	73.30%	26.70%
C1.8. Outdated eligibility regulations are based on the Chaffee Amendment.	14	0.00%	100.00%
C1.9. DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.	14	100.00%	0.00%
C1.10. Eligibility requirements across school districts are inconsistent.	12	50.00%	50.00%
Subdomain: File Format-Based Challenges			
C1.11. Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.	15	80.00%	20.00%
C1.12. Teachers do not use textbooks often in the classroom.	14	78.60%	21.40%
C1.13. Teachers and IEP teams are unaware of all of the formats that are available to help their students.	14	71.40%	28.60%
C1.14. Teachers and IEP teams are confused about the multiple formats available.	14	85.70%	14.30%
C1.15. Most of the materials used for instruction in the classroom are not provided through AIM.	12	83.30%	16.70%

(continued)

Table 40. All Confirmed Challenges: Using AIM in the Classroom: Percentage to be Addressed Locally or Nationally (continued)

Confirmed Challenge	<i>n</i>	Local	National
C1.16. Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology-based options.	10	90.00%	10.00%
C1.17. Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.	12	91.70%	8.30%

Note. *n* = number of panelists who agreed the challenge should be addressed among a total of 16. DRM = Digital Rights Manager; IEP = Individualized Education Plan.

Table 41

All Confirmed Challenges: Ordering and Delivering AIM: Percentage to be Addressed Locally or Nationally

Confirmed Challenge	<i>n</i>	Local	National
Subdomain: Coordination and Communication with Digital Rights Managers (DRMs)			
C2.1. DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.	10	100.00%	0.00%
C2.2. There is not a standard skill set required of personnel designated as digital rights managers.	12	100.00%	0.00%
C2.3. DRMs are assigned differently depending on the school system.	7	100.00%	0.00%
C2.4. DRMs are not typically 12-month employees, leaving no designated person to receive books during the summer months.	13	100.00%	0.00%
Subdomain: Delivery of Books Electronically			
C2.5. Security systems in place in schools prevent DRMs from downloading files from FTP servers.	10	100.00%	0.00%
C2.6. Slow Internet connections in more rural systems time out before files are fully downloaded.	11	90.90%	9.10%
Subdomain: Retention of Books			
C2.7. DRMs develop a “personal library” of AIM to possibly use for another student in the future (compromising copyright).	12	83.30%	16.70%

Note. *n* = number of panelists who agreed the challenge should be addressed among a total of 16.

Table 42

All Confirmed Challenges: Producing AIM: Percentage to be Addressed Locally or Nationally

Confirmed Challenge	<i>n</i>	Local	National
Subdomain: Creating Quality AIM Files in a Timely Manner			
C3.1. ^a It is very time consuming to develop an accessible textbook from scratch.	0	0.00%	0.00%
Subdomain: Lack of Training and Research on the Best Technology Tools to Use for Production of AIM			
C3.2. There is a lack of staff capable of describing high-level math content.	11	63.60%	36.40%
C3.3. There is a lack of technology available to create accessible math textbooks.	10	40.00%	60.00%
C3.4. It is necessary to keep staff up to date on technology upgrades for creating accessible text.	14	71.40%	28.60%
Subdomain: Cost of Production			
C3.5. Printing costs associated with large print can be expensive.	12	91.70%	8.30%
C3.6. Partnership contracts are expensive and may only provide a small percentage of books to eligible students.	13	61.50%	38.50%
<p><i>Note.</i> <i>n</i> = number of panelists who agreed the challenge should be addressed among a total of 16.</p> <p>^aThis item was left off of the Rounds Three and Four questionnaire accidentally, but was confirmed as a challenge (reaching a level of agreement priori of $\geq 75\%$) in Round Two.</p>			

Table 43

All Confirmed Challenges: Training on AIM Services and Implementation: Percentage to be Addressed Locally or Nationally

Confirmed Challenge	<i>n</i>	Local	National
Subdomain: Limited Time Available for Training			
C4.1. There is a lack of release time or teacher workdays available for AIM training—available days are needed for professional development requirements in other areas.	14	100.00%	0.00%
C4.2. Information and training provided to DRMs is not reaching teachers.	14	92.90%	7.10%
<p><i>Note.</i> <i>n</i> = number of panelists who agreed the challenge should be addressed among a total of 16; DRM = Digital Rights Manager.</p>			

Qualitative Data

In addition to providing information regarding the level at which confirmed challenges should be addressed, panelists were also asked to provide suggestions for solutions. The researcher reviewed suggested solutions for all confirmed challenges. Qualitative data from open-ended questions requesting solutions from panelists for each confirmed challenge were compiled into a single Word file and analyzed. Repeated ideas were highlighted and sorted into categories and larger themes for each confirmed challenge. Tables 44 through 47 provide a summary of the solutions suggested by the local and national experts.

Table 44

All Identified Challenges: Using AIM in the Classroom: Summary of Suggested Solutions

Confirmed Challenge	Suggested Solutions
C1.1. The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.	<ul style="list-style-type: none"> • Increase awareness • Share “Success Stories,” “Pockets of Excellence” • Change the Focus of Administrators: Creativity is stripped due to demands of Standards of Learning (SOL)
Subdomain: Technology-Based Challenges	
C1.2. Teachers are not adequately trained on Assistive Technology or AIM at the preservice level.	<p>Professional Development</p> <ul style="list-style-type: none"> • Training at the preservice level (7 of 15 participants) • Online training opportunities • Statewide training opportunities • Help desk for teachers
C1.3. Restrictive school-based policies for installing software exist.	<ul style="list-style-type: none"> • LEAs can solve this through coordination between AT and IT personnel • More personnel are needed to address instructional needs. IT departments are overwhelmed with security concerns. • Should work toward more online options rather than specific software applications. <p>Guidance from DOE</p> <ul style="list-style-type: none"> • Policy allowing access to administrative accounts for certain staff throughout the school system • LEAs should address this issue simply from the perspective of implementation of IDEA
C1.4. Even with training it is difficult for teachers to keep up with the advances in technology.	<p>Technology</p> <ul style="list-style-type: none"> • Reducing options • Do not advance to the latest versions <p>Training</p> <ul style="list-style-type: none"> • Online, quick training • Help desk for teachers

(continued)

Table 44. All Identified Challenges: Using AIM in the Classroom: Summary of Suggested Solutions (continued)

Confirmed Challenge	Suggested Solutions
Subdomain: Eligibility-Based Challenges	
C1.5. The number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.	<p>Clarification is needed at the federal level</p> <ul style="list-style-type: none"> • Resistance to diagnosing “Organic Dysfunction” <p>Reduce need for specific eligibility by</p> <ul style="list-style-type: none"> • Enforcing a set of accessibility standards for all publishers of instructional materials • Instructional materials should not be purchased that don’t meet standards
C1.6. Information about the availability of AIM services is not reaching classroom teachers.	<p>Direction from administrators</p> <ul style="list-style-type: none"> • Focused expectations from administrators • Incorporated into IEP documentation • More oversight of DRM assignments an school-based personnel supports (AT Specialist) <p>Professional development</p> <ul style="list-style-type: none"> • “Just-in-time” – Online
C1.7. Information about the availability of AIM services is not reaching parents.	<p>Develop a requirement to provide information to parents</p> <ul style="list-style-type: none"> • IEP Meetings • Beginning of the year • Increase AIM resource visibility on local and national parent resources • AIM-VA reach out to Special Ed. Advisory Boards in school districts to provide training
C1.8. Outdated eligibility regulations are based on the Chaffee Amendment.	<p>State and National Organizations need to Advocate to update the law</p> <ul style="list-style-type: none"> • Parents and educators need to be as vocal as publishers who resist changes • Clarify language • Language should address current educational needs • Enforce a set of accessibility standards for all educational materials produced to diminish the need to change copyright laws

(continued)

Table 44. All Identified Challenges: Using AIM in the Classroom: Summary of Suggested Solutions (continued)

Confirmed Challenge	Suggested Solutions
C1.9. DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.	<ul style="list-style-type: none"> • Vision teachers should not be expected to be the DRM for students outside of their caseload • This is a state issue—VI teachers are not necessarily the best person to be a DRM • AIM-VA should provide best practices for DRM assignments • Assign multiple DRMs for each school or district
C1.10. Eligibility requirements across school districts are inconsistent.	<ul style="list-style-type: none"> • Develop consistent and clear eligibility requirements nationally • Clear definitions should be provided by the Federal Government and disseminated by designated AIM state agencies • Clear criteria should be provided to ensure that the diagnosis of “Organic Dysfunction” • Modify the Chafee Amendment to address digital textbooks
Subdomain: File Format-Based Challenges	
C1.11. Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.	Professional Development <ul style="list-style-type: none"> • Web-based “Just-in-Time” training • More AT personnel to support teachers need to integrate technology
C1.12. Teachers do not use textbooks often in the classroom.	State needs to provide guidance <ul style="list-style-type: none"> • Textbooks do not follow SOLs • Teacher-made materials and open source materials are used more often • Need to ensure all learning materials are accessible
C1.13. Teachers and IEP teams are unaware of all of the formats that are available to help their students.	<ul style="list-style-type: none"> • Online—Just-in-time training • Training at all levels • Use existing local and national training and technical assistance centers
C1.14. Teachers and IEP teams are confused about the multiple formats available.	Reduce the number of formats available <ul style="list-style-type: none"> • Keep it simple • Online – Just-in-time training • Increased awareness of resources
C1.15. Most of the materials used for instruction in the classroom are not provided through AIM.	<ul style="list-style-type: none"> • Invest in technology (OCR) to allow teachers to create electronic materials • LEA’s need to know how to make accessible materials. • All materials should be made accessible.

(continued)

Table 44. All Identified Challenges: Using AIM in the Classroom: Summary of Suggested Solutions (continued)

Confirmed Challenge	Suggested Solutions
C1.16. Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology based options.	<ul style="list-style-type: none"> • Training on how to use electronic formats • Training on the benefits of technology-based options for large print • Make hard-copy large-print books available at a cost
C1.17. Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.	<p>Confusing</p> <ul style="list-style-type: none"> • Too many options available <p>More training and personnel support is needed</p> <ul style="list-style-type: none"> • Online Training – Small chunks of information • Local and national technical assistance centers.

Table 45

All Confirmed Challenges: Ordering and Delivering: Summary of Suggested Solutions

Confirmed Challenge	Suggested Solutions
Subdomain: Coordination and Communication with Digital Rights Managers (DRMs)	
C2.1. DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.	Better system for selecting DRMs <ul style="list-style-type: none"> • Break down specific tasks required – AIM-VA • Assign personnel within school system to complete some tasks (“gather information needed before orders are placed”)
C2.2. There is not a standard skill set required of personnel designated as digital rights managers.	Guidance from AIM-VA (9 of 12 responses) <ul style="list-style-type: none"> • Develop a job description • A list of skills necessary • Create a list of required and preferred skills for DRMs
C2.3. DRMs are assigned differently depending on the school system.	<ul style="list-style-type: none"> • Develop a procedure for school systems
C2.4. DRMs are not typically 12-month employees, leaving no designated person to receive books during the summer months.	<ul style="list-style-type: none"> • Require a designee that can act as backup (5 of 13) • Pay DRMs to work 1-2 days in the summer to manage orders.
Subdomain: Delivery of Books Electronically	
C2.5. Security systems in place in schools prevent DRMs from downloading files from FTP servers.	<ul style="list-style-type: none"> • Work with IT within the school systems to find a work around (6 of 10 responses) • Discontinue FTP servers • Use streaming technology like Bookstream and Learning Ally
C2.6. Slow Internet connections in more rural systems time out before files are fully downloaded.	<ul style="list-style-type: none"> • Continue to provide CD/DVD Options • Break files into smaller chunks • LEAs should apply for grants to improve infrastructure
Subdomain: Retention of Books	
C2.7. Development of a “personal library” of AIM files by DRMs to possibly use for another student in the future (compromising copyright).	<ul style="list-style-type: none"> • DRMs need to understand the liabilities around copyright laws • Require DRMs to watch a short, engaging video of copyright before they can submit their order • Offer specific training on copyright • Regular memos reemphasizing the importance or purging files • Work with publishers to provide a legal digital library

Table 46

All Confirmed Challenges: Producing AIM Materials: Summary of Suggested Solutions

Confirmed Challenge	Suggested Solutions
Subdomain: Creating Quality AIM Files in a Timely Manner	
C3.1. It is very time consuming to develop an accessible textbook from scratch.	No comments provided on questionnaire
Subdomain: Lack of Training and Research on the Best Technology Tools to Use to Produce AIM	
C3.2. There is a lack of staff capable of describing high level math content.	<ul style="list-style-type: none"> • Training is needed at the state level • Technology is catching up. • Learning Ally recorded books may be the best option for these materials.
	Recruit content-area specialists to develop materials <ul style="list-style-type: none"> • graduate students – provide credit, internships • Retired math teachers • Professors
C3.3. There is a lack of technology available to create accessible math textbooks.	Same as above
C3.4. It is necessary to keep staff up to date on technology upgrades for creating accessible text.	Assign someone to keep up with latest advances <ul style="list-style-type: none"> • Weekly update meetings • Online training and resources developed by vendors • Only upgrade when there is a need or a problem.
Subdomain: Cost of Production	
C3.5. Printing costs associated with large print can be expensive.	Do not print them
	Increase use of video magnifiers and digital text <ul style="list-style-type: none"> • Determine if students can use hand-held magnifiers or CCTVs • Pass costs on to school system
C3.6. Partnership contracts are expensive and may only provide a small percentage of books to eligible students.	<ul style="list-style-type: none"> • School systems should pay for memberships • Small school systems could form consortiums to pay membership fees. • Pay for individual memberships for students—it's cheaper!

Table 47

All Confirmed Challenges: Training on AIM Services and Implementation: Summary of Suggested Solutions

Confirmed Challenge	Suggested Solutions
Subdomain: Limited Time Available for Training	
C4.1. There is a lack of release time or teacher workdays available for AIM training—available days are needed for professional development requirements in other areas.	<p>Incorporate into other required district-level training</p> <ul style="list-style-type: none"> • AIM training should not be separate, accessibility should be incorporated into all training • Provide recertification credit <p>Web-based: On-demand training (webinars live and recorded)</p> <ul style="list-style-type: none"> • Record and archive trainings • Keep AIM-VA Website updated—One place to go for updated information
C4.2. Information and training provided to DRMs is not reaching teachers.	<p>Regular dissemination of information</p> <ul style="list-style-type: none"> • Blogs • Principals institute checks and balances ensuring dissemination of information • Required updates at staff meetings

Combined Rounds Three and Four Summary

In the combined Rounds Three and Four, a total of 16 experts participated (11 local and 5 national experts). In this round, experts identified five additional challenges through a level of agreement of 75% or greater; one of the newly identified challenges was a challenge added by expert panelists in Round Two of the study (Table 39). In addition to identifying five new challenges, two potential challenges from Round Two were eliminated, receiving a level of agreement of less than 25% (Tables 35 through 38). The panel did not form consensus on the remaining 32 potential challenges, including three new challenges that were added during Round Two (Table 39). In addition to forming consensus on a total of 32 challenges to providing AIM by the completion of combined Rounds Three and Four, experts suggested solutions and also indicated whether the challenges should be addressed at a local or national level (See Tables 40 through 43). A summary of the suggestions are provided in Tables 46 and 47.

Solutions were examined as a whole by the researcher within the domains of producing, ordering, and delivering AIM and using AIM in the classroom. Across all domains three main themes emerged among the suggested solutions: (a) the need to increase opportunities for professional development, especially Web-based “just in-time” training; (b) the need for increased coordination and guidance at the state and local level in regard to policy development and dissemination of information; and (c) the need to increase both AT and IT personnel available to support the increasing use of technology in the classroom. In addition to these three overarching themes, the suggestion to invest in assistive technology in the classroom that students with print-related disabilities can

use to adapt standard instructional materials was offered as a solution by several experts to address the cost of production.

Chapter Summary

At the completion of all rounds of the Delphi study, results of both quantitative and qualitative data provided a final list of confirmed advantages and challenges. Following an examination of the final list, the researcher refined the domains and subdomains used during the data collection process and rearranged advantages and challenges within the refined subdomains. This reorganization was deemed necessary to better represent the data and facilitate the discussion of findings presented in Chapter 5.

The advantages and challenges are numbered to facilitate referencing of individual items. Advantages and challenges are numbered beginning with the letter “A” and “C” respectively. The first number following the letter “A” or “C” represents the domain area that it fell within: (1) Using AIM in the Classroom, (2) Ordering and Delivering AIM, (3) Producing AIM Materials, and (4) Training on AIM-VA Services and Implementation. The complete list of advantages and challenges confirmed by the panel of experts through consensus of opinion (level of agreement reaching $\geq 75\%$) is arranged in order by domains used to help answer the three research questions, beginning with advantages.

Advantages to Producing AIM at the State Level

Access to expertise.

- A3.5. Development of Word files created and edited by AIM-VA production will provide quality files to translate into Braille.

- A3.6. University personnel are constantly researching and experimenting with new formats to keep up with advancements in technology (e.g., ePub files).
- A.3.8. Systematic—“assembly line” approach to developing materials is used (computer-savvy student workers become experts in their assigned jobs).
- A3.10. Location of major production of formats at a university (special education unit) provides expertise regarding the needs of students with print-related disabilities.
- A3.14. University location provides unlimited access student wage workers, reducing personnel costs.

Development of partnerships.

- A3.3. Maintaining a partnership with Virginia Department for the Blind and Vision Impaired (DBVI) adds to the library of immediately available books.
- A3.4. Maintaining a partnership with Bookshare adds to the library of immediately available books.
- A3.7. Partnership with Learning Ally is maintained to produce audio books.
- A.3.9. Partnership with DBVI is maintained to produce Braille formatted books.
- A3.11. State-funded program provides shared resources.
- A3.12. Partnerships with major production houses reduce personnel costs.
- A3.13. Free delivery of electronic files through the use of an FTP server.
- A3.15. Partnerships with assistive technology companies reduce the cost of software used for production.

- A3.16. UPS Statewide contract provides very low delivery costs.

Advantages to Ordering and Delivering AIM at the State Level

Effective communication with stakeholders.

- A2.1. Full-time help-desk for technical trouble-shooting, just-in-time training, and process issues is helpful.
- A2.2. AIM-VA production and policy staff are highly responsive to the needs of stakeholders.
- A2.3. AIM-VA Web site is comprehensive for quick information.
- A2.4. AIM-VA Advisory Group allows a strong level of stakeholders' involvement.
- A2.5. DRMs act as liaisons between school systems (administrators, teachers, IEP teams) and AIM.

Efficient ordering and delivery system.

- A2.6. All AIM formats can be ordered from the same database system (one-stop shop).
- A2.7. Large library of Existing AIM files has been developed and is available.
- A2.8. Database is easy to use.
- A2.9. AIM-VA database is specifically programmed for the project with a full-time programmer to make adjustments as needed.
- A2.10. Ability to report data on student use of AIM that was previously available with multiple databases from multiple providers has increased.

- A2.11. Partnership with UPS provides a familiar, reliable and inexpensive delivery system.
- A3.1. Large library of existing AIM files has been developed and is available.

Challenges to Producing AIM at the State Level

Cost of producing AIM.

- C3.5. Printing costs associated with large print can be expensive.
- C3.6. Partnership contracts are expensive and may only provide a small percentage of books to eligible students.

Time to produce AIM.

- C3.1. It is very time consuming to develop an accessible textbook from scratch.

Limited technology and expertise for technical subject matter.

- C3.2. There is a lack of staff capable of describing high-level math content.
- C3.3. There is a lack of technology available to create accessible math textbooks.
- C3.4. It is necessary to keep staff up to date on technology upgrades for creating accessible text.

Challenges to Ordering and Delivering AIM at the State Level

Assignment of Digital Rights Managers (DRMs).

- C2.1. DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.

- C2.2. There is not a standard skill set required of personnel designated as digital rights managers.
- C2.3. DRMs are assigned differently depending on the school system.
- C2.4. DRMs are not typically 12-month employees—leaving no designated person to receive books during the summer months.

Technology infrastructure.

- C2.5. Security systems in place in schools prevent DRMs from downloading files from FTP servers.
- C2.6. Slow Internet connections in more rural systems time out before files are fully downloaded.
- C2.7. DRMs develop a “personal library” of AIM to possibly use for another student in the future (compromising copyright).

Advantages to Using AIM-VA

Access to multiple formats.

- A1.1. Students can access information using their dominant or preferred learning style.
- A1.2. More than one accessible format for the same book can be ordered for the same student.
- A1.3. Students can access books in different environments (i.e. on the bus using iPhone and in the classroom using accessible PDF).
- A1.4. Students can access information using their preferred technology.

- A1.7. AIM-VA Files can be used on student-owned technology tools (iPads, iPhone, laptops, CD players provided by Learning Ally or DBVI).
- A1.8. Providing multiple formats allows schools to use the technology for which they have access.

Time and cost savings.

- A1.5. It saves teachers the time of producing accessible text by providing a statewide program.
- A1.6. It is free and easy for teachers to provide accessible textbooks statewide for students in the classroom.
- A1.9. Partnership with Don Johnston provides access to Read Outloud to all schools in Virginia.
- A1.10. Partnerships with assistive technology companies/vendors continue to move technology forward and provide easier access to students (i.e. Don Johnston—BookStream).

VDOE interpretation of eligibility policy.

- A1.11. Virginia Department of Education (VDOE) interpretation of eligibility requirements for AIM allows students identified as having a learning disability to use AIM-VA services without requiring a diagnosis from a medical doctor.
- A1.12. Eligibility decisions are made by the IEP Team.

- A1.13. VDOE interpretation of eligibility requirements allows students being served through a 504 plan, as a result of a print-related disability, to use AIM-VA services.

Challenges to Using AIM-VA

Policies surrounding eligibility.

- C1.5. Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.
- C1.8. Outdated eligibility regulations are based on the Chaffee Amendment.
- C1.10. Eligibility requirements across school districts are inconsistent.

Dissemination of information.

- C1.6. Information about the availability of AIM services is not reaching classroom teachers.
- C1.7. Information about the availability of AIM services is not reaching parents.
- C1.9. DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.
- C4.2. Information and training provided to DRMs is not reaching teachers.

Lack of training and awareness of formats and technology.

- C1.1. The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.

- C1.2. Teachers are not adequately trained on assistive technology or AIM at the preservice level.
- C1.3. Restrictive school-based policies for installing software exist.
- C1.4. Even with training it is difficult for teachers to keep up with the advances in technology.
- C1.11. Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.
- C1.13. Teachers and IEP teams are unaware of all of the formats that are available to help their students.
- C1.14. Teachers and IEP teams are confused about the multiple formats available.
- C1.16. Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology-based options.
- C1.17. Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.
- C4.1. There is a lack of release time or teacher workdays available for AIM training—available days are needed for professional development requirements in other areas.

Materials used for instruction.

- C1.12. Teachers do not use textbooks often in the classroom.
- C1.15. Most of the materials used for instruction in the classroom are not provided through AIM.

The advantages and challenges confirmed by the panel of experts were used to answer the first two research questions. Solutions provided for confirmed challenges in the final round of the Delphi study were used to answer the third research question. A discussion of key findings is presented in the following chapter.

5. DISCUSSION

This chapter presents the discussion of major findings and their implications for research and policy that emerged from the Delphi study. The main purpose of this study was to identify advantages and challenges associated with implementing federal education policy at the state level and to gather evidence of best practices to provide accessible instructional materials at the state level. To accomplish this, a four-round modified Delphi method was used to answer three research questions:

1. What are the advantages and challenges associated with producing and disseminating AIM-VA materials?
 - a. What issues exist with producing each of the formats provided (Braille, large print, audio books, eText, etc.)?
 - b. What issues exist in ordering and delivering AIM-VA materials (Braille, large print, audio books, eText, etc.)?
2. What are the advantages and challenges associated with utilizing AIM-VA materials in the classroom?
 - a. What are the issues in determining eligibility to use AIM-VA materials with students?
 - b. What are the issues in determining the appropriate AIM format to meet the needs of students?

- c. What are the issues with teaching students to use AIM-VA materials?
 - d. What are the issues with using technology (hardware and software) to access the materials provided?
3. What recommendations do experts in the field of accessible instructional materials have for addressing the issues identified?

Interviews with 13 local experts with direct knowledge of the AIM-VA project were conducted in the first round of the Delphi to establish an initial list of advantages and challenges. The first and second research questions were examined through data collected in the first round interviews as well as questionnaires from Round Two and Part 1 of the combined Rounds Three and Four questionnaires, in which 7 additional national experts participated. Whereas there was a small amount of attrition, 11 local and 5 national experts completed all four rounds of the Delphi study (see Appendices A, B, and C). Data for the third research question was collected through open-ended questions included in the Delphi questionnaire for the combined Rounds Three and Four. The panel of experts was comprised of local and national experts representing different perspectives within the field of AIM including policy, training, production, digital rights management, and using AIM in the classroom.

Analysis of both quantitative and qualitative data collected throughout the study provided evidence for the following key findings to providing AIM through a centralized state-funded program. Experts in providing accessible instructional materials agree:

1. Shared resources which enable a “one-stop shop” are a key advantage enabled by providing accessible instructional materials through a centralized state-funded program.
2. The availability of a help desk to support the needs of stakeholders in a “just-in-time” fashion is a highly valued resource.
3. Developing partnerships increases the ability to deliver AIM in a timely manner and provides financial benefits in terms of production and acquisition of technology.
4. Lack of consistent policies and practices across school districts increases the likelihood of inconsistent services provided to students and impacts the ability to delivery materials in a timely manner.
5. Confusion about eligibility criteria across local, state, and federal policies has contributed to the underutilization of AIM services by students with print-related disabilities.
6. Inadequate dissemination of information about AIM-VA services has contributed to the underutilization of AIM services by students with print-related disabilities.
7. Teachers lack training on AIM and the use of assistive technology tools available to access AIM.

Discussion of Advantages and Challenges to Producing and Distributing AIM at the State Level

Advantages and challenges listed under the domains of (a) production and (b) ordering and delivering were used to answer the first research question. It was found that

advantages and challenges confirmed by experts in these domains were not specific to individual file formats, as anticipated by the researcher. Instead, advantages and challenges were more general, focusing on the development of multiple file formats as a whole. The only exception was a challenge related to the cost of producing large-print books.

Advantages to Production and Distribution

A total of 26 advantages were confirmed by the expert panelists. Of the 26 advantages, 14 were identified within the domain of production and 12 advantages were identified within the domain of ordering and delivering. The advantages were organized into categories in order to discuss findings for Research Question 1. The four categories that emerged were: (a) access to expertise, (b) development of partnerships, (c) efficient ordering and delivery system, and (d) effective communication with stakeholders. Figure 6 illustrates the organization of advantages into categories. Levels of agreement reached by experts for all advantages are presented in Tables 10 through 14.

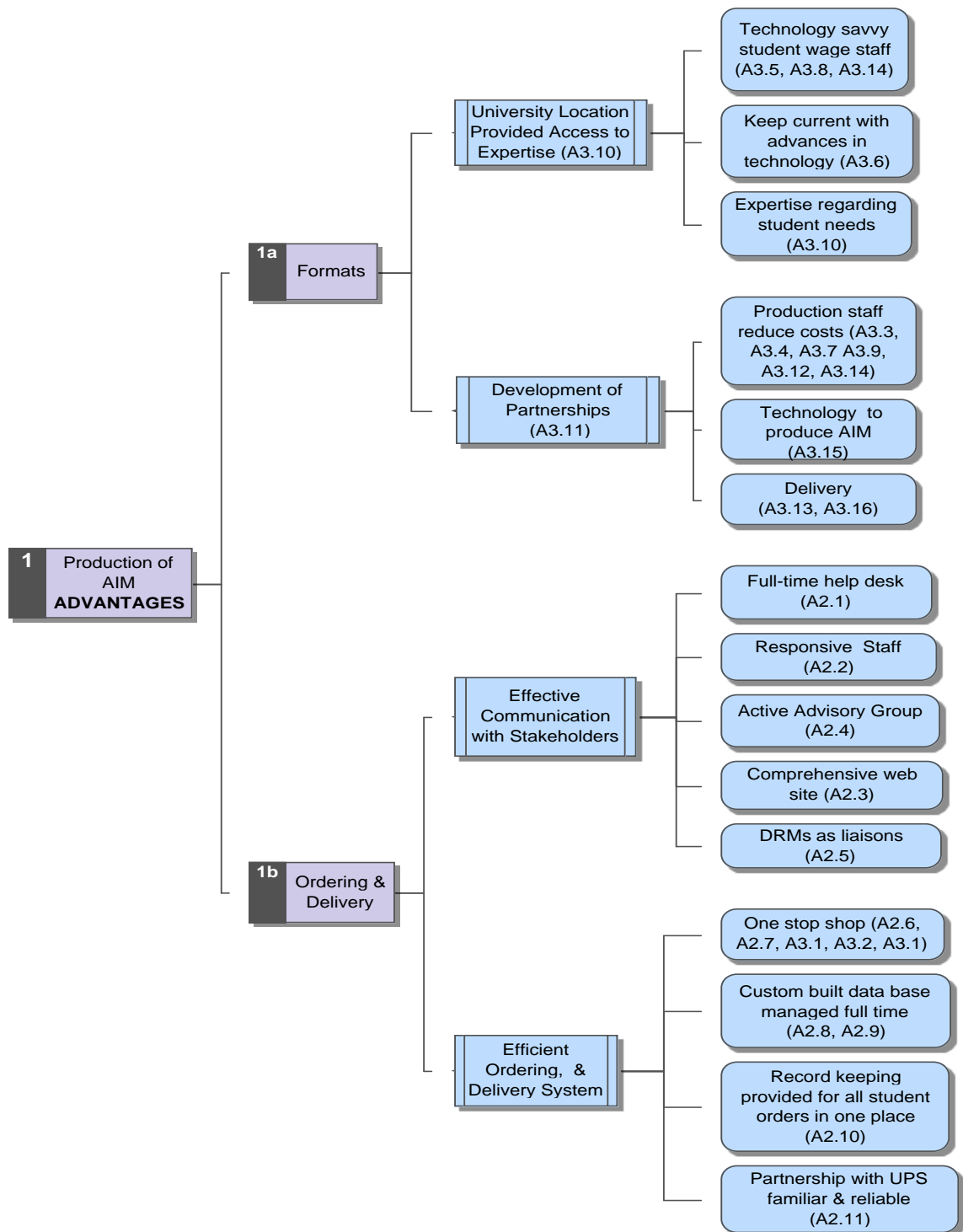


Figure 6. Advantages to producing and distributing AIM at the state level.

Access to expertise. Panelists agreed that access to personnel with expertise in special education and the latest advances in assistive technology provide an advantage in producing AIM in the state of Virginia. AIM-VA is located at George Mason University within the Division of Special Education and disAbility Research. This location provides access to a variety of personnel with a broad range of skills, including the learning and technology needs of students with print-related disabilities (A3.10). In addition, AIM-VA utilizes computer-savvy college students to produce materials in an assembly-line approach, allowing student workers to become experts at their given assignments (A3.5,A3.6, A3.8). Access to production personnel through partnerships with production houses that create accessible textbooks is also an advantage. This is especially true of highly specialized formats such as Braille that require a great deal of training to produce. More than half of the 50 states require Braille transcribers to have National Library Service certification. The lack of trained personnel to transcribe Braille was a top concern for all states (Wall, Emerson, Corn, & Siller, 2006).

Development of partnerships. Panelists confirmed several advantages that supported the development of partnerships. AIM-VA has developed numerous partnerships with production houses and assistive technology vendors. Expert panelists agreed that these partnerships provide access to professional expertise in producing specialized formats and the technology used to access them. In addition, partnerships provide financial benefits by reducing excessive personnel costs required to produce specialized AIM formats such as Braille and digital audio recordings (see Figure 6). For example, the American Printing House for the Blind pays Braille transcribers between

\$4.00 and \$7.00 per page depending on the complexity of the materials. Books containing math content require more time and skill to transcribe (American Printing House for the Blind, “To Order a Book,” n.d.). Using these figures, the cost to produce a 500-page textbook in Braille would be between \$2,000 and \$3,500 depending on the complexity of the content within the book. At the extreme end of costs, AIM-VA has actually had specialized science or large social science books transcribed for \$20,000 each. The cost to produce books in digital audio format is difficult to ascertain because it is dependent on how they are produced. The Alternate Text Production Center (ATPC), a fee-for-service production center for learning institutions in California, charges \$2.60 per page or about \$1,300 to convert a hard-copy textbook to a digital audio format or DAISY file. This cost is less if the textbook is provided to the ATPC in electronic form, eliminating the need to scan the hard-copy book and edit the contents. The cost to convert a textbook in electronic form to DAISY format is \$1.50 per page, or \$700 for a 500-page textbook. AIM-VA pays yearly service contracts and/or membership fees to partner agencies (“Alternate Text Production Center Website,” n.d.). In addition, partnerships with technology vendors have helped to reduce the cost of acquiring and updating tools used to produce AIM materials from scratch. Panelists agreed that these partnerships provided financial benefits by reducing the need to hire and pay production staff.

Advantages to Ordering and Delivering AIM

Efficient order and delivery system. Advantages related to the efficiency of the order and delivery system developed by AIM-VA were shown to have the highest levels of agreement among the group of experts. Four of the seven advantages (A2.6,

A2.7, A2.9, A2.11) grouped in this area (see Figure 6) received a level of agreement of 100%, as shown in Table 11. The AIM-VA online ordering database is used to place orders. During the first year of AIM-VA an out-of-the-box online database system was used, which proved to be inefficient and caused confusion among stakeholders. One local panelist stated, “In the first year we had a lot of problems. But since we’ve created a new database, I have not received one phone call this year about problems ordering.” Rose, Hasselbring, Stahl, and Zabala (2005) noted that issues with efficient development of AIM as well as lack of timely delivery of AIM materials were a national problem. According to a local expert panelist who has been with the project from the beginning, a database programmer was hired to create a database customized to the needs of the AIM-VA project. The database is continually adjusted and adapted based on feedback from the production staff, training coordinator, and AIM-VA advisory board members. This provides evidence of effective communication among stakeholders, an advantage discussed later in this section. The customized database has greatly improved the ability for designated Digital Rights Managers (DRMs) to search for, order, track, and return their materials for students with print-related disabilities in their districts. All orders are managed through the system, including orders for formats provided by AIM-VA partners. DRMs have the ability to search a large library of existing materials provided through AIM-VA and their production partners. The AIM-VA system provides DRMs with a “one-stop shop” to order textbooks in an accessible format, a major advantage as indicated by experts through 100% agreement (see Table 11). In addition, the system

maintains records of all orders placed by DRMs. This information is used to assist them in returning materials at the end of the year. A UPS label can be printed from the database to allow for free and easy shipment of materials back to AIM-VA.

Effective communication with stakeholders. Several advantages were confirmed by the expert panel that provide evidence of effective communication with stakeholders. In addition to an active advisory board that meets twice a year, AIM provides multiple communication channels with stakeholders, which was also confirmed as an advantage through consensus of the experts. These channels of communication include a full-time AIM-VA help desk (A2.1), single point of contact with school districts through digital rights managers (DRMs) (A2.5), and a comprehensive Web site (A2.3). All advantages grouped under “effective communication with stakeholders” in Figure 6 (A2.1 through A2.5) received a level of agreement of at least 88.20%. Two of the five advantages in this group reached 100% agreement among the 18 panelists who rated these items (see Table 10). Advantages in this grouping were also rank ordered. The advantage with the highest rank and level of agreement was A2.1, “Full-time help desk for trouble-shooting, just-in-time training, and process issues is helpful.”

Providing a full-time help desk was identified as a major advantage, receiving the strongest level of agreement in the domain of ordering and delivering overall, as shown in Table 10. The AIM-VA help desk is staffed full-time from 8:30 a.m. to 5:00 p.m. According to call logs, the help desk receives an average of 30 calls a month throughout the year. The help desk provides support to DRMs in regard to ordering and receiving materials, as well as “just-in-time” training on using the file formats provided through

AIM-VA. The production manager and staff are in close proximity to the help desk, providing added support, and have intimate knowledge of the file formats produced and the technology that can be used to access them. This knowledge combined with the proximity to the help desk allows for issues to be handled quickly. The fact that panelists did not identify any challenges related to the help desk provides further evidence of that it is a key advantage. The only challenge noted by experts in Round One interviews related to the help desk was the inability for technology resource professionals to contact the help desk for support. This policy was implemented to protect the confidentiality of the students. This potential challenge was included for consideration by the full group of expert panelists in Round Two, but received a level of agreement of only 29.40% (see Table 16). Consistent with the Delphi technique, it was reconsidered in combined Rounds Three and Four where the level of agreement fell to 25.00%. Therefore it was removed as a challenge.

A high level of communication with stakeholders through the advisory board, help desk, and use of DRMs has helped to develop efficient systems. This was evident in an interview with one panelist who stated, “the database that they [AIM-VA] have built into this new system makes life so much easier for me. For ordering, they have really done a good job of listening to us and streamlining it.” This finding is consistent with research on business practices. Private business which ascribe to a practice known as “managing for stakeholders,” in which firms encourage stakeholder communication and actively involve stakeholders involved in decision making (Sisodia, Wolfe, Sheth, 2007),

spurs innovation and allows firms to more efficiently deal with changes (Harrison, Bosse, & Phillips, 2010).

Challenges to Producing and Distributing AIM

Panelists confirmed a total of 13 challenges; of these, 6 address issues within production and 7 addressed challenges in the domain of ordering and delivering. They can be found in Tables 42 and 41 respectively. As with confirmed advantages, challenges were grouped for the purpose of discussion. Five key areas emerged: (a) limited technology and content expertise for technical subject matter, (b) time required to produce AIM, (c) cost of production, (d) inconsistent assignment of DRMs, and (e) technology infrastructure. Figure 7 illustrates the grouping of challenges into the three key areas identified.

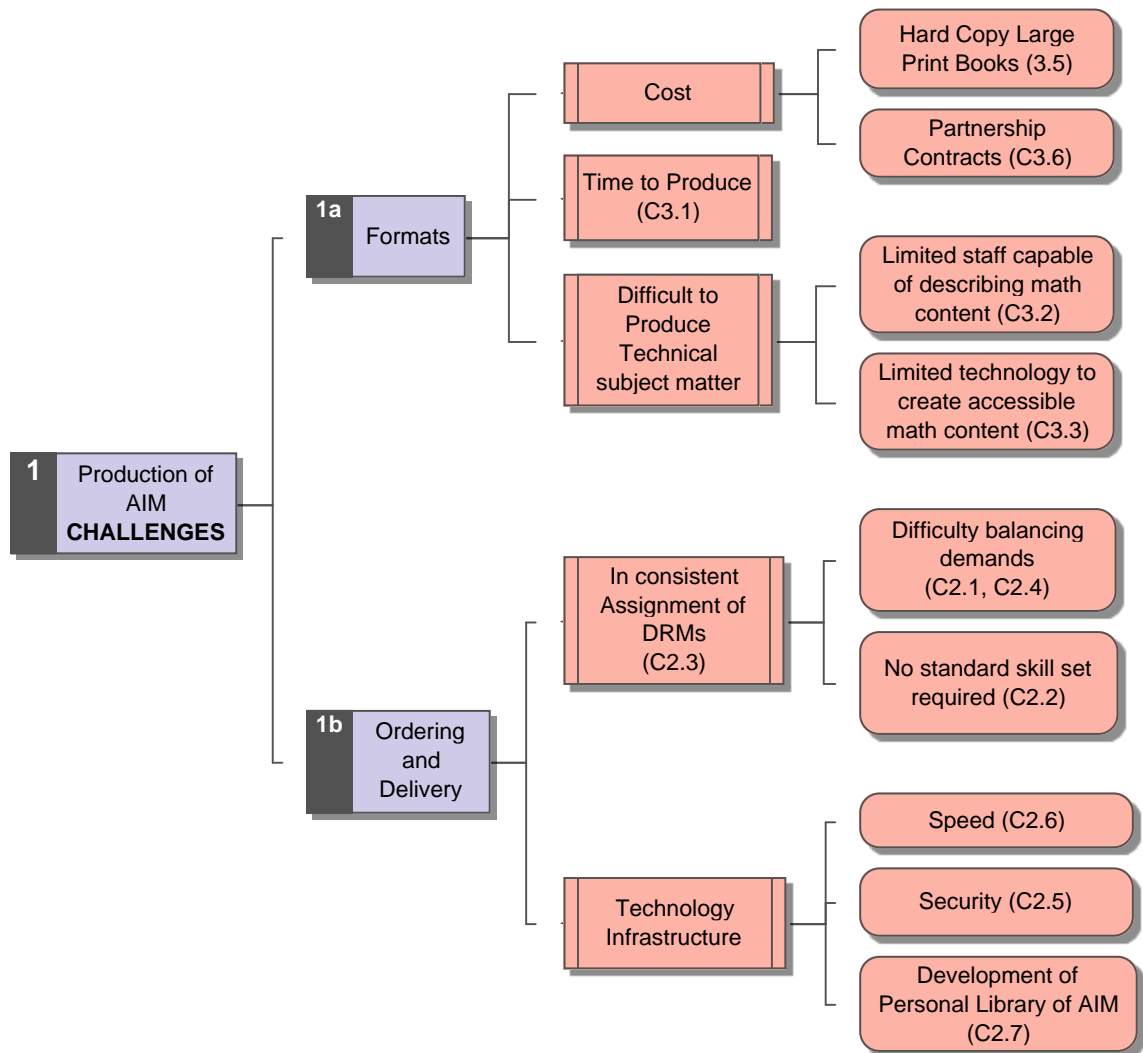


Figure 7. Challenges to the producing and distributing AIM at the state level.

Limited technology and content expertise for technical subject matter.

Experts confirmed two challenges (C3.2 and C3.3) to highlight the challenge of producing accessible content for technical subject matter (e.g., math, science). Advances in assistive technology, such as optical character recognition (OCR) software, have enabled a relatively efficient way of converting hard-copy text into electronic text by first scanning the hard-copy pages and then converting them to editable text using OCR

technology. AIM-VA uses high-speed scanners that are capable of scanning up to 60 pages per minute in the initial steps of their production process. OCR technology is very accurate for most general textbooks; however, technical subjects such as math and science still create problems. The majority of the software programs available for OCR conversion are unable to provide accurate conversion of specialized characters and symbols used in technical subjects such as mathematics, chemistry, physics, and computer science. The few that are available do not provide a high level of accuracy and require a considerable amount of editing of the scanned text, slowing the production process (Stewart, n.d.). This has proven to be a challenge to providing AIM.

To date, students who need auditory access to this type of material generally have to order books from Learning Ally, a partner of AIM-VA. Learning Ally relies on volunteer readers to provide human audio recordings in digital format rather than text-to-speech, in which the software converts the text and reads it aloud using synthesized speech. The issue with using audio recordings is twofold. One issue is that it can be difficult to find readers capable of reading and explaining technical subject matter. In addition, books created with audio recordings of human voices limit the user in regard to the technology they can use to access the material. For example, digital audio recording allows for the use of some features provided in text-to-speech-based systems such as the ability to have text highlighted as it is read by the computer using synthesized speech. Audio recordings of textbooks also do not allow students to quickly look up a word or take a note in the text. All of these features have been shown in the literature to be helpful

to students with specific learning and cognitive disabilities (Isso et al., 2009; Twyman & Tindle, 2006).

Time required to produce AIM. The production process used by AIM-VA to produce new materials from scratch in structured Word and fully accessible PDF is time consuming. A textbook of approximately 500 pages typically takes about five weeks (200 hours) to produce. The process involves several steps: (a) removing the textbook binding, (b) scanning and OCR conversion of the hard-copy pages, (c) editing the resulting electronic file (correcting errors in the text and removing formatting), (d) adding navigation features (bookmarking, proper page numbering, etc.), (e) describing images (pictures, graphs, etc.), (f) quality control check, and (g) saving and/or converting file in the appropriate format to CD and uploading to the appropriate server. The time required is immense for this enhanced accessibility (Adler, 2002; Jackson, 2004; Perl, 2002). The time required to develop an accessible textbook from scratch was confirmed as a challenge with 100% agreement among the panel of experts as shown in Table 22.

Cost of production. In some areas, the cost of production is offset by the development of partnerships with large production houses to produce Braille through the Virginia Department of the Blind and Visually Impaired (VDBVI) and audio recordings from Learning Ally. Production costs are also relatively low for electronic files produced through AIM-VA due to the availability of technology-savvy, student wage workers at the university location. However, the panel agreed that the cost of producing hard-copy large-print books is a financial challenge to providing AIM at the statewide level. This challenge was echoed in a study investigating the production and distribution of large

print and Braille in all states. States who responded to the survey indicated that the “processes involved in the production of braille and large-print textbooks were cumbersome and expensive” (Wall et al., 2006, p. 149).

Large-print books are produced by AIM-VA by scanning hard-copy textbooks, saving them as PDF files, enlarging the electronic copy to 11”x14”, and printing them. Printing is either done in-house when demands are manageable, or is outsourced to local printing companies when there are a high number of orders. Due to their increased size and weight, large-print books are printed in volumes; the average book requires three volumes. Large-print volumes consist of approximately 240 printed pages on medium stock paper, front and back covers on heavy-weight stock, and black plastic combed bindings. Each large-print copy of a text and its volumes have unique ID codes printed on the inside front covers. The cost to produce the books in black-and-white averages about \$20.00 per volume or \$60.00 per book. Color copies more than triple the cost. All large-print books must be returned to the AIM-VA library at the end of the school year to comply with copyright law and to allow them to be available to another student the following school year. This library system adds to the cost of producing hard-copy large-print books by requiring repairs, replacements, or reprints due to damage, loss, or student writing within the pages. During the 2011-2012 school year, AIM had 2,593 large print orders. Approximately 750 of these were either for new books to be scanned and fully printed or for existing books that were out of stock and had to be reprinted. Out of the remaining 1,840-plus in-stock large print orders, about 700 required repairs or reprints of

missing volumes. All orders were shipped via UPS for \$5 per package. The total printing costs for large-print books orders in 2011-2012 were approximately \$70,000.

Challenges to Ordering and Delivering AIM

Inconsistent assignment of DRMs. The designation of digital rights managers in each school district was a process established to provide a point of contact for AIM-VA for the purpose of disseminating information, completing orders for eligible students, and ensuring that copyright regulations are followed for all materials distributed for use by students. DRMs are not currently paid for the added responsibilities. As mentioned previously, experts viewed the designation of DRMs as an advantage in the domain of ordering and delivering (see Table 10 advantage A2.5) related to the area of effective communication with stakeholders. However, the inconsistent practices used in the process of assigning DRMs within school districts has proven to present challenges related to efficiently ordering and delivering AIM.

School divisions are responsible for assigning personnel to act as DRMs for their district. Currently AIM-VA does not enforce specific guidelines for the assignment of DRMs. As a result, the type of personnel and their skills, as well as job responsibilities, vary greatly. Depending on the district, DRMs may be teachers for the visually impaired, special education personnel, assistive technology specialists, or administrative support staff. In some cases DRMs work part-time or are contractors who do not work during the summer months. Some districts assign multiple DRMs to cover individual school buildings; others assign one DRM for the entire district. Difficulties stemming from inconsistent assignment of DRMs have been identified as a challenge in regard to

delivering and returning materials to AIM-VA and its partners. AIM-VA staff have noted that DRMs have difficulties coordinating with the personnel at individual schools within their districts. Therefore, large-print books and CDs containing electronic files sent to schools are often misplaced or returned to AIM-VA because staff at the schools were not made aware of what to do with them. DRMs' lack of organizational skills and/or time to collect AIM materials at the end of the year were also viewed as a challenge by experts. In the 2010-2011 school year, 343 large print volumes were not returned to AIM-VA.

Technology infrastructure. Another challenge identified by experts is the insufficient or restrictive technology infrastructure of many school districts. Electronic file formats may be downloaded from an AIM FTP server or delivered through a cloud system. Electronic delivery is less problematic in regard to lost or misplaced orders; however, challenges are evident in relation to the capacity of the technology infrastructure within the schools ("Technology in Education, " 2011) and network security policies that may restrict access to this type of electronic access for some DRMs. Virginia is a diverse state consisting of very large and very small school districts in rural, metropolitan, and urban areas. The quality and capacity of the technology infrastructure varies as much as the geographic locations. School systems with an outdated technology infrastructure or restrictive network security policies have been identified as a challenge to delivering electronic files. DRMs have the option to download files from an FTP server maintained by AIM-VA. Experts agreed that the ability to download files from an FTP server was found to be an advantage in terms of cost (A3.13), but it was also identified as a challenge in terms of ease of delivery. Outdated technology may cause

download speed to be so slow that the system will logout before the download is complete. In addition, most school districts, including those with updated technology, have restrictive security policies in place to protect their systems from viruses and malicious content. These security policies often restrict DRMs from downloading files. During interviews conducted in Round One of the Delphi, several participants mentioned that they have resorted to downloading files to personal computers at home in the evenings to combat the issue of slow Internet speeds or security policies that limited their access to download files at work.

Due to difficulties in both time and technology restrictions, some DRMs admitted the practice of maintaining a copy of electronic files after they have been used by an eligible student. This issue was described by a few local experts during interviews in Round One. It was also brought up as an issue in AIM-VA staff meetings. Textbooks provided in accessible PDF format are often too large to be opened on computers that lack a sufficient level of processing speed and/or memory required to handle large files. Therefore, the files need to be divided in order to be used by students. Because the process of dividing PDF documents can be very time consuming, the modified files are often saved in the event that they are needed for another eligible student in the future. This practice is strictly prohibited by AIM-VA.

Discussion of Advantages and Challenges to Using AIM in the Classroom

Confirmed advantages and challenges listed under the domain of using AIM in the classroom and challenges, listed under the domain of training on AIM-VA services and implementation, were used to answer the second research question. After a review of

the final list of advantages and challenges within the domain of training on AIM-VA services, only two challenges were confirmed and they fit more appropriately under using AIM in the classroom. In the initial interviews conducted in Round One, local AIM-VA experts were asked questions designed to explore advantages and challenges to using AIM in the classroom. Specific questions explored areas including eligibility for use, selecting and using the formats provided, and training (see Appendix B). Advantages and challenges were identified and included for consideration by the local and national experts.

Advantages to Using AIM

A total of 13 advantages related to using AIM in the classroom were confirmed by experts. Tables 7 through 9 provide the advantages along with level of agreement percentages. Advantages were grouped into three key areas: (a) access to multiple formats, (b) time and cost savings, and (c) VDOE interpretation of eligibility policies (see Figure 8).

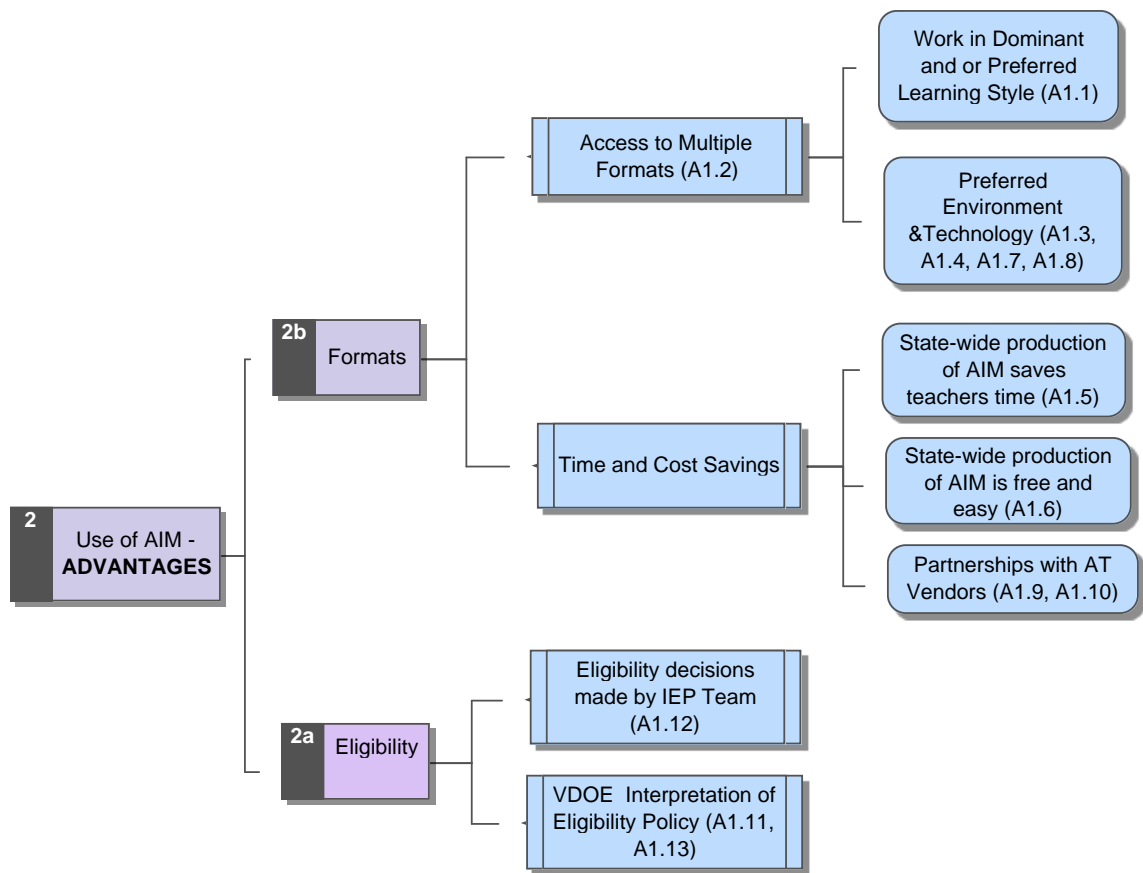


Figure 8. Advantages to using AIM at the state level.

Access to multiple formats. Experts identified six advantages that related to using multiple formats (see Table 7, advantages A1.1 - A1.4 and Table 8, advantages 1.7 and 1.8). The advantages confirmed did not delineate specific file formats, but focused on providing multiple formats to students. Experts agreed that offering multiple formats enabled students to access information in their preferred and/or dominant learning style (advantages A1.1 and 1.2). Advantages to multiple formats (A1.3, A1.4, A1.7, and 1.8) suggest that providing multiple formats benefits both students and school systems in relation to the technology available in the environment. These multiple format advantages

are supported by research on the benefits of universal design for learning (Rose et al., 2005; Spencer, 2011). Considering the varied level of technology available in school districts across Virginia, the ability to order multiple formats of the same book for one student allows the student to access the book with whatever technology is available in the classroom and then later access the same book in a format that will work with technology available to the student on the bus or at home. One panelist said her students may use a hard-copy large-print version in class, but then use the same book in digital audio format to complete reading assignments on the bus or in the car.

Time and cost savings. Partnerships with assistive technology vendors have been identified as an advantage by increasing the availability of technology tools that can be used in the classroom and at home, by allowing students greater access to the general curriculum (A1.9 and A1.10). The AIM-VA partnership with Don Johnston has established a unique software licensing agreement with all school systems in Virginia. Don Johnston agreed to provide an unlimited license for Read Outloud to be installed on computers in all schools and also allowed students served by AIM-VA to install the software on home computers. Experts agree that this partnership with Don Johnston has allowed for increased access of AIM in the classroom and at home to access the curriculum (Don Johnston Inc., 2011). The panel also acknowledged, through consensus, that partnerships with vendors have helped to advance technology use in Virginia by providing access to more efficient systems such as Bookstream, a new cloud computing system. These partnerships have also resulted in motivating AIM-VA to produce more ePubs, which is quickly becoming a preferred AIM format for users. Through their

partnership with Don Johnston, AIM-VA has been able to provide access to over 50,000 additional noncopyright accessible textbooks in the form of epub and PDF documents. This new cloud system allows students to access materials on any browser, smartphone, or tablet that is connected to the Internet any time and at any location (Katzan, 2010). The cloud system designed by Don Johnston also incorporates many standard accessibility features, including text-to-speech with synchronized highlighting, text enlargement, and text and background color adjustments, among other things.

The last area within the domain of using AIM in the classroom is eligibility policies. Experts agreed that the way in which VDOE originally interpreted eligibility policies increased the number of students who could be served through AIM-VA services (A1.11 and A1.13). To understand why experts believe VDOE's interpretation offers an advantage, it is important to understand issues surrounding eligibility to use AIM.

The eligibility debate. There is much debate over which students can access AIM-VA services and, more specifically, materials created using NIMAS files. The debate is centered around inconsistencies that exist in federal laws that govern the provision services for students with disabilities in K-12 education. Depending on their needs, students with disabilities in the K-12 environment may be provided services through an Individualized Education Plan (IEP) required under IDEA (2004) or a 504 plan required under Section 504 of the Rehabilitation Act of 1973. Regulations for both IDEA and Section 504 specify that educational materials in an accessible format be provided to students if needed to access their education. However, the specific policy provisions required under IDEA and Section 504 are very different. Because the NIMAS

provisions were included in the IDEA and the law did not reference Section 504 of the Rehabilitation Act of 1973, only students served under IDEA are eligible to access accessible textbooks that were created using NIMAS files available through the NIMAC (Perl, 2002). Complicating the issue, textbook publishers are actively lobbying to restrict the use of electronic files of their textbooks (Karger, 2010).

In order to be found eligible to benefit from the NIMAS/NIMAC regulations specified in IDEA, students must meet two eligibility requirements. They must (a) receive special education services under IDEA and (b) have a reading disability that meets the definitions outlined in the Chafee Amendment of the Copyright Act of 1966. The Chafee Amendment provides copyright protections for four distinct disability categories: (a) blindness, (b) visual disability, (c) physical limitation, and (d) reading disability resulting from organic dysfunction. The Chafee Amendment requires the existence of one of these four disability categories, certified by a “competent authority” (Pub. L. No. 104-97, §316). According to the regulations, a competent authority for the first three disability categories can include medical doctors, registered nurses, therapists, social workers, rehabilitation teachers, and superintendents, among others. In contrast, certification for the fourth category, reading disability resulting from organic dysfunction, must be certified by a medical doctor who may consult with professionals in associated disciplines (Pub. L. No. 104-97 § 316). This requirement creates confusion and inequity in services provided to individuals with reading disabilities because the category of “reading disability resulting from an organic dysfunction” is not consistent with either the language used in IDEA or Section 504 of the Rehabilitation Act. The language of the

Chaffee Amendment is now considered outdated, as it includes terminology used by medical doctors and neurologists in the 1960s and 1970s, when Congress approved the four disability categories used to determine eligibility under the Chaffee Amendment as well as services provided by the National Library Services for the Blind and Physically Handicapped in 1966 (Karger, 2010). Use of this terminology and certification criteria has excluded students with learning disabilities served through an IEP under IDEA as well as individuals who are provided services through a 504 plan who might benefit greatly from using NIMAS files provided through the NIMAC. Students served under their 504 plans are also excluded from using materials generated from NIMAS files because they are not provided services under IDEA and do not meet the first eligibility requirement.

VDOE guidance regarding certification of “organic dysfunction.” In an effort to meet the intention of the law, the Virginia Department of Education initially concluded that a doctor’s diagnosis was not required if reading specialists trained to administer research-based diagnostic testing were available to identify a student and confirm that a student would benefit from using a specialized format. VDOE believed that reading specialists qualify as “colleagues in associated professions” and should be able to certify a reading disability, so long as the recommendation was in the student’s IEP. VDOE cited scientific evidence from research that demonstrates a neurobiological or organic link to the presence of reading disabilities to justify their position (Sharp, 2010). Experts agreed with the interpretation of eligibility requirements provided by VDOE and supported the expertise of the IEP team to certify eligibility requirements to provide AIM. This in turn

allowed more students access to the services provided through AIM-VA. Specific advantages in this area are listed in Table 9 (A1.11 through A1.13).

Serving students with a 504 plan. The AIM-VA project develops a variety of accessible formats from scratch (not using NIMAS files), including structured Word and accessible PDF files. AIM-VA was authorized by VDOE to provide any AIM files that did not originate from the NIMAC for students who receive accommodations through 504 plans. This service was intended to help remove the burden of creating accessible materials from teachers and LEAs as required under Section 504 of the Rehabilitation Act. This service was confirmed as an advantage by the panel of experts, receiving a level of agreement of 100%.

Unfortunately, VDOE's stance on the certification of organic dysfunction has been challenged, as well as its policy to provide AIM to students served through a 504 plan using non-NIMAS files. On August 3, 2012, VDOE issued a superintendent's memo correcting policy guidance provided in an earlier memo dated March 9, 2012. The memo dated August 9, 2012, stated in part:

The IEP team or 504 committee must document in the child's IEP or 504 plan that the student has a need for accessible instructional materials. The reference to 504 is inconsistent with the current law and should be considered deleted from the March 9 Memo. (Wright, 2012 p. 1)

This policy shift requires LEAs to provide AIM to 504 students rather than use the statewide AIM-VA system and is reflective of the confusion around conflicting federal policies.

VDOE's interpretation of eligibility regulations were changed in part as a result of intense lobbying efforts of textbooks publishers. The Association of American Publishers (AAP) contends that the Chaffee Amendment of the Copyright Law (Pub. L. No. 104-97 §316) is intended to meet the needs a very specific population of individuals small enough in numbers not to constitute a "viable commercial market," which could result in an economic hardship for publishers (Karger, 2010). According to the U.S. Department of Education, Office of Special Education Services (OSEP), in 2011, approximately 2.4 million students with learning disabilities were served under IDEA (U.S. Department of Education, 2011). Research indicates that approximately 80% of learning disabilities impact reading abilities (Thurlow et al., 2009). It is the position of the AAP that including this entire population of individuals with reading disabilities has the potential to raise the number of beneficiaries to a level that would restrict the market share and infringe on the profits of textbook publishers.

Challenges to Using AIM

Experts confirmed 19 challenges to using AIM in the classroom. Challenges in regard to use of specific AIM formats in the classroom (Research Question 2a) were not discovered in the study. However, challenges were confirmed in one or more areas, as shown in Figure 9: (a) eligibility, (b) lack of training and awareness (with regard to AIM file formats and technology used to access them), and (c) materials used for instruction. Challenges grouped under lack of training and awareness and materials used for instruction were provided as evidence to address Research Questions 2b and 2c.

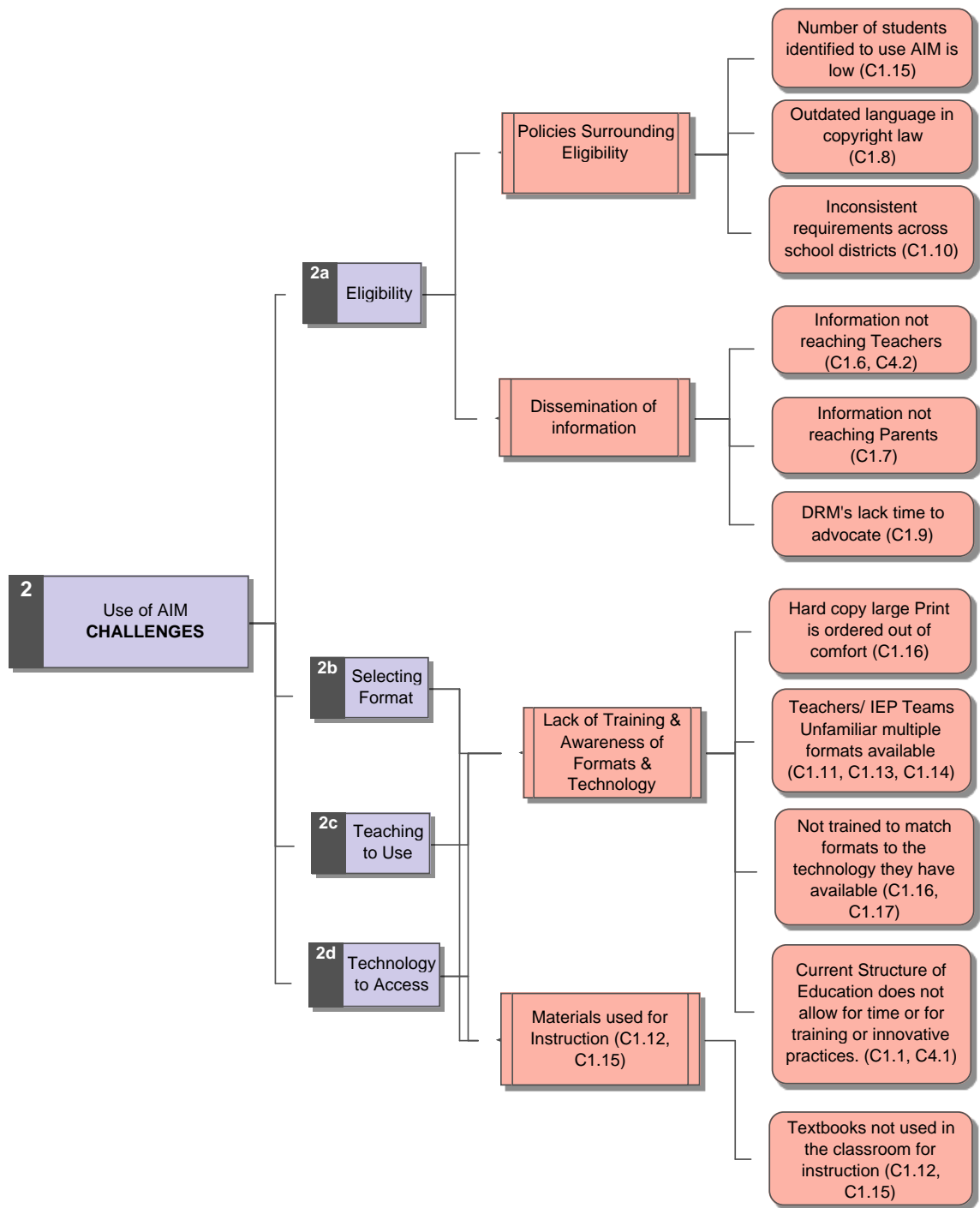


Figure 9. Challenges to using AIM at the state level.

Policies surrounding eligibility. Overall experts concurred, with a level of agreement of 94.10%, that the number of students currently found eligible to use AIM is much lower than it should be, considering the number of students in special education who likely have print-related disabilities. Considering the eligibility issues discussed earlier in this chapter in regard to students with learning disabilities, it is possible that this is in part due to the outdated language in the Chaffee Amendment of the Copyright Law (Pub. L. No. 104-97 §316), which was also identified as a challenge that the experts believed was negatively impacting the use of AIM in the classroom.

Dissemination of information. Several challenges were identified that provided evidence that information about the availability of AIM and AIM-VA services is not reaching parents and teachers. This lack of awareness may contribute to the underutilization of AIM in the classroom by otherwise eligible students because parents and/or teachers simply do not ask for the accommodation for the student. In addition, the inconsistency in the assignments of DRMs, discussed previously in this chapter, affect ordering and delivery. Specifically, difficulties some DRMs have with managing their time, and additional responsibilities, may make it difficult for them to share information and training provided by AIM-VA, causing a breakdown of communication between AIM-VA and the school system, therefore contributing to the lack of information disseminated.

Lack of training on formats and technology. A total of 10 challenges were connected to training needs of educators (see Figure 8). Experts agreed that teachers have not been adequately trained on using AIM or the assistive technology used to access

AIM. The challenges that received the highest level of agreement of at least 94% (see Table 26, C1.2 and C1.11) were lack of time available to the teacher for training and professional development (referenced in two confirmed challenges C1.1 and C4.1), which may help to explain this finding (see Tables 39 and 38 respectively).

Materials used for instruction. The final area of challenge that experts believed impacted the use of AIM in the classroom is that teachers do not primarily rely on textbooks to support instruction (see Table 26). One reason for this shift away from the traditional textbook is the current model of education that places much emphasis on accountability. Textbooks in large part do not follow or highlight the current Virginia Standards of Learning (SOLs). Because students are required to demonstrate mastery of SOLs in Virginia, teachers must find or make appropriate instructional materials to support learning SOLs outside of textbooks. This is exacerbated by the fact that there are no state textbook adoption requirements in the Commonwealth. The Virginia Department of Education has recognized the need to ensure that textbooks do address SOLs. They have teams of experienced teachers to routinely review textbooks for adherence to Virginia SOLs but, at the same time, VDOE recognizes the need to use supplemental instructional materials that move beyond textbooks. They have approached this through a series of pilot projects titled “Beyond Textbooks” to explore “Cost-effective models that blend the vetted, standards-based content and convenience of traditional textbooks with the engaging, dynamic, up-to-date content and resources afforded by the Web” (Virginia Department of Education, n.d.). In the digital age, there are many more resources

available to engage students in learning, including e-pubs developed by major publishers (Adler, 2002).

Solutions Suggested by Expert Panel

In the final round of the study, experts were asked to suggest solutions to the challenges identified. To gain additional information, experts were asked to indicate whether challenges should be addressed on a local or national level. A summary of solutions provided by experts to address the confirmed challenges is discussed in the subsequent section.

Production Time and Costs

A solution related to producing AIM formats, brought forth by experts to address the challenge of time and cost needed to produce AIM formats, was to promote the use of assistive technology (AT) tools by students to adapt standard-size text as needed. Increased use of AT to improve accessibility is supported in the literature. Several studies have been conducted to explore using assistive technology, such as CCTVs and handheld monoculars to enlarge standard-size text, as opposed to providing books in large print. The majority of the studies concluded that using assistive technology increased reading speed and comprehension without increasing eye fatigue. This finding was attributed to the ability of students to use the technology to view the material in their optimal print size, rather than the standard 18-point font (Corn et al., 2003; Lueck et al., 2003; Lussenhop & Corn, 2002). CCTV technology can also allow students to enlarge materials in full color or customize the color options for the text and background. One expert suggested that all students ordering large print should be evaluated to see if they could

use a CCTV or monocular to read standard-size print before providing hard copy to them. Instituting this suggestion has the potential to reduce the cost of materials and personnel to produce large print. It would also eliminate the challenges associated with lost and damaged books discussed earlier in the chapter. However, it would likely require additional funds be provided to school systems to purchase video magnifiers for students to have available in their classrooms.

Ordering and Delivering

Assignment of DRMs. Of the 12 experts who provided a solution for the issues surrounding the assignment of DRMs, 9 suggested that AIM-VA provide specific guidance to school districts in regard to assigning DRMs, including developing a job description listing both required and preferred skills. Another suggestion was to assign additional personnel to assist DRMs with record keeping, “gathering information” needed by DRMs prior to placing the order. All participants who responded to challenges related to DRM assignments agreed that these challenges should be addressed locally (see Table 41).

Technology infrastructure. More than half (60%) of the panel of experts believed that restrictive security policies—which interfere with the ability to download AIM files or install software needed to access the files—should be addressed through coordination with IT personnel at the local level. Other suggestions focused on adapting files or delivery methods, including that files should be broken into chunks, discontinuing FTP downloading, or continuing to provide files on CD. These solutions may address the immediate needs, but expert panelists did not offer solutions that took into account the

increasing demands for technology in education. Schools must continue to plan for advances in technology in order to take advantage of the power of the technology in preparing students for the digital age. *Education Week* noted that school districts are in a constant battle to keep pace with increasing demands to upgrade their technological infrastructure. The demands have changed from simply gaining connectivity to providing enough bandwidth for complex streaming audio and video (“Technology in Education,” 2011).

Using AIM in the Classroom

Training and technical support. Training and technical support was a theme seen throughout all domains of solutions offered by experts. More than half (7 of 15) of the solutions provided by experts who responded on this issue referenced the need for training in the area of AIM at both the preservice level and professional development for teachers. It was suggested that training focus on principles of universal design in order to address the fact that most teachers rely on teacher-made materials for instruction. Rose and Meyer (2002) state that a curriculum designed approach increases flexibility in teaching and decreases the barriers that frequently limit student access to materials and learning in classrooms. Policy makers recognized the value of Universal Design for Learning (UDL) by incorporating it into the Higher Education Opportunity Act of 2008 (Pub. L. No. 110-315). The act encourages UDL practices in higher education, particularly in teacher preparation programs (Rose, Vue, & Halsey, 2010). Another suggestion presented by experts included using Web-based systems that allow for “just-in-time” training. In addition to recognizing a lack of training in technology as a

challenge, they agreed that the current educational model provides teachers with little time for professional training. The use of Web-based systems to provide “just-in-time” training has the potential to address the time issue and has also been acknowledged as an effective method of professional development. Several studies suggest that tailoring training to the immediate needs of teachers increases the likelihood that they will incorporate what they learn into their teaching (Dexter & Anderson, 2002; Keller, Bonk, & Hew, 2005; Penuel, Fishman, Yamaguchi, & Gallagher, 2007).

Granger, Morbey, Lotherington, Owston, and Wideman (2002) found that “just-in-time” professional development is the most influential factor contributing to teachers’ integration of technology into their classrooms. Results suggest that professional development for teachers should transition to a “just-in-time” model rather than the “just-in-case” professional development most school systems currently employ. Given the ubiquitous nature of mobile technologies (Hlodan, 2010) and the limited time available to teachers, Web-based training that is specific to the immediate needs of teachers may be an appropriate option. AIM-VA already utilizes such a training mechanism through the statewide professional Website operated by the Kellar Institute at Mason, TTACOnline.org. Teachers and DRMs can access video-based training and Webshops on various AIM related activities and materials.

Development of learning communities. Experts also suggested leveraging resources through national centers focused on innovative and best practices. Help desk support and Web-based peer-to-peer support to share resources are two such approaches. Peer support including teachers, administrators, and others in the education community

has been shown to influence the level of integration in the classroom (Hernandez-Ramos 2005; Strudler & Herrington, 2009). Teachers working in teams to share successful experiences and develop lessons that incorporated technology have been shown to save time and increase the use of technology in the classroom. The researchers also found that teachers who used Web-based tools to communicate online were more willing to share stories of “failures” with lessons that incorporated technology than they were when sharing in person (Lim & Khine, 2006).

Increase technology support personnel. Experts also suggested providing more technology support personnel (information technology (IT) and assistive technology (AT) specialists) in schools to support using AIM. Literature suggests that teachers are less likely to integrate technology in the classroom if they encounter technical problems when installing or using software (Sandholtz & Reilly, 2004). When provided with technical support, teachers feel more competent and ready to integrate technology (Hernandez-Ramos, 2005; Sandholtz & Reilly, 2004). The Consortium of School Networking (CoSN) supports the need for technology support personnel who are available to integrate technology in schools (2009). They find this is lacking when compared to what is available in private industry. The number of computers per technician in K-12 education is estimated at 616 compared with 150 computers per technician in private industry (CoSN, 2009). The U.S. Department of Education acknowledges the need to provide more technical support in schools. Their *Transforming American Education Learning Powered by Technology National Education Technology Plan* proposes to expand programs in some states that have used technically savvy students to help support

teachers through technical support work experiences (U.S. Department of Education, 2010).

Direct and Indirect Cost Considerations

Many of the solutions offered by the expert panel have both direct and indirect costs associated which need to be considered, especially in light of potentially significant cuts to federal funding to the U.S. Department of Education in March 2013. This study concluded at a time when Congress could not come to an agreement on a plan to cut \$1.2 trillion dollars to reduce the federal deficit and avoid sequestration. Sequestration will go into effect if Congress fails to agree on a plan to cut spending (Klein, 2013), resulting in an 8.2% cut—equal to a \$4.8 billion reduction in funding for Department of Education. Special education services provided through IDEA would lose 1 billion dollars of funding for the 2013-2014 school year (U.S. Office of Management and Budget, 2012). This reduction of funding is likely to impact the ability of AIM-VA to continue to operate under the current structure.

In 2012- 2013 AIM-VA was funded at \$1,440,000, approximately \$700,000 of which is dedicated to personnel costs and approximately \$500,000 designated to produce and deliver AIM, roughly broken down into BookStream \$190,300; DBVI (Braille materials) \$185,000; Learning Ally (digital audio books) \$100,000; and print services and delivery \$20,000. Many of the challenges associated with providing AIM in Virginia and nationwide, based on the results of this study, revolve around the production of, delivery of, and eligibility to use textbooks in an accessible format. If all books published were created in an electronic format consistent with set of accessibility standards, the

funds provided to support a statewide system like AIM-VA could be reallocated to provide more technical support to educators to incorporate best practices for the effective use of accessible instructional materials in the classroom regardless of the technology students need to access them.

Summary of Policy Implications

The NIMAS requirements included in the reauthorization of IDEA were intended to increase access to curriculum for individuals with disabilities by ensuring access to accessible textbooks in a timely manner. Results from this study indicate that providing AIM through a statewide program has increased access to students. However, a number of issues have arisen as publishers have begun to voice concern over whether the IDEA regulations are superseded by copyright law. Their concerns are primarily based on the perception of lost revenues in their markets, but also include issues related to lack of clarity in the type of rights they have obtained from authors for print vs. digital dissemination. Developing a standard of digital copyrights and then enforcing a set of accessibility policies for all publishers, regardless of the type of materials they are publishing, could provide access to more people with print disabilities and reduce concern over eligibility. Schools could also purchase digital accessible eBooks from publishers rather than getting them for free. This in turn could reduce the demand on LEAs to produce or order specialized formats for students with print-related disabilities. Indirect costs associated with personnel time required to determine which students are eligible to use AIM or who can act as a DRM would be reduced or eliminated. Enforcing an accessibility standard for all publishers, with UDL as a specific goal, might result in

an overall better product of accessible digital materials than are currently being placed in the NIMAC, benefiting all consumers—not just students—with print disabilities. Using UDL and accessibility standards would essentially remove, or at least reduce, the need for schools to find and/or produce instructional materials for a wide array of students with print disabilities. This in turn could improve overall market sales by publishers.

Local and State Policy Implications

This Delphi research study explored the implementation of a statewide project to provide accessible instructional materials to students with print-related disabilities. Experts identified a number of advantages and challenges to the system in place, AIM-VA. Recommendations included that schools should invest in technologies that empower students to use and/or adapt instructional materials used in the classroom as needed. With the advances in technology and the unlimited array of materials that may be used in the classroom for instruction, students (and their teachers) will be best served if they are given the knowledge, skills, and technology available to adapt the materials as needed.

Research indicates that there are no inherent disadvantages to adapting print and electronic text using technology. Many studies have found that using CCTVs and other optical devices used to enlarge print are just as effective as using hard copy large print, and in most cases better (Corn et al., 2003; Lueck et al., 2003; Lussenhop & Corn, 2002). Likewise, a study that explored teaching young students to use electronic (refreshable) Braille displays to learn to read and produce Braille found them to be equally effective to hard-copy Braille (Bickford & Falco, 2012).

The advantages to using technology like refreshable Braille and CCTVs are many, including saving on production costs, allowing for specific customization such as enlarging print to the optimal print size, viewing materials in the most appropriate color contrast, and accessing materials at any time and any location with various devices. The cost of these devices is significant and must be considered. The average cost for a basic desktop video magnifying device or CCTV is between \$2,200 to \$2,500 each, and the average cost of a 20-cell refreshable Braille display is approximately \$1,800 (American Printing House for the Blind, 2013). However, refreshable Braille displays and many other technologies used to access print materials are available to schools free of charge through a federal quota program enacted in 1879 as part of An Act to Promote the Education of the Blind (P.L 45-186). The quota program provides an annual appropriation of funds to states proportional to the number of students in who are legally blind. This money can be used for specialized materials for the blind. The program is operated out of the American Printing House for the Blind (“An Overview of Federal Quota,” n.d.).

Promoting the use of assistive technology such as refreshable Braille displays and CCTVs or video magnifiers would reduce the time and expense required to produce hard-copy Braille and large-print. Using technology would empower students to adapt instructional materials as needed, fostering independence and self-reliance and preparing them for future environments. According to a study by D’Andrea (2012), college students have very little access to hard-copy Braille and large-print materials once they leave K-12 education. Providing students with access to tools and skills that will allow them to make

accommodations on the fly is likely to increase their opportunities for success in future environments.

Empower Teachers

The majority of the challenges identified by experts were related to the lack of knowledge and training available to educators who are responsible for implementing AIM in the classroom. Local policies should be directed at empowering teachers, and other service providers, with the supports they need to integrate new accessible technology into their teaching practices to ensure that all students, regardless of their disability, can access the curriculum. Research indicates that teachers are more likely to integrate technology in the classroom if they are provided with models of effective integration of technology in the classroom (Kopcha, 2008; Matzen & Edmunds, 2007). Professional development can be provided through online learning communities and training that is tailored to the individual needs and situations of the teachers. Opportunities to share stories and resources should be developed to create learning communities within schools and nationally. The Center for Applied Special Technology (CAST) is a national organization that is a leader in the field of universal design for learning and houses the National Center on Accessible Instructional Materials, which has developed many online resources to support teachers. These resources and others, such as TTAC Online developed by the Virginia Department of Education, should be leveraged to create a robust 24/7 Web-based online portal of training and support to teachers. This could alleviate personnel time required to develop and attend face-to-face professional

development while providing more effective “just-in-time” training that can be accessed in short segments with any device connected to the Internet.

Funding for additional highly skilled assistive technology and IT technical support personnel should be a priority in schools in order to capitalize on the power of mobile technologies infusing society. The cost of additional personnel is a potential challenge, however, considerations for how technology budgets could be restructured to reflect the increased availability of mobile and personal technology tools used in classrooms may allow schools to allocate less money to hardware and software, freeing up funds for additional personnel and infrastructure to support open source technology. Creative solutions such as utilizing technology-savvy students to assist teachers with troubleshooting technology in the classroom could also help with cost savings.

Implications for Further Research

With the rapid infusion of mobile technologies and constant Internet connectivity, the array of information available to be used as supplemental instructional materials is endless, and in many cases more engaging than typical textbooks (Franklin, 2011). For the most part, textbooks used in classrooms today do not adequately address the standards of learning (SOLs) identified by the state of Virginia that students are required to master. With these things in mind, it is not surprising that teachers are moving to using more open-source and teacher-made instructional materials in their instructional practices. The requirement to provide accessible instructional materials (AIM) to students with print-related disabilities was included in IDEA to ensure that students with disabilities have access to the curriculum in a timely manner. Further research is needed to understand

how teachers use textbooks and supplemental materials for instruction to truly ensure that students with print-related disabilities have access to instructional materials in the digital age.

Additional research should focus on the implications of the infusion of mobile technology on providing accessible textbooks and other forms of instructional materials available to students with and without print-related disabilities. In increasing numbers, both students and teachers are bringing their own devices into the classroom. It is critical for educators to understand how to harness the power of this mobile technology and the capability it may have to empower students to access information using their own technology. Research that explores appropriate levels of AT and IT technical support structures and resources is needed to understand how to integrate and harness the power of the technology provided in the digital age and how educational funding should be reallocated to meet the needs.

There were many advantages and challenges identified related to providing AIM through a state-funded project (AIM-VA) explored in this study. Unfortunately, the researcher was unable to find studies exploring effective models for providing AIM. The only exception was a survey conducted in 2010 to gain an understanding of the status of AIM provision across the United States (NCAIM, 2011). Research supporting the development of instructional materials—using the principles of Universal Design for Learning (UDL) and the advancements in assistive and mobile technologies—has the potential to reduce and/or eliminate the need to create and provide AIM. However, this is an ideal that is not likely to be fully realized due to the constant development of new

media avenues, the multitude of people creating materials, and new technologies that may pose accessibility challenges that have not even been considered yet. Research should also be conducted to explore the advantages and challenges of providing AIM through private industry, state, and/or local resources.

Limitations of the Study

The researcher has worked for over 10 years at the Kellar Institute in the field of assistive technology and was known to some of the study's local and national experts. This relationship may have influenced interview responses during Round One interviews or the interpretation of the data collected. Efforts to reduce the researcher bias were addressed through the use of a review team.

The total number of participants in all rounds of the study (16) met the threshold of 13 participants widely believed to be sufficient for a Delphi study. Only 4 of the initial 20 participants dropped out of the study. Two local experts dropped out after the Round One interviews and two national experts dropped out after completing the questionnaire for Round Two. Participants were selected based on strong credentials in their specific disciplines. However, a broad range of topics related to providing accessible instructional materials were covered during the study. Not all participants were knowledgeable in all areas. Along with inherent limitations associated with the Delphi methodology, the ability to generalize findings to other states or locales is limited.

Process-related limitations included too much time between rounds, lack of rankings for items in all rounds of the study, and combining Round Three and Round Four into one round. The time between rounds Two and Rounds Three/Four was 4

months, primarily because of summer schedules. This may have affected the responses provided by experts, who may have forgotten how they responded earlier. Limitations of time also required the researcher to combine Rounds Three and Four. This precluded the ability for expert participants to rate solutions. Although rating solutions is not required for Policy Delphi studies, which aim to provide a variety of possible solutions, rating would be useful to understand the degree to which experts buy into the solutions provided.

APPENDIX A. TIMELINE OF TECHNOLOGY FOR ACCESSIBLE TEXT

Year	Technology/Service		Description
1831	Embossed Text	Tactile Text	Beginning in 1831, systems of embossed letters such as New York Point and Boston Line Text were developed as forms of accessible text for individuals who were Blind (“History of Reading Codes for the Blind”, n.d.)
1829	Braille Code		Braille code was developed by Louis Braille in 1829. It provided a more efficient reading medium for individuals who were Blind (“History of Reading Codes for the Blind”, n.d.).
1858	American Printing House for the Blind (APH)		The American Printing House for the Blind (APH) was established in 1858. It provided literary works to individuals who were Blind. APH books were embossed using Boston Line Text, Braille was not widely available (Koestler, 2004).
1892	Personal Braille Writer		The personal Braille writer was invented in 1892. It provided students who were Blind a way to emboss Braille almost as quickly as their sighted peers could write print (“History of Reading Codes for the Blind”, n.d.).
1914	Optophone	Auditory Text	The Optophone was invented in 1914. It was one of the first pieces of technology that was developed to convert printed text to auditory output. It was a rudimentary precursor to optical character recognition systems (OCR) (Capp & Picton, 2000).
1928	American Foundation for the Blind (AFB) - Radio		The American Foundation for the Blind (AFB) provided radios to individuals who were blind. Newspapers including advertisements and comic strips were read over radio broadcasts (“Milestones in AFB’s history, n.d.).
1934	The Talking Book		APH began using long-playing phonograph record (LP) to distribute literature to citizens who were blind. The Readophone was invented during the same period. The technology allowed users to adjust the playback speed and provided better sound quality. It did not become a viable technology, but provided the foundation for modern talking book systems (Koestler, 2004).
1948	Recordings for the Blind		The Recordings for the Blind was established in 1948 to provide recorded textbooks for students who were blind. They subsequently expanded their services to individuals with visual, learning and physical disabilities who cannot access standard print materials. Now, Learning Ally they are the largest provider of audiobooks and is a partner with AIM-VA (Learning Ally, 2013)

1948	APH - Provides Large Print	Large Print Text	The American Printing House for the Blind began to print large print books for distribution to students who were visually impaired (“The History of the American Printing House for the Blind: A Chronology”, n.d.).
1971	Visual Tek (Video Magnifier)		The development of the first user-friendly closed-circuit television (CCTV) called the Visualtek was marketed to people with visual impairments in 1971 (Candela, 2006).
1971	Opticon	Electronic Text	The Opticon was a portable electronic print reading device consisting of a camera and a 26-by-6 array of tactile metal rods. The rods would vibrate as the user moved the camera over areas of black ink on paper forming a tactile representation of the text on the array (Coughlan & Manduchi, 2013). The Opticon was the precursor to refreshable Braille displays.
1976	Optical Character Recognition		Optical Character Recognition technology was invented. The Kurzweil Reading Machine integrated OCR software, a flat-bed-flatbed scanner and a text-to-speech synthesizer to recognize and reproduce printed text into electronic text that could be read aloud (Coughlan & Manduchi, 2013).
1978	Personal Computers		The invention and wide-spread use of the personal computer revolutionized the way students with print-related disabilities interacted with text and other instructional materials, providing access to electronic text and text-to-speech capabilities (Bryant & Bryant, 2003).
2002	Digital Talking Books		Digital Talking Books were developed in response to limitations of cassette tapes. DTB provide structured electronic books to allow easy navigation and synchronized text and audio. The structure format for DTBs is known as DAISY. The DAISY 3 standard became the basis for the National Instructional Materials Accessibility Standard (NIMAS) (Kerscher, Luceno & Leith, 2013)
2009	Mobile Devices and eReaders		The widespread use of eReaders on mobile devices by the general population began in 2009 with the release of the Amazon Kindle. Many eReaders followed most notably the Apple iPad in 2010. The popularity of mobile devices led to increased access to eBooks in multiple formats. Learning Ally began distributing textbooks to students in eBook formats compatible with iPads & iPhones in 2010

APPENDIX B. PHONE SURVEY INTERVIEW PROTOCOL

Phone Survey Interview Protocol

Thank you for agreeing to participate in this study. In this round, I would like to ask you a series of questions regarding the policies and processes that guide the AIM-VA project. I would like to use your first-hand knowledge as well as any anecdotal knowledge you may have from your experiences and conversations with others who have used the AIM-VA project. The information collected from this interview will be compiled and analyzed along with 12 others participants in this round. The results of the analysis will be used as a basis for the second round questionnaire which will be distributed to you and other experts from across the country. The goal is to identify the positive and negative implications to providing Accessible Instructional Materials (AIM) to students with print-related disabilities. In later rounds of the study, suggestions for best practices to address issues will be discussed.

Demographics

Participant ID:

Title:

1. From what Region of Virginia are you currently employed?
2. How would you best describe your role with AIM-VA (select all that apply)
 - a. I am involved in policy development at the state level
 - b. I conduct training for school personnel on AIM
 - c. I am a Teacher who uses AIM-VA materials
 - d. I am a Digital Right Manager
 - e. I am involved in the production of AIM-VA Materials
 - f. Other (please specify) _____

3. How many years have you been involved with AIM-VA
 - a. Less than 1 year
 - b. 1 – 2 years
 - c. 2 – 3 years
4. How would you describe your level of comfort with computer technology?
 - a. Novice (I use computers for basic tasks, primarily word processing and email and searching the web)
 - b. Advanced (I work with databases, multiple programs and am familiar with downloading and uploading files)
 - c. Expert (I have created a web site and have at least a basic understanding of a programming language.

Utilizing AIM Services

5. In the past 3 years approximately how many orders have you placed with AIM-VA?
 - a. Less than 10
 - b. 10 – 30
 - c. 30 – 50
 - d. 50 – 70
 - e. More than 70
 - f. N/A
6. What do you believe are the main issues with regard to eligibility to use the Accessible Instructional Materials provided by AIM-VA?
7. What are the positive aspects of using AIM-VA services
What are the negative aspects of using AIM-VA services

in regard to:
 - a. Ordering Materials
 - b. Tracking and receiving materials
 - c. Producing Materials (question not intended for DRM's or Teachers)

8.	To what extent do you agree with the following statements?	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
	k. It is easy to locate information about how to use AIM-VA services.					
	l. I understand which students are eligible for AIM-VA services.					
	m. I understand the differences between the file formats available through AIM-VA					
	n. I can determine the most appropriate format for students					
	o. The process for ordering materials is working well					
	p. The process of receiving materials through the mail is working well.					
	q. The process of downloading files from the FTP server is working well					
	r. The process of returning materials to AIM-VA is working well					
	s. I receive my materials in a timely manner					
	t. The AIM-VA help desk has been helpful to me.					

9. Is there anything else you would like to add in regard to using AIM-Services?

Format Questions

In this section I would like to ask you about the quality and ability to use the different formats provided through AIM-VA. Again, I would like to use your firsthand knowledge as well as any anecdotal knowledge you may have from your experiences and conversations with others who have used the AIM-VA project.

10. What are the positive aspects to using the Accessible formats provided by AIM-VA?

What are the negative aspects to using the Accessible formats provided by AIM-VA?

11. AIM-VA has the following formats available for order. What types of formats have you requested?

- a. PDF: Accessible
- b. PDF: Fully Accessible
- c. Microsoft Word Document
- d. Braille
- e. Braille Ready File (.brf)
- f. Large Print
- g. Audio Recording (RFB&D)
- h. NIMAS
- i. Digital Talking Book (DTB) - Daisy 3

12. Please indicate your level of satisfaction with the following file formats you or someone you know has used or intend to use?

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A
j. PDF: Accessible					
k. PDF: Fully Accessible					
l. Microsoft Word Document					
m. Braille					
n. Braille Ready File (.brf)					
o. Large Print					
p. Audio Recording (RFB&D)					
q. NIMAS					
r. Digital Talking Book					

13.	Please indicate your level of satisfaction with the time it takes to produce/receive the following formats	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	N/A
	a. PDF: Accessible					
	b. PDF: Fully Accessible					
	c. Microsoft Word Document					
	d. Braille					
	e. Braille Ready File (.brf)					
	f. Large Print					
	g. Audio Recording (RFB&D)					
	h. NIMAS					
	i. Digital Talking Book					

14. Have you had to return a file due to a problem? If yes
- a. What type of file format have you returned due to a problem?
 - b. What was the nature of the problem?
 - c. Was the problem corrected in a timely manner?
15. How many people do you know are using AIM-VA materials in the classroom?
16. What tools have you used or seen used to access the materials?
17. What issues have been encountered using the tools?
18. Have you used Read Outloud?
19. What if any issued have been encountered using Read Outloud?

20. What, if any adaptations have you or a colleague had to make in order to use the formats provided through AIM-VA?
21. Is there anything else you would like to add regarding AIM-VA materials?

Training Questions

In this section I would like to ask you about the availability and quality of training provided through AIM-VA. Again, I would like to use your firsthand knowledge as well as the anecdotal knowledge you may have from your experiences and conversations with others who have used or have knowledge of the training available through the AIM-VA project.

22. What are the positive aspects of the training provided by AIM-VA?
What are the negative aspects of the training provided by AIM-VA?
23. Have you received any training on how to use AIM-VA services? If yes, What kind of training did you receive?
- a. AIM-VA Face to Face
 - b. TTAC Face to Face
 - c. Online training
 - d. AIM-VA Webinars
 - e. Webinars provided by other service providers
 - f. TTAC Online asynchronous training
24. Do you have any concerns about the type of training available to you or your colleagues? If yes, please list your concerns. (Probe for each type selected in question 23)
25. Do you have any concerns about the quality of training available to you or your colleagues? If yes, please list your concerns (Probe for each type selected in question 23)

26.	To what extent do you agree with the following statements?	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure
	g. There is adequate training for administrators on AIM-VA Policies and Procedures					
	h. IEP teams are adequately trained to determine eligibility for AIM-VA materials.					
	i. Teachers/IEP teams are adequately prepared to determine the appropriate formats to request					
	j. Teachers are adequately prepared to match technology applications with the format provided.					
	k. Teachers are prepared to implement AIM-VA materials with students in their classroom					
	l. Digital Rights Managers are adequately prepared to facilitate the ordering and delivery of AIM Materials					

27. Is there anything else you would like to add regarding the training related to AIM-VA?

28. Is there anything else you would like to add?

APPENDIX C. ROUND TWO QUESTIONNAIRE

Challenges and Advantages of Providing Accessible Instructional Materials (AIM) Through A Statewide Program *Round 2 Questionnaire*

Part 1: Challenges

The following statements have been identified as challenges to the provision of Accessible Instructional Materials. These items were generated following interviews with experts working with the AIM-VA Project.

A. Please rate each item, indicating the level to which you believe these statements are challenges. After rating each item, please briefly explain your rating in the space provided (400 characters max. including spaces).

B. After rating each item, the next section will ask you to rank order each item by level of importance.

C. At the end of each domain area space is provided to add any additional items you believe to a challenge to the provision of AIM through a state-wide program.

PARTICIPANT CODE: Click here to enter text.

Domain Name: Use of AIM in the Classroom

Domain Definition: This domain is focused on the potential challenges to the implementation of AIM for students participating in classroom activities.

1. Challenge: Underutilization of AIM in the Classroom - Technology-based Issues

Inconsistent level of technology in classrooms (new vs. outdated technology)

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

A decision about what technology should be used by a student who needs AIM is based on what is available not what is most beneficial to the student.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Little research is available to justify the use of AIM.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Teachers are not adequately trained on Assistive Technology or AIM at the preservice level.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Even with training it is difficult for teachers to keep up with the advances in technology.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Restrictive school-based policies for installing software

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Quality of technology tools (hardware, software, etc.) available across school systems vary.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Read Outloud software (available to all schools in Virginia) does not read Word documents.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 9 is least important).

Please note that each ranking can be used only ONCE.

2. Inconsistent level of technology in classrooms (new vs. outdated technology) Choose an item.

A decision about what technology should be used by a student who needs AIM is based on what is available not what is most beneficial to the student. Choose an item.

Little research is available to justify the use of AIM. Choose an item.

Teachers are not adequately trained on Assistive Technology or AIM at the preservice level. Choose an item.

Even with training it is difficult for teachers to keep up with the advances in technology. Choose an item.

Restrictive school-based policies for installing software. Choose an item.

Quality of technology tools (hardware, software, etc.) available across school systems vary. Choose an item.

Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities. Choose an item.

Read Outloud software (available to all schools in Virginia) does not read Word documents. Choose an item.

3. Challenge: Underutilization of AIM in the Classroom - Eligibility Issues

Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Outdated eligibility regulations in the Chaffee Amendment.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Information about the availability of AIM services is not reaching classroom teachers

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Information about the availability of AIM services is not reaching parents.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Inconsistent eligibility requirements across school districts.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 8 is least important).

Please note that each ranking can be used only ONCE.

4. Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities. Choose an item.

Outdated eligibility regulations in the Chaffee Amendment. Choose an item.

Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness. Choose an item.

Information about the availability of AIM services is not reaching classroom teachers. Choose an item.

Information about the availability of AIM services is not reaching parents. Choose an item.

DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload. Choose an item.

Inconsistent eligibility requirements across school districts. Choose an item.

Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality. Choose an item.

5. Challenge: Underutilization of AIM in the Classroom - File Format Issues

Teachers and IEP teams are unaware of all of the formats that are available to help their students.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Teachers and IEP teams are confused about the multiple formats available.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Teachers do not use textbooks often in the classroom.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Most of the materials used for instruction in the classroom are not provided through AIM.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Many school systems do not have the proprietary CD players needed to play Learning Ally files. (Schools are currently unable to download files directly from Learning Ally.)

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

PDF files provided by AIM-VA are too large to open in many programs (e.g. Kurzweil) and require too much time to break into parts to use in the classroom.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology based options.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 10 is least important).

Please note that each ranking can be used only ONCE.

6. Teachers and IEP teams are unaware of all of the formats that are available to help their students. Choose an item.

Teachers and IEP teams are confused about the multiple formats available. Choose an item.

Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching. Choose an item.

Teachers do not use textbooks often in the classroom. Choose an item.

Most of the materials used for instruction in the classroom are not provided through AIM. Choose an item.

Teachers are not trained to match the technology they have available in their classroom with the proper AIM format. Choose an item.

Many school systems do not have the proprietary CD players needed to play Learning Ally files. (schools are currently unable to download files directly from Learning Ally). Choose an item.

PDF files provided by AIM-VA are too large to open in many programs (e.g. Kurzweil) and require too much time to break into parts to use in the classroom. Choose an item.

Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology based options. Choose an item.

Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology. Choose an item.

7. Please add any additional items you would like to see included in this domain (Use of AIM in the Classroom). If you have no items to add, please enter "None"

Click here to enter text.

Domain Name: Ordering and Delivery of AIM Materials

Domain Definition: This domain is focused on the potential challenges to the implementation of AIM related to the process of ordering and delivery of AIM formats between the school system and AIM-VA Project

8. Challenge: Coordination and Communication with Digital Rights Managers (DRMs)

There is not a standard skill set required of personnel designated as digital rights managers

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

DRMs are assigned differently depending on the school system.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

DRM assignments change regularly without notifying AIM-VA

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivery of AIM materials.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

DRMs often have difficulty balancing the demands of digital rights management with the demands of their “regular” job.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Assigning contractors as DRMs makes communication and training difficult.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

DRMs are not typically 12-month employees - leaving no designated person to receive books during the summer months.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

AIM-VA closes for a period of time to new orders making it difficult to get books for new or transferring students.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 8 is least important).

Please note that each ranking can be used only ONCE.

9. There is not a standard skill set required of personnel designated as digital rights managers. Choose an item.

DRMs are assigned differently depending on the school system. Choose an item.

DRM assignments change regularly without notifying AIM-VA. Choose an item.

Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivery of AIM materials. Choose an item.

DRMs often have difficulty balancing the demands of digital rights management with the demands of their "regular" job. Choose an item.

Assigning contractors as DRMs makes communication and training difficult. Choose an item.

DRMs are not typically 12 month employees - leaving no designated person to receive books during the summer months. Choose an item.

AIM-VA closes for a period of time to new orders making it difficult to get books for new or transferring students. Choose an item.

10. Challenge: Delivery of books electronically

Security systems in place in schools prevent DRMs from downloading files from FTP servers.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Difficult for some DRMs to find a computer that will allow them to save files. (many school systems require a password to save files.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Slow Internet connections in more rural systems time out before files are fully downloaded.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

DRMs download files from personal computers to bypass security restrictions.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 4 is least important).

Please note that each ranking can be used only ONCE.

11. Security systems in place in schools prevent DRMs from downloading files from FTP servers. Choose an item.

Difficult for some DRMs to find a computer that will allow them to save files. (many school systems require a password to save files) Choose an item.

Slow Internet connections in more rural systems time out before files are fully downloaded. Choose an item.

DRMs download files from personal computers to bypass security restrictions. Choose an item.

12. Challenge: Retention of Books

Students using AIM materials do NOT always return books to the school.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Development of a “personal library” of AIM files by DRMs to possibly use for another student in the future (compromising copyright).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

AIM-VA policy prohibiting DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Books are lost because DRMs in large school systems lose track of where books are within the district.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 4 is least important).

Please note that each ranking can be used only ONCE.

13. Students using AIM materials do NOT always return books to the school.

Choose an item.

Development of a “personal library” of AIM files by DRMs to possibly use for another student in the future (compromising copyright). Choose an item.

AIM-VA policy prohibiting DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM. Choose an item.

Books are lost because DRMs in large school systems lose track of where books are within the district. Choose an item.

14. Challenge: Ordering – Miscellaneous

DRMs order books that are not needed or not used

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Some books are ordered through students individual memberships (i.e. Learning Ally, Bookshare) bypassing AIM-VA.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is more important and 2 is less important).

Please note that each ranking can be used only ONCE.

15. DRMs order books that are not needed or not used. Choose an item.

Some books are ordered through students individual memberships (i.e. Learning Ally, Bookshare) bypassing AIM-VA. Choose an item.

16. Please add any additional items you would like to see included in this domain (Ordering and Delivery of AIM Materials). If you have no items to add, please enter "None" Click here to enter text.

Domain Name: Production of AIM Materials

Domain Definition: This domain is focused on the potential challenges to the implementation of AIM related to the production and quality of AIM formats.

17. Challenge: Creating Quality AIM Files in a Timely Manner.

Very time consuming to develop an accessible textbook from scratch.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

NIMAS files in large part are not available.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Many NIMAS files are of poor quality and hard to use.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Hard-copy textbooks provided by schools for scanning purposes are often in poor condition.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Inconsistent level of quality control for Braille formats.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Inconsistent level of quality control of Bookshare files

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 6 is least important).

Please note that each ranking can be used only ONCE.

18. Very time consuming to develop an accessible textbook from scratch. Choose an item.

NIMAS files in large part are not available. Choose an item.

Many NIMAS files are of poor quality and hard to use. Choose an item.

Hard-copy textbooks provided by schools for scanning purposes are often in poor condition. Choose an item.

Inconsistent level of quality control for Braille formats. Choose an item.

Inconsistent level of quality control of Bookshare files. Choose an item.

19. Challenge: Lack of Training and Research on the Best Technology Tools to Use for Production of AIM.

Decisions about technology used for production of AIM are most often done on the fly.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Time consuming to train AIM-VA staff on technology tools and updates for production.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Student-wage staff must make decisions regarding accessibility features (e.g. when and how to describe images, etc.)

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Lack of staff capable of describing high-level math content.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Lack of technology available to create accessible math textbooks.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Keeping staff up to date on technology upgrades for creating accessible text.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 6 is least important).

Please note that each ranking can be used only ONCE.

20. Decisions about technology used for production of AIM is most often done on the fly. Choose an item.

Time consuming to train AIM-VA staff on technology tools and updates for production. Choose an item.

Student-wage staff must make decisions regarding accessibility features (e.g. when and how to describe images, etc.) Choose an item.

Lack of staff capable of describing high level math content. Choose an item.

Lack of technology available to create accessible Math textbooks. Choose an item.

Keeping staff up to date on technology upgrades for creating accessible text. Choose an item.

21. Challenge: Cost of Production

Partnership contracts are expensive and may only provide a small percentage of books to eligible students.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Printing costs associated with large print can be expensive.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Reprinting costs for large-print textbooks that are not returned or are returned in poor condition

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 3 is least important).

Please note that each ranking can be used only ONCE.

22. Partnership contracts are expensive and may only provide a small percentage of books to eligible students. Choose an item.

Printing costs associated with large print can be expensive. Choose an item.

Reprinting costs for large-print textbooks that are not returned or are returned in poor condition. Choose an item.

23. Please add any additional items you would like to see included in this domain (Challenges to the Production of AIM Materials). If you have no items to add, please enter "None" Click here to enter text.

Domain Name: Training on AIM-VA Services & Implementation

Domain Definition: This domain is focused on the potential challenges to the implementation of AIM related to current training practices.

24. Challenge: Limited Time Available for Training

Too much information provided in online trainings.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Lack of "just-in-time" training on new policies procedures.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Lack of release time or teacher workdays available for AIM training - available days are needed for professional development requirements in other areas.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Information and training provided to DRMs is not reaching teachers.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 4 is least important).

Please note that each ranking can be used only ONCE.

25. Too much information provided in online trainings. Choose an item.

Lack of "just-in-time" training on new policies procedures. Choose an item.

Lack of release time or teacher workdays available for AIM training - available days are needed for professional development requirements in other areas. Choose an item.

Information and training provided to DRMs is not reaching teachers. Choose an item.

26. Please add any additional items you would like to see included in this domain (Challenges to Training on AIM-VA Services & Implementation). If you have no items to add, please enter "None". Click here to enter text.

Challenges and Advantages of Providing Accessible Instructional Materials (AIM) Through A Statewide Program

Part 2: Advantages

The following statements have been identified as advantages to the provision of Accessible Instructional Materials. These items were generated following interviews with experts working with the AIM-VA Project.

A. Please rate each item, indicating the level to which you believe these statements are advantages After rating each item, please briefly explain your rating in the space provided (400 characters max. including spaces).

B. After rating each item, the next section will ask you to rank order each item by level of importance.

C. At the end of each domain area space is provided to add any additional items you believe to an advantage to the provision of AIM through a statewide program.

Domain Name: Use of AIM in the Classroom

Domain Definition: This domain is focused on the potential advantages to the implementation of AIM for students participating in classroom activities.

27. Advantage: Multiple Formats Available to Meet Student Needs.

More than one accessible format for the same book can be ordered for the same student.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Students can access books in different environments (i.e. on the bus using iPhone and in the classroom using accessible PDF).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Students can access information using their dominant or preferred learning style.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Students can access information using their preferred technology.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Free and easy for teachers to provide accessible textbooks statewide for students in the classroom.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Saves teachers the time of producing accessible text by providing a statewide program.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 6 is least important).

Please note that each ranking can be used only ONCE.

28. More than one accessible format for the same book can be ordered for the same student. Choose an item.

Students can access books in different environments (i.e. on the bus using iPhone and in the classroom using accessible PDF). Choose an item.

Students can access information using their dominant or preferred learning style. Choose an item.

Students can access information using their preferred technology. Choose an item.

Free and easy for teachers to provide accessible textbooks statewide for students in the classroom. Choose an item.

Saves teachers the time of producing accessible text by providing a statewide program. Choose an item.

29. Advantage: Technology Tools

Providing multiple formats allows schools to use the technology for which they have access.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Partnership with Don Johnston provides access to Read Outloud to all schools in Virginia.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

AIM-VA Files can be used on student owned technology tools (iPads, iPhone, laptops, CD players provided by Learning Ally or DBVI).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Partnerships with assistive technology companies/vendors continue to move technology forward and provide easier access to students (i.e. Don Johnson - BookStream).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 4 is least important).

Please note that each ranking can be used only ONCE.

30. Providing multiple formats allows schools to use the technology for which they have access. Choose an item.

Partnership with Don Johnston provides access to Read Outloud to all schools in Virginia. Choose an item.

AIM-VA Files can be used on student owned technology tools (iPads, iPhone, laptops, CD players provided by Learning Ally or DBVI). Choose an item.

Partnerships with assistive technology companies/vendors continue to move technology forward and provide easier access to students (i.e. Don Johnson - BookStream). Choose an item.

31. Advantage: More Students Provided with Accessible Text Books – Eligibility

Virginia Department of Education (VDOE) interpretation of eligibility requirements for AIM allows students identified as having a learning disability to use AIM-VA services **without requiring a diagnosis from a medical doctor.**

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

VDOE interpretation of eligibility requirements allows students being served through a 504 plan, as a result of a print-related disability, to use AIM-VA services.

Briefly explain why you feel this way: Click here to enter text.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Eligibility decisions are made by the IEP Team.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 3 is least important).

Please note that each ranking can be used only ONCE.

32. Virginia Department of Education (VDOE) interpretation of eligibility requirements for AIM allows students identified as having a learning disability to use AIM-VA services *without requiring a diagnosis from a medical doctor*. Choose an item.

VDOE interpretation of eligibility requirements allows students being served through a 504 plan, as a result of a print-related disability, to use AIM-VA services. Choose an item.

Eligibility decisions are made by the IEP Team. Choose an item.

33. Please add any additional items you would like to see included in this domain (Advantages to the Use of AIM in the Classroom). If you have no items to add, please enter "None" Click here to enter text.

Domain Name: Ordering and Delivery of AIM Materials

Domain Definition: This domain is focused on the potential advantages to the implementation of AIM related to the process of ordering and delivery of AIM formats between the school system and AIM-VA Project.

34. Advantage: Strong Level of Communication Among Stakeholders

Strong level of involvement of stakeholders through the AIM-VA Advisory Group.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

AIM-VA production and policy staff are highly responsive to the needs of stakeholders.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

DRMs act as liaisons between school systems (administrators, teachers, IEP teams and AIM Production - single point of contact).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Full-time help-desk for technical trouble-shooting, just-in-time training and process issues.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Comprehensive AIM-VA web site for quick information.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Please rank order all of the statements below in terms of importance (1 is most important and 5 is least important).

Please note that each ranking can be used only ONCE.

35. Strong level of involvement of stakeholders through the AIM-VA Advisory Group.
Choose an item.

AIM-VA production and policy staff are highly responsive to the needs of stakeholders.
Choose an item.

DRMs act as liaisons between school systems (administrators, teachers, IEP teams and AIM Production - single point of contact). Choose an item.

Full-time help-desk for technical trouble-shooting, just-in-time training and process issues. Choose an item.

Comprehensive AIM-VA web site for quick information. Choose an item.

36. Advantage: Effective Database for Management and Tracking.

AIM-VA database is specifically programmed for the project with a full-time programmer to make adjustments as needed.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

All AIM formats can be ordered from the same database system (One-Stop Shop).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Large library of Existing AIM files has developed and is available.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Database is easy to use.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Partnership with UPS provides a familiar, reliable and inexpensive delivery system.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Increased ability to report data on student use of AIM than was previously available with multiple databases from multiple providers.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 6 is least important).

Please note that each ranking can be used only ONCE.

37. AIM-VA database is specifically programmed for the project with a full-time programmer to make adjustments as needed. Choose an item.

All AIM formats can be ordered from the same database system (One-Stop Shop).
Choose an item.

Large library of Existing AIM files has developed and is available. Choose an item.

Database is easy to use. Choose an item.

Partnership with UPS provides a familiar, reliable and inexpensive delivery system.
Choose an item.

Increased ability to report data on student use of AIM than was previously available with multiple databases from multiple providers. Choose an item.

38. Please add any additional items you would like to see included in this domain (Advantages to the Ordering and Delivery of AIM Materials). If you have no items to add, please enter "None" Click here to enter text.

Domain Name: Production of AIM Materials

Domain Definition: This domain is focused on the potential advantages to the implementation of AIM related to the production and quality of AIM formats.

39. Advantage: Availability of AIM Files in a Timely Manner.

Large library of existing AIM files has developed and is available.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Maintaining a partnership with Learning Ally adds to the library of immediately available books.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Maintaining a partnership with Virginia Department for the Blind and Vision Impaired (DBVI) adds to the library of immediately available books.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Maintaining a partnership with Bookshare adds to the library of immediately available books.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Development of Word files created and edited by AIM-VA production will provide quality files to translate into Braille.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 5 is least important).

Please note that each ranking can be used only ONCE.

40. Large library of existing AIM files has developed and is available. Choose an item.

Maintaining a partnership with Learning Ally adds to the library of immediately available books. Choose an item.

Maintaining a partnership with Virginia Department for the Blind and Vision Impaired (DBVI) adds to the library of immediately available books. Choose an item.

Maintaining a partnership with Bookshare adds to the library of immediately available books. Choose an item.

Development of Word files created and edited by AIM-VA production will provide quality files to translate into Braille. Choose an item.

41. Advantage: Access to Expertise in the Development of File Formats.

Maintaining a Partnership with Learning Ally to produce audio books.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Maintaining a Partnership with DBVI for the production of Braille formatted books.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Location of major production of formats is at a University (Special Education Unit) provides expertise regarding the needs of students with print-related disabilities.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Systematic - "assembly line" approach to the development of materials (computer- savvy student workers become experts in their assigned jobs).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

University personnel constantly researching and experimenting with new formats to keep up with advancements in technology - (ePub files).

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: [Click here to enter text.](#)

Please rank order all of the statements below in terms of importance (1 is most important and 5 is least important).

Please note that each ranking can be used only ONCE.

42. Maintaining a Partnership with Learning Ally to produce audio books. Choose an item.

Maintaining a Partnership with DBVI for the production of Braille formatted books. Choose an item.

Location of major production of formats is at a University (Special Education Unit) provides expertise regarding the needs of students with print-related disabilities. Choose an item.

Systematic - "assembly line" approach to the development of materials (computer- savvy student workers become experts in their assigned jobs). Choose an item.

University personnel constantly researching and experimenting with new formats to keep up with advancements in technology - (ePub files). Choose an item.

43. Advantages: Cost of Production and Delivery.

State-funded program provides shared resources.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

University location provides unlimited access student-wage workers reducing personnel costs.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Partnerships with major production houses reduces personnel costs

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

UPS statewide contract provides very low delivery costs

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Free delivery of electronic files through the use of an FTP server

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Partnerships with assistive technology companies reduce the cost software used for production.

☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree

Briefly explain why you feel this way: Click here to enter text.

Please rank order all of the statements below in terms of importance (1 is most important and 6 is least important).

Please note that each ranking can be used only ONCE.

44. State-funded program provides shared resources. Choose an item.

University location provides unlimited access student-wage workers reducing personnel costs. Choose an item.

Partnerships with major production houses reduces personnel costs. Choose an item.

UPS State-wide contract provides very low delivery costs. Choose an item.

Free delivery of electronic files through the use of an FTP server. Choose an item.

Partnerships with assistive technology companies reduce the cost software used for production. Choose an item.

45. Please add any additional items you would like to see included in this domain (Advantages to the Production of AIM Materials). If you have no items to add, please enter "None." Click here to enter text.

Click here to enter text.

Please add any additional statements or domains you would like included in the discussion or any additional comments or concerns in the area below.

[Click here to enter text.](#)

Thank you for taking the time to give your valuable feedback! Have a great day. ~Kristine

APPENDIX D. ROUNDS THREE AND FOUR QUESTIONNAIRE

Challenges of Providing Accessible Instructional Materials (AIM) Through A Statewide Program *Round Three Questionnaire*

Part 1: Reconsidering Challenges

A. PARTICIPANT CODE: Click here to enter text.

Instructions: In this Round of the Delphi study you are asked to reconsider the potential issues presented in the last round for which the panel has **NOT yet reached consensus**. **Consensus for the purpose of this section of the study means that 75% of the group agrees that an item is a challenge to the provision of AIM and should be addressed.** To help, I have provided a summary of the responses from round 2 for your consideration.

Specific Tasks:

A. Determine if you believe the issue is a challenge to the provision of AIM and how it should be addressed:

Mark - Yes, on a Local Level - if you believe the issue needs to be handled on the local level (meaning at the state or district level)

Mark - Yes, on a National Level - if you believe the issue is seen across states and needs to be addressed through national policy initiatives.

Mark No - if you do **not** believe the issue presents a significant challenge to the provision of AIM through a state-wide program

Mark N/A - if you do not understand or have no knowledge or experience regarding the issue.

B. If you mark **Yes**, please provide suggestions for how to address the issue. **THANK YOU!**

Domain: Use of AIM in the Classroom

1. Challenge Section: Underutilization of AIM in the Classroom - Technology-based Issues

ISSUE 1.1: Decisions about what technology should be used by a student who needs AIM is based on what is available not what is most beneficial to the student. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☒ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

a. If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE 1.1

Results of Ratings from Round 2: ISSUE 1.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	41.2%	35.3%	0	64.7%	3.41 out of 9

Summary of Comments:

- Tight budgets make it difficult to keep up with the latest and greatest
- Budget issues cause schools to use what is available – fitting the student to the technology rather than the technology to the student.
- Confusion about technology options and file formats available through AIM makes technology decisions difficult for IEP Teams.
- Technology decisions are often made by what is known rather than what is best for the student.
- There is enough technology to get started – does not have to be the latest and greatest
- AT decisions are based on need and what will work successfully

ISSUE 1.2: Restrictive school-based policies for installing software- After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- a. If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE # 1.2

Results of Ratings from Round 2: ISSUE 1.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	35.3%	17.6%	11.8%	70.6%	5.29 out of 9

Summary of Comments:

- Double-edged sword – School systems need policies to control access to networks, but students need access to the latest technology.
- I think there is a lack of understanding of the benefits of allowing access at several levels, network administrators have the primary job of keeping computers and networks working.
- Lack of advanced IT staff who understands security within a flexible framework. It is often outside the budget constraints of the LEA.
- It is a battle between IT folks who want or need to maintain control. The people who DO want to support our needs have very little time to hear the remote little squeaky wheels of sped teachers. Most teachers have just given up, thereby enabling the power struggle to continue
- There is always a work-around to overcome the barrier if AT and IT people work together.
- Not an issue. The IEP should drive policies like this.

ISSUE 1.3: Quality of technology tools (hardware, software, etc.) available across school systems vary. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- a. If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE 1.3

Results of Ratings from Round 2: ISSUE 1.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	35.3%	47.1%	0	52.9%	5.35 out of 9

Summary of Comments:

- There is a lot of disparity between school divisions across Virginia
- In some other (especially rural states in the country) the disparity goes far beyond just access to technology
- I don't believe it is the 'quality' of the technology available that creates the challenges for AIM - it is the understanding and skill level of teachers.
- It is more about administrative support and resources. Do teachers know what to request? Is there support for use?
- Quality of equipment and software is important. We have a cycle replacement schedule.
- District budgets vary.

ISSUE 1.4: Inconsistent level of technology in classrooms is a challenge (new vs. outdated technology). - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

a. If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE 1.4

Results of Ratings from Round 2: ISSUE 1.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	52.9%	29.4%	0	70.6%	5.41 out of 9

Summary of Comments:

- An underutilization of existing technology (new or otherwise) in classrooms.
- Teachers don't want the hassle of taking the time to set up students on computers/software that don't work.
- With the varied formats available, even outdated technology can be used to access AIM.

- Accessible materials do not always need the LATEST technology. Although it is "nice" to have tablets and the latest operating systems, not having them is more of a convenient "excuse" not to provide AIM.
- The bigger issue is access to the technology given the growing demands on students and increasing student: computer ratios
- Many school districts will restrict technology purchases based on what platforms are to be used throughout the district for management purposes.
- Classroom technology often varies based on financial priorities

ISSUE 1.5: Computers available in the classroom are not portable enough to be effectively incorporated into instruction and other classroom activities. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- a. If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE 1.5

Results of Ratings from Round 2: ISSUE 1.5					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	47.1%	29.4%	5.9%	64.7%	1.47 out of 5

Summary of Comments:

- SO many schools that don't have computers in the classroom!
- the need to maintain updated technology that meets student needs is critical
- A 1:1 computing model is the ONLY model that I see feasible for the successful implementation and integration of AIM
- Portability is not the issue. Having a larger number of computers is the issue
- There are still many school districts that may have one computer in the classroom or where the class still goes to a computer lab once a week.
- Educational and personal technologies are evolving rapidly, leaving the Computer Lab model and a few desktop computers in classroom no longer very effective conduits for teaching and learning.

- This could be an issue if/when textbooks are used in the classroom.
- Most students who access AIM need to be doing so at home, not necessarily In the classroom.
- This might be an issue if laptops/iPads are not available in the classrooms
- More and more classrooms are using netbooks, iPads, etc.

ISSUE 1.6: Little research is available to justify the use of AIM - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Summary of Ratings and Comments from Previous Round: ISSUE # 6

Results of Ratings from Round 2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	35.3%	47.1%	5.9%	47.1%	5.94 out of 9

Summary of Comments:

- Research seems sufficient
- Plenty of research exists on the benefit of using multiple means of representation/engagement. AIM is an integral part of this.
- I'm not sure rigorous research is necessary. Every student is different and the idea of AIM is flexibility - getting the student what he/she needs. To determine the power of AIM, take it away from a student who needs it and see if they can access and progress in the curriculum.
- There have been minimal studies that have resulted in growth in achievement because of AIM. The Text-to-Speech study (Missouri, I believe) is the one I refer to the most. There are Design Science studies that also reveal growth, but for the most part, I think it would be very difficult to study growth because you can't isolate AIM as a finite contributor, and heavens, we wouldn't want to exclude Kurzweil 3000 research Don Johnston White paper for ROL, Text Transformations article by NCAC
- There just isn't enough research published in professional journals to justify the use of AIM from the school's perspective
- Even more important, little research is available about who can use AIM and who can't-among the group of students with print disabilities.

- I do not believe that teachers themselves are driven as much by research as by practice and 'what's new'
- If it is available, classroom teachers/IEP case managers are not aware of it.

2. Challenge: Underutilization of AIM in the Classroom - Eligibility Issues

ISSUE 2.1: DRMs who are also vision teachers do not have time to consider students who have disabilities outside of their caseload. -- After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 2.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	52.9%	17.6%	11.8%	70.6%	4.94 out of 8

Summary of Comments:

- Many vision teachers are contracted to work with the assigned student(s) only
- Then they shouldn't be DRMs.
- Another DRM in my district works with other students with additional disabilities.
- Educators are there to improve outcomes for all students. They need to be a resource for all students.
- It is not the DRMs who should be doing this consideration. It is the IEP teams and the DRM should just be following up with procurement via legally defensible channels.
- I don't really think this is the issue.
- It should be a team approach of supports.
- I am only VI for 2 counties...cannot worry about other disabilities!
- I don't think VI teachers manage the DRM responsibility outside of their caseload.
- Actually, VI staff do not want the responsibility anymore and wants the school-based DRM to support ALL students moving forward.
- vision teachers focus on large print, Braille Audio - AT Coordinators as DRM for LD/OHI
- Nor do they have the expertise to assist in the determination of a print disability in the other eligible disability categories.

- The real problem has been that DRMs who are also vision teachers infuse their beliefs, perceptions, procedures, and experiences into the AIM process, putting a significant slant on the program's capacity to support students. Our state contact for NIMAS/AIM is a vision teacher, and there were issues from Day One – Wyoming doesn't have an Instructional Materials Center, so there was not one place to go.

ISSUE 2.2: Many Digital Right Managers (DRMs) believe that AIM is only for students with visual impairments and blindness - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 2.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	35.3%	41.2%	11.8%	58.9%	5.18 out of 8

Summary of Comments:

- This is slowly changing - having AIM-VA inaccessible to 504 students when opened proved to be a huge hurdle to correct when 504 students were approved by VDOE to receive materials
- This is true in other places. I am not familiar with VA.
- I would not say 'many' -- there have been a couple.
- In our county if schools have a DRM it is for a student with learning disabilities. Vision has their own separate DRM for vision students.
- Based on experience
- Consistent professional development is needed to inform all educators.

ISSUE 2.3: Inconsistent eligibility requirements across school districts. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 2.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	35.3%	29.4%	11.8%	58.8%	5.59 out of 8

Summary of Comments:

- This is becoming more consistent.
- AIM does a good job of training and getting the word out across the state
- This should be a state-wide requirement - not a school or district one. Again, training is in order if this is indeed causing issues.
- It is not clear who is eligible.
- Requirements seem to be interpreted differently.
- Not sure it is inconsistent REQUIREMENTS but rather inconsistent UNDERSTANDING of the requirements and lack of clarity that NEED is first and eligibility relates only to the SOURCES that can be used to acquire what is needed!
- The SEA should make the criteria decision for the entire State and develop the policies, practices and procedures.
- I believe there are inconsistencies in eligibility in the area of organic dysfunction. Not sure about the other areas but they are more concrete and not open to as much interpretation
- I agree to the extent that this most likely occurs in states where there is no SEA guidelines established for LEAs.
- Our state eligibility procedures and requirements are strictly adhered to.

ISSUE 2.4: Technology resource teachers assigned to help teachers use the technology with students are not allowed to contact the AIM-VA help desk for technical support due to confidentiality. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 2.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	5.9%	47.1%	23.5%	29.4%	6.24 out of 8

Summary of Comments:

- Anyone can contact the helpdesk, however specific questions about orders may only be discussed with the DRM who ordered it.
- If this is true in VA. It's a really big systems problem that should be addressed. People who are there to help are not allowed to?
- The help desk itself is not a 'technical assistance' line so this should not create issues.
- If you are not a DRM, you cannot get specific information (beyond the FAQs on website) on how to assist DRMs at base schools.
- Our technology resource teachers address instructional technology, not AT.
- They can contact the district DRM or perhaps be the designated DRM
- Wow! This needs to be addressed in some way! If there is need of AIM-related help, obviously the teacher making the inquiry KNOWS that the student is using AIM.
- This is an issue because in our county, classroom teachers often rely on the AT resource teacher for help.
- They should be part of the students support team and allowed information for educational purposes.
- Even if Technology Resource Teachers TRTs were able to contact the helpdesk, support would not change in LCPS. Long story but centers around politics of General Ed. vs. Special Ed.
- ITRTS contact the DRM w/concerns. The information is related to AIM
- This should be a non-issue if the technology resource teacher is included in the decision making process.
- Confidentiality has played a significant role in the provision of services, even up to the Bookshare and Learning Ally levels. Even our database structures depend on student name and number, making changes in tracking more difficult.

3. Challenge Domain: Underutilization of AIM in the Classroom - File Format Issues

ISSUE 3.1: Many school systems do not have the proprietary CD players needed to play Learning Ally files. (schools are currently unable to download files directly from Learning Ally). - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 3.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	23.5%	47.1%	0	52.9%	7.76 out of 10

Summary of Comments:

- The players are expensive AND going to be out of date this year.
- We have purchased a large number of these devices, but they are expensive and a bit difficult for users to operate.
- Sounds like a big problem.
- This is more of a concern than a problem because if the format is needed, the schools do indeed get access to the players. If not, they use alternate formats.
- Access to the audio recordings is very cumbersome, but for many students, this would be the ideal format, in addition, this format seems to be more readily available.
- Not the case in my school district but I imagine that may be the case in others.
- Learning Ally files have changed and other options are available
- While this is a barrier, if schools are not able to download files from Learning Ally the CD players are not the issue!
- Many teachers don't realize you need a special player to play these files. The file gets ordered and then they realize it.
- And they are big and cumbersome
- Another confusing dynamic in the AIM world.
- Certainly if school districts do not have the players and aren't able to download the files directly from Learning Ally then audio access to textbooks is going to be minimal. (I can't really address this issue because in our state we provide the players for Learning ally files.)
- First of all, this is an outdated item. I download files and put them on an SD Card that is then used by students on portable devices. If they ask specifically ask for CDs, I try to point out the value of DAISY navigation and the capability of "studying" on the same device that carries, perhaps, their mp3 files; if the student still prefers the CD or some other format.

ISSUE 3.2: PDF files provided by AIM-VA are too large to open in many programs (e.g. Kurzweil) and require too much time to break into parts to use in the classroom. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 3.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	47.1%	29.4%	5.9%	64.7%	7.12 out of 10

Summary of Comments:

- PDF files provided by AIM-VA are too large to open in many programs (e.g. Kurzweil) and require too much time to break into parts to use in the classroom.
- This is an issue for us. We are working around it, but it still takes a bit of time to make the files usable.
- Again, this seems like a systems problem. Teachers should get the materials in a ready-to-use format.
- The PDF files do not open in Kurzweil because the program does not support PDF; not because of a size issue. Most PDFs provided are small enough to send as an attachment in e-mail.
- It is time consuming.
- reported challenge in many locations
- IF this is true, perhaps AIM-VA should look at ways to "chunk" materials. I am thinking they probably have done that and that this may be a misconception.
- PDF's can be very large depending on pictures.
- This has not been an issue in our program, because while it is time-consuming, it is what the student typically prefers. A discussion of available options and frank problem-solving leads us to a good solution.

ISSUE 3.3: Electronic Braille format is not widely used due to lack of availability of refreshable braille display technology. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 3.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	47.1%	29.4%	5.9%	64.7%	8.0 out of 10

Summary of Comments:

- The number of people using Braille is decreasing with the advent of new technologies.
- I seriously doubt that this is why people aren't using Braille formats. I suspect it's more about familiarity with Braille and also the number of potential Braille readers.
- The costs and availability of refreshable Braille technology is great. However, the reason for not using BRF files may also have more to do with the availability of alternative formats such as ePub and DAISY.
- Expense of technology necessary to support this kind of use.
- Refreshable braille displays are another added expense for school districts and so they will look for a different format that is not so costly to provide.
- We don't have access to clean, properly formatted electronic braille. There would, without a doubt, be many more requests for refreshable braille display technologies if we could trust the formatting and content of .brf files.

4. Challenge Domain: Ordering and Delivery of AIM Materials

ISSUE 4.1: DRM assignments change regularly without notifying AIM-VA- After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 4.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	47.1%	35.3%	5.9%	58.8%	4.18 out of 8

Summary of Comments:

- DRM assignments change regularly without notifying AIM-VA
- This causes numerous issues however the ordering system has begun providing a way of managing this.
- This will be a constant.
- I don't think this is a huge problem. Occasionally, a few DRM changes might not get noted.
- Communication between agencies is always difficult.
- I'm it :) (i.e. The only DRM in the district)

ISSUE 4.2: AIM-VA closes for a period of time to new orders making it difficult to get books for new or transferring students. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 4.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
5.9%	47.1%	23.5%	23.5%	52.9%	5.59 out of 8

Summary of Comments:

- DRMs are told to contact the help desk if there is an urgent need
- AIM-VA always provides AIM materials when required, even when a year is closed for ordering through the on-line system.
- Student needs change throughout the year and it is very difficult to know all the text a student will need for the year up front. When AIM VA closes, it is difficult to get a book/novel for a student who may need it for the fourth quarter.
- Not an issue; they make exceptions if necessary
- This will always be a problem but probably impacts a relatively small number of students for a brief time. Back-up plans should be made for the interim.
- I don't think this is a huge problem although this year (2010-2011) it seemed like it was closed longer than normal.
- This simply takes organization to avoid this issue.
- they are closed during SOL time...I am not worried about ordering books at this time
- It's presented a few issues over the past few years, but I understand why it must be done.
- Depends on when they (orders) arrive. Materials may not be available to students until near the end of the year.
- Being closed for a period of time is not a good option when considering the need to meet the timely manner requirements of the NIMAS regulations.

ISSUE 4.3: Compensation is not provided to DRMs for the added responsibility of managing the ordering and delivery of AIM materials. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 4.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	35.3%	35.3%	11.8%	52.9%	5.59 out of 8

Summary of Comments:

- I would imagine that DRMs would very much like this because the AIM process can indeed be very time consuming.
- Because we have one at every school and so few kids utilizing AIM this is not an issue.
- It is time consuming
- job responsibilities need to be balanced- so this is a specific skill, not an add on.
- There should AT LEAST be a shift in the other duties for which that person has been responsible rather than just an "add on."
- I don't think it's a big enough job to warrant compensation.
- This is typical in school settings
- Very time consuming, especially if required to do my job and learn enough about LD to adequately serve them as well
- Isn't serving students effectively enough compensation? ;-) Truthfully, even if they were paid, I'm not sure things would change at all
- No extra help or pay is given. It is an added responsibility
- Part of the job in most LEAs

ISSUE 4.4: Assigning contractors as DRMs makes communication and training difficult. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 4.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	41.2%	23.5%	17.6%	58.8%	6.12 out of 8

Summary of Comments:

- This should not be allowed.
- Contractors involved with more than one school district can create issues if districts are not kept separated.
- The time for and expectation of training should be included in the contract.
- It depends on the system; however, it can simply add another layer of coordination if not planned carefully.
- I also believe there might well be some legal issues

5. Challenge: Delivery of books electronically

ISSUE 5.1: Difficult for some DRMs to find a computer that will allow them to save files. (many school systems require a password to save files. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 5.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	35.3%	29.4%	11.8%	58.8%	2.47 out of 4

Summary of Comments:

- Get them an external hard drive!
- Worked out with IT to save copy to school server or in thaw space
- There IS a solution to this one too! This needs to be managed within the district specifically for this purpose.
- This can be a challenge but not an overwhelming one.
- Again districts struggle with security and access.
- Agree but there are other solutions for saving files

ISSUE 5.2: DRMs download files from personal computers to bypass security restrictions. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 5.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	41.2%	29.4%	11.8%	58.8%	3.41 out of 4

Summary of Comments:

- This has only happen on rare occasions,
- Have done this in the past; now work with IT to coordinate ability to put on server or individual machines
- Well, this is not a good solution, but if it the only way to ensure that the students get the materials it is understandable.
- There are many times when this is the best way to get timely access versus working through LEA security systems.
- CD's are available
- Can happen but DRMs need to be fully aware of the need to protect the copyright process.

6. Challenge: Retention of Books

ISSUE 6.1: Development of a "personal library" of AIM files by DRMs to possibly use for another student in the future (compromising copyright). - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 6.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
5.9%	64.7%	17.6%	11.8%	70.6%	2.12 out of 4

Summary of Comments:

- It is difficult to have to delete an entire year's inventory of books, especially when they require so much modification to match the formats we use (Kurzweil)
- I know this is not allowed. But I get why they do it. As long as they don't freely distribute I understand why they think they should.
- The rare occasion of DRMs creating personal libraries does not have much to do with Retention of Books.
- Compromising copyright is an issue, but if DRMs are well trained and ensure that they understand and respect copyright issues, this would not be much of a problem.
- This would make it easier because the same books are used for many years.
- The risk is there
- Again DRM's should be required to sign a legal acceptance for the files that includes the protection of the copyright process and to have a clear understanding that they are legally representing the school district in these transactions.

Issue 6.2: Students using AIM materials do NOT always return books to the school.

- After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 6.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	41.2%	29.4%	11.8%	58.8%	2.12 out of 4

Summary of Comments:

- This has happened only rarely.
- Again, they are often using the books at home and it is difficult to manage that.
- Hard to implement a policy of consequences that apply to STUDENTS.
- This is always a problem - getting materials back from students at the end of the year.

- The DRM's are sometimes confused when advising students.
- Interestingly enough, the disks, USB jump drives, and SD cards are managed by a paraprofessional. The student signs a copyright agreement but the paraprofessionals are the ones typically responsible for the "support" role, and they rarely return materials.

ISSUE 6.3: Books are lost because DRMs in large school systems lose track of where books are within the district. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 6.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	52.9%	29.4%	5.9%	64.7%	2.82 out of 4

Summary of Comments:

- This has more to do with the organization of the DRM than the size of the District.
- This doesn't happen in our county because we have many different DRMs, but I can see this being a challenge.
- This is an internal division issue. They need to held accountable for lost books. Then they will improve their tracking systems.
- This probably happens more if there is one DRM for a whole system. We have a DRM for every building so it is easier for them to keep track.
- systems issues. This does not need to be different than printed materials.
- If the DRM has ordered the book for a specific student assigned to a specific teacher and tracks this information, I don't see how they can lose track of where books are located.

ISSUE 6.4: AIM-VA policy prohibiting DRMs from retaining a hard-copy large-print book unless they submit an order to retain the book before it is ordered by another DRM. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 6.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
5.9%	29.4%	35.3%	29.4%	35.3%	2.94 out of 4

Summary of Comments:

- Provision of Large Print should cease all together
- This statement is only true for the current 2012/2013 school year and is yet to be seen as an issue.
- Sounds like, in cases like this, more than one hard copy needs to be in the AIM-VA library.
- This may be an issue although not huge
- Some notice is necessary for AIM to fairly serve LP needs
- Seems like standard operational practice for most places

7. Challenge Domain: Ordering – Miscellaneous

ISSUE 7.1: DRMs order books that are not needed or not used. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 7.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	35.3%	29.4%	0	70.6%	1.18 out of 2

Summary of Comments:

- I assume that this happens when student assignments change - the issue comes when the DRM does not return the materials until the end of the year when another student could have been using it.

- Often AIM is an IEP team decision and the student is not fully invested. Books are ordered, but the student does not use and no one really monitors its use.
- On a few occasions school changes materials to be used after ordered
- simply return or delete
- This would take valuable time of AIM staff that could be used for other things.
- I think many DRMs just order the whole book for every class - just in case.
- This happens when teachers order books and then don't use
- Yes, because when they aren't sure what file format will work for a student (making an educated guess, they order multiple formats and some may not be used). Not so sure I disagree with this thinking though.
- Teachers list text they don't use
- The DRM is responsible for ordering or approving book orders for students. If they are ordering books that are not needed or not used then this would be a training piece at least and a warning to the LEA that there is a problem with ensuring the copyright process.
- Not the fault of the person ordering; students change the classes they're taking, go to another school, or the teacher changes the requirements on the syllabus

ISSUE 7.2: Some books are ordered through students individual memberships (i.e. Learning Ally, Bookshare) bypassing AIM-VA. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 7.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	52.9%	11.8%	17.6%	70.6%	1.82 out of 2

Summary of Comments:

- More options are available to students if they have individual memberships
- For the Department of Education and their data-collection, this is an issue.
- It is often easier for a student to have a bookshare account so that he/she can get what they need in a more timely manner.
- the goal is to get AIM into the hands of students

- I understand why this is a data tracking issue, but if the students are getting the materials in a timely manner AND data can be received from the school divisions, then it seems like a good solution.
- Some people know this system and continue to use it. Easier than learning a new system (AIM-VA)
- LEAs can access Bookshare and Learning Ally
- my students don't order through individual memberships
- So far, not an issue in LCPS. Parents want the division to pay for everything.
- some students have been members w/Learning Ally prior to being eligible at school
- I agree but only to the extent that these agencies often have more lax requirements for qualifying for books than the state agency. State systems can also be set up to have schools order from both these providers through them so a record of the transaction on behalf of the students is maintained.

Domain Name: Production of AIM Materials

8. Challenge: Production: Creating Quality AIM Files in a Timely Manner.

ISSUE 8.1: NIMAS files in large part are not available. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 8.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	47.1%	29.4%	11.8%	58.8%	2.82 out of 6

Summary of Comments:

- I don't see this as true. It was, but is getting better.
- The number of NIMAS derived orders does not necessarily reflect whether a book is actually in the NIMAC. IT could very well be that DRMs simply order directly for AIM Production - other formats.
- Unable to find them
- This has been true in the past but is becoming less and less of an issue nationally.
- This slows down the process.

- They have a huge selection
- What's NIMAS? Just kidding! ;-) This is the thought though by many DRMs. NIMAS is very confusing to them.
- Not having access to legacy files is often problematic
- Some states use old textbooks, with copyright dates before 2006.

ISSUE 8.2: Many NIMAS files are of poor quality and hard to use. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 8.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
5.9%	29.4%	58.8%	5.9%	35.3%	3.82 out of 6

Summary of Comments:

- NATIONAL systems issue
- Not 'many' just some are less of less quality than others. I would not say that they are 'hard to use.'
- Yes due to formatting issues
- Improved significantly
- This has been true in the past but is becoming less and less of an issue nationally.
- They are not student ready but AMPs should know that.
- Most NIMAS files are fine but you do have to watch for those that aren't and have a plan to either send it back to the NIMAC or a process to clean them up available to you.
- I've only downloaded one book that had errors in grammar and punctuation, and that would not be the fault of the NIMAC folks, but of the Author/Publisher. It was returned to the publisher by NIMAC with a request for tighter quality control. (The work of creating the actual NIMAS file set was outsourced to India.)

ISSUE 8.3: Hard-copy textbooks provided by schools for scanning purposes are often in poor condition. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 8.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	41.2%	35.3%	11.8%	52.9%	4.06 out of 6

Summary of Comments:

- Not 'often' - just sometimes, and when they are, DRMs most often provide another copy.
- Copies are adequate
- It should be required that books submitted for scanning are in new or excellent condition.
- I make sure I get a good copy
- We've got plenty of lovely textbooks not being used. :-)
- Well, they have to provide a book, and they typically let go of a waterlogged, marked up, or dog-torn book.

ISSUE 8.4: Inconsistent level of quality control of Bookshare files - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 8.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	23.5%	52.9%	5.9%	41.2%	4.18 out of 6

Summary of Comments:

- This is horrible
- Some files contain errors or spelling mistakes
- Consistent if a textbook from a NIMAS file
- Although this is still a problem (especially related to BRF) it is less of a problem than it was in the beginning.
- We often find “dirty” Bookshare files.

ISSUE 8.5: Inconsistent level of quality control for Braille formats. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 8.5					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	23.5%	41.2%	17.6%	41.2%	4.65 out of 6

Summary of Comments:

- I do not know specifically about this comment but do know that orders for Braille are small compared to other formats so this comment is less of an issue for AIM-VA as a whole.
- This is especially a problem with BRF that is inappropriately used to create an embossed braille document.
- This depends on the quality controls in place during production...our state’s quality controls are top notch and we won’t accept anything less than high quality braille formats.
- We use a limited group of folks for braille, and their work is consistently excellent.

9. Challenge: Production: Lack of Training and Research on the Best Tools to Use for Production.

ISSUE 9.1: Time consuming to train AIM-VA staff on technology tools and updates for production. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 9.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	47.1%	35.3%	0	64.7%	3.29 out of 6

Summary of Comments:

- Not as much of a challenge as it is part of the job.
- I can imagine that creating math texts must be a very big challenge. I would also agree that it is difficult for student wage staff to make decision not thoroughly knowing the content of the texts.
- Although I am sure this is true and a challenge, hopefully there is some continuity of staff.
- It is all very technical
- we only use trained prison inmates
- This is a time-intensive set of tasks, and requires a lot of time to train or coach any additional workers, much less to find funds to keep our tools and updates current.

ISSUE 9.2: Student-wage staff must make decisions regarding accessibility features (e.g. when and how to describe images, etc.) - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 9.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	52.9%	29.4%	0	70.6%	3.41 out of 6

Summary of Comments:

- Wage staff do not make decisions - they follow procedures already predetermined.
- They should NOT be making these decisions! Hopefully the DIAGRAM work and POET will have some impact here!

- I don't have first-hand experience with AIM-VA staff but I would think this is an issue.
- They need to be trained well.
- Students aren't clear or confident in making decisions without asking, and this creates a "stop-and-go" situation for me. I require a truly quiet, distraction-free setting and it's just not possible.

ISSUE 9.3: Decisions about technology used for production of AIM are most often done on the fly. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 9.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6%	23.5%	52.9%	5.9%	41.2%	3.41 out of 6

Summary of Comments:

- Production decisions are never made 'on-the-fly.'
- if this is how this is happening, this is a huge issue. however, I am unaware of actual practice.
- I think this is carefully thought out, especially by AIM-VA.
- There is a lack of understanding that there are many things to consider, which takes time.
- we have a production workflow that includes specific technologies for production
- I have received multiple hands-on sessions taught by the nation's leading experts in textbook conversion.

10. Challenge: Production: Cost

ISSUE 10.1: Reprinting costs for large-print textbooks that are not returned or are returned in poor condition - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 10.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6	47.1	29.4	5.9	64.7	2.53 out of 6

Summary of Comments:

- This is becoming less of an issue since we are moving towards using technology instead of a large print book.
- Lots of things are expensive!
- This IS expensive not 'can be.'
- That's why I'm a big proponent of not using LP
- Facts shared at Advisory Board support this statement

11. Domain Training on AIM-VA Services and Implementation

ISSUE 11.1: Lack of "just-in-time" training on new policies procedures. - After reviewing the comments and ratings from the previous round (see below): Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

If you answered yes, please provide some suggestions to address the challenge:

Results of Ratings from Round 2: ISSUE 11.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
17.6	47.1	29.4	5.9	64.7	2.47 out of 4

Summary of Comments:

- Policies and Procedures change every year, trainings occur every year and online information is consistently provided.
- AIM does a very good job of providing updated training
- This needs to be done throughout the year to keep all informed of changes.
- Updates are timely

- Even I can find out about AIM-VA's policies and procedures! Surely people in the state can do that if they make the effort!
- I think there is adequate "just-in-time" training on new policies and procedures
- It takes time to develop.
- Online trainings are important but archived trainings would provide just in time support. I don't think there are any at this time.
- on-line training for new policies and procedures is critical
- I would LOVE to see some artificial intelligence combined with database technologies to create a "Just in time" training system for states. This has to be a tremendous problem for other states, as well.

Part 2: Suggesting Solutions to Established Challenges

Instructions: Based on the feedback received from your participation in the Round Two Questionnaire, **75% or more of the expert panel agreed that the following issues are significant challenges to the implementation of Accessible Instructional Materials (AIM)**. Based on your knowledge and experience please share your advice on how best to address these challenges.

Specific Tasks:

- Please provide brief suggestions for how to address the challenge presented.
- Determine the level at which you believe the challenge should be addressed:
 - **Mark Local Level** - if you believe the issue needs to be handled on the local level (meaning at the state or district level)
 - **Mark National Level** - if you believe the issue is seen across states and needs to be addressed through national policy initiatives
 - **Mark N/A** - if you do not understand or have no knowledge or experience regarding the issue.

Domain: Use of AIM in the Classroom

1. Challenge Section: Underutilization of AIM in the Classroom - Technology-based Issues

CHALLENGE 1.1: Teachers are not adequately trained on Assistive Technology or AIM at the preservice level.

- What suggestions do you have to address this challenge?

--

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 1.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank
70.6%	23.5%	5.9%	0	94.1%	2.1

CHALLENGE 1.2: Even with training it is difficult for teachers to keep up with the advances in technology.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 1.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank
25.3%	47.1%	17.6%	0	82.4%	3.88

2. Challenge Section: Underutilization of AIM in the Classroom - Eligibility Issues

CHALLENGE 2.1: Information about the availability of AIM services is not reaching classroom teachers

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 2.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	47.1%	17.6%	0	82.4%	2.65

CHALLENGE 2.2: Number of students being identified as eligible for AIM is much lower than it should be based on the number of students with print-related disabilities.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 2.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
52.9%	41.2%	0	5.9%	94.1%	3.11

CHALLENGE 2.3: Information about the availability of AIM services is not reaching parents.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 2.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
41.2%	47.1%	11.8%	0	88.2%	3.65

CHALLENGE 2.4: Outdated eligibility regulations in the Chaffee Amendment.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 2.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	47.1%	17.6%	5.9%	76.5%	4.65

3. Challenge Section: Underutilization of AIM in the Classroom - File Format Issues

CHALLENGE 3.1 Teachers are not trained on how to effectively incorporate the use of electronic files into their teaching

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level

☐ National Level

☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
52.9%	41.2%	5.9%	0	94.1%	3.06

CHALLENGE 3.2: Teachers do not use textbooks often in the classroom.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level

☐ National Level

☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
11.8%	70.6%	17.6%	0	82.4%	3.82

CHALLENGE 3.3: Teachers and IEP teams are unaware of all of the formats that are available to help their students.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
47.1%	42.2%	11.8%	0	88.2%	4.00

CHALLENGE 3.4: Teachers and IEP teams are confused about the multiple formats available

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
47.1%	35.3%	17.6%	0	82.4%	4.18

CHALLENGE 3.5: Most of the materials used for instruction in the classroom are not provided through AIM.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.5					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
5.9	70.6	11.8	11.8	76.5	4.82

CHALLENGE 3.6: Teachers are not trained to match the technology they have available in their classroom with the proper AIM format.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.6					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	47.1%	23.5%	0	76.5%	5.41

CHALLENGE 3.7: Large-print books are ordered out of comfort with the format and/or lack of knowledge of technology based options.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 3.7					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	47.1%	23.5%	0	76.5%	6.82

4. Challenge Section: Ordering and Delivery of AIM Materials

CHALLENGE 4.1: DRMs often have difficulty balancing the demands of digital rights management with the demands of their "regular" job.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 4.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	52.9%	11.8%	5.9%	82.4%	2.53

CHALLENGE 4.2: There is not a standard skill set required of personnel designated as digital rights managers

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 4.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	58.8%	5.9%	0	94.1%	3.00

CHALLENGE 4.3: DRMs are assigned differently depending on the school system.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 4.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	47.1%	17.6%	0	82.4%	4.41

CHALLENGE 4.4: DRMs are not typically 12 month employees - leaving no designated person to receive books during the summer months.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 4.4					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	41.2%	17.6%	5.9%	76.5%	4.59

5. Challenge Section: Delivery of books electronically

CHALLENGE 5.1: Security systems in place in schools prevent DRMs from downloading files from FTP servers.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level

☐ National Level

☐ N/A

Results of Ratings from Round 2: CHALLENGE 5.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
41.2%	35.3%	17.6%	5.9%	76.5%	1.76

CHALLENGE 5.2: Slow Internet connections in more rural systems time out before files are fully downloaded

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level

☐ National Level

☐ N/A

Results of Ratings from Round 2: CHALLENGE 5.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	52.9%	5.9%	17.6%	76.5%	2.35

6. Challenge Section: Retention of Books
(no Challenges identified in this section at 75% agreement after round 2.)

7. Challenge Section: Ordering – Misc.
(no Challenges identified in this section at 75% agreement after round 2.)

Domain: Production of AIM Materials

8. Challenge Section: Production: Creating Quality AIM Files in a Timely Manner.
(no Challenges identified in this section at 75% agreement after round 2.)

9. Challenge: Production: Lack of Training & Research on the Best Tools to Use for Production.

CHALLENGE 9.1: Lack of staff capable of describing high level math content.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 9.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
29.4%	52.9%	11.8%	5.9%	82.4%	3.00

CHALLENGE 9.2: Lack of technology available to create accessible Math textbooks.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 9.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	47.1%	17.6%	0	82.4%	3.88

CHALLENGE 9.3: Keeping staff up to date on technology upgrades for creating accessible text.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 9.3					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
23.5%	52.9%	23.5%	0	76.5%	4.00

10. Challenge: Cost of Production

CHALLENGE 10.1: Printing costs associated with large print can be expensive.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 10.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
41.7%	29.4%	11.8%	11.8%	76.5%	1.59

CHALLENGE 10.2: Partnership contracts are expensive and may only provide a small percentage of books to eligible students.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 10.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	41.2%	17.6%	5.9%	76.5%	1.88

11. Domain Training on AIM-VA Services and Implementation

CHALLENGE 11.1: Lack of release time or teacher workdays available for AIM training - available days are needed for professional development requirements in other areas.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 11.1					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
47.1	41.2	5.9	5.9	88.2	1.76

CHALLENGE 11.2: Information and training provided to DRMs is not reaching teachers.

a. What suggestions do you have to address this challenge?

b. At what level do you believe the issue should be addressed:

☐ Local level ☐ National Level ☐ N/A

Results of Ratings from Round 2: CHALLENGE 11.2					
Strongly Agree	Agree	Disagree	Strongly Disagree	Level of Agreement	Average Rank within Section
35.3%	58.8%	0%	5.9%	94.1%	2.06

Part 3: Considering NEW Challenges

Instructions: In this final and very brief section of the questionnaire **NEW** issues that were not included in the last round have been suggested by some of the panelist for consideration. In an effort to ensure that important challenges are not left out please consider the following **NEW** items.

Specific Tasks:

- A. **Please rate each item, indicating the level to which you believe these statements are challenges to the implementation of AIM.**

Mark N/A - If you do not feel like you have the knowledge or experience to respond to the item, please mark N/A

- B. Determine if you believe the proposed issue is a challenge to the provision of AIM and how it should be addressed

Mark - Yes, on a Local Level - if you believe the issue needs to be handled on the local level (meaning at the state or district level)

Mark - Yes, on a National Level - if you believe the issue is seen across states and needs to be addressed through national policy initiatives.

Mark No - if you do **not** believe the issue presents a significant challenge to the provision of AIM through a state-wide program

Mark N/A - if you do not understand or have no knowledge or experience regarding the issue.

- C. If you mark **Yes**, please provide suggestions for how to address the issue.
THANK YOU!

12. Use of AIM in the Classroom

- 12.1. ISSUE: The structure of the current educational model/system makes it very difficult for educators to have the time or training to be innovative in their thinking, reducing the effective use of AIM materials.**

a. ☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ N/A

b. Do you believe it is necessary to address this issue?

☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- c. If you answered yes, please provide some suggestions to address the challenge:

Use of AIM - File Format Issues

12.2 ISSUE: Confusion about how to order text in ePub formats is limiting their use

- a. ☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ N/A

- b. Do you believe it is necessary to address this issue?

- ☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- c. If you answered yes, please provide some suggestions to address the challenge:

12.3 ISSUE: Confusion about how to access (use) textbooks that are provided in ePub format is limiting the effective use of this format.

- a. ☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ N/A

- b. Do you believe it is necessary to address this issue?

- ☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- c. If you answered yes, please provide some suggestions to address the challenge:

12.4 ISSUE: Lack of consistent and reliable Internet connection makes it difficult or impossible to use Bookstream to access ePub formats.

- a. ☐ Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ N/A

- b. Do you believe it is necessary to address this issue?

- ☐ Yes - on a Local level ☐ Yes - On a National Level ☐ No ☐ N/A

- c. If you answered yes, please provide some suggestions to address the challenge:

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CURRICULUM VITAE

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