Bridging the Gap: Expanding Access to the Visual Arts through Distance Technology

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CRYSTAL BRIDGES
MUSEUM OF AMERICAN ART

Crystal Bridges Museum of American Art is grateful to the Windgate Charitable Foundation for supporting this research conducted by the Nebraska Center for Research on Children, Youth, Families & Schools.

This research serves as a reference for Crystal Bridges as the Museum develops and implements a distance learning initiative; however, it also serves as a resource for art museums, art educators, general educators, and policy makers across the country.

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NEBRASKA CENTER FOR RESEARCH
CHILDREN, YOUTH, FAMILIES & SCHOOLS

National Center for Research on Rural Education (R^2Ed)

INTRODUCTION

Though visual art has the power to evoke inspiration, transformation, and understanding, this process is oftentimes aided by trained educators or guides who seek to increase these effects. To the extent that students lack experiences in reflecting on the meaning of art or the intentions of artists, such guidance may be particularly essential in ensuring meaningful art experiences.

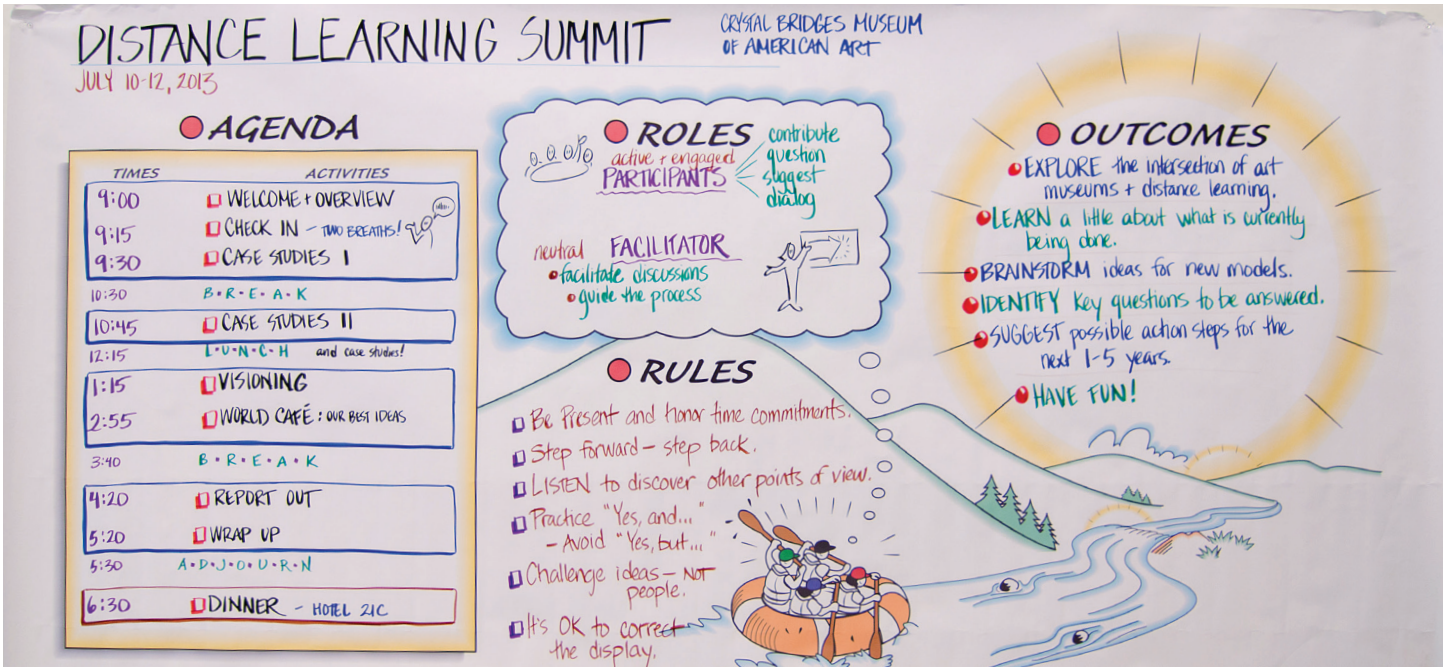
Art museums, along with the field of museum education, have effectively developed and implemented programs to engage and educate youth and adult audiences from many different backgrounds while in the physical museum space. In a recent study investigating the potential effects of guided museum visits to Crystal Bridges Museum of American Art, researchers documented numerous positive impacts of such visits on important academic and social/emotional outcomes (Green, Kisida, & Bowen, 2013). In this study, these benefits were particularly amplified for rural students.

Museums have also increased their offerings of distance education opportunities, but many questions remain regarding how to best transmit informative and transformative visual art experiences when the learners are not in the museum. This report focuses on distance education approaches employed by visual arts museums for connecting with school communities, including rural schools, outside the physical museum space. This work builds upon the aforementioned study by the University of Arkansas and Crystal Bridges Museum of American Art in an attempt to provide direction for similar educational programming designed to reach students that cannot feasibly engage in the on-site museum experience. Students in rural communities are a particular focus of the report due to geographic or financial constraints that may restrict rural students' physical access to art museums. Because distance and funding should not determine youths' access to works of art, distance education can be a valuable way to promote equity in access to high-quality visual art experiences.

This report is primarily grounded in an extensive literature review of museum education, distance learning and distance technologies, and art education in school communities. Throughout the literature review, attention was particularly focused on the unique challenges and experiences of art education in rural communities, whether provided by teachers within the schools or through distance technologies. Priority was given to literature collected from the domains of museum education, distance learning, and art education in school communities, with particular focus given to the use of web-based technologies as a means for providing distance-education opportunities. Mobile methods are also discussed in the report, but to a much lesser extent given the recent focus on technology-based distance education in museum settings.

In order to support these comparisons empirically, quantitative analyses were conducted to compare features related to art access, art education, and educational technology for city, suburban, town, and rural schools. These analyses were conducted using recent national representative data collected by the National Center for Educational Statistics. The results of the statistical analyses help support the results from the literature review to show that there are substantial differences in access to art education and community art opportunities based on school locale. Throughout the report, we attempt to synthesize knowledge gathered from this analysis with that from the literature.

To further study these issues, interviews were conducted with individuals affiliated with distance programming, whether for art museums or distance-learning organizations. In addition, one participant represents the experience of a school art specialist who has successfully woven distance learning provided by an art



museum into her own instruction. Because of the emerging and dynamic nature of distance education by art museums, it was deemed essential to investigate current practices and beliefs within the field rather than base conclusions solely on writings that may not fully represent the scope of current activities within the field. This is especially relevant given that a leading goal of this evaluation was to highlight and identify strategies likely to be effective for the described purposes, including those approaches that may yet need further development. Thus, reflections from those currently utilizing the technologies are particularly valuable for providing a comprehensive picture. Where feasible, results from the interview are combined with findings from the literature to more fully document the relevant themes of the report. Additional excerpts from the interviews will be provided in a separate section.

The resulting report is foremost intended to help inform Crystal Bridges as they tackle ambitious initiatives to expand opportunities to experience visual art; however, the goals for the report reach far beyond a single museum.

Instead, the report is intended to be a useful resource for a wide range of art museums and art organizations as they expand, improve, or create their own distance-learning programs, as well as for schools and educational institutions that may be receiving partners of such programming.

Though Crystal Bridges may be situated within a more rural context than many other leading American art museums, rural communities reside beyond the boundaries of all cities that host art museums. In addition, increased connectedness places nearly all students within reach of museums around the country and the world through distance education. It is hoped that a shared knowledge base for these museums, in the form of this report, will promote quality distance-education programming throughout the field. This hope can be further fulfilled through the collaborative efforts of art museums working toward the goal of improving equity in access to enriching art experiences.

Through preliminary consultation with Crystal Bridges, we identified several key questions about distance education by art museums that required closer examination. Thus, the report addresses the following key areas:

1. Historical Developments in General Distance Education
2. Current Trends in Distance Education for Art
3. Distance Learning for Art: Motivation and Access
4. Distance Learning for Art: Beliefs and Pedagogies
5. Distance Learning for Educator Professional Development
6. Teaching Art in Schools: Challenges Faced in Rural and Urban Schools
7. Technology Access and Use in Rural and Urban Schools
8. The Intersection of Educational Policy and Art Education
9. Shaping a Vision for Distance Education for Art

The wide-ranging topics addressed make it unlikely that any single reader will be an expert in all the topics. Rather than attempting to construct an authoritative and static document, this report is instead intended to provide a common framework and promote knowledge sharing as museums and organizations seek to provide continually improving distance-education programs, particularly for rural students.

HISTORICAL DEVELOPMENTS IN GENERAL DISTANCE EDUCATION

What is Distance Education? The terms *educational technology* and *instructional technology* are often used interchangeably to describe the integration of classroom pedagogy with advances in the scientific development of hardware (e.g., televisions, computers, and communication devices).

While debate continues on the impact technological advances have on learning and academic outcomes in formal education settings, computer technology and the Internet have had a tremendous impact on the ability of teachers in both formal and non-formal educational settings to expose their students to a plethora of information offered from outside the classroom (Jostens Learning Corporation, 1997). Technological advances such as the Internet provide an opportunity for students to engage in an interactive learning process similar to the experience they would have in a classroom environment or real-world setting such as a museum. This process is often referred to as *distance learning* or *distance education*.

Formal distance education is an endeavor dating back to the mid-nineteenth century (Sumner, 2000; Willis, 1993). Distance education generally involves instruction that is provided through a technological medium allowing communication to take place between teacher and student at different locations. This communication is generally interactive, involving immediate and/or delayed support and feedback from the teacher to the student. Interaction among students is also becoming increasingly common due to technological advances enabling increased access to social networking or messaging platforms. Online education—defined as any learning, formal or informal, that occurs via an Internet connection at a distance from a student's personal computer—is considered a general case of distance education (Larreamendy-Jones & Leinhardt, 2006).

ASYNCHRONOUS VS. SYNCHRONOUS DELIVERY

Delivery of distance-education programming can be generally categorized as involving either an asynchronous, one-way communication process, or a synchronous, two-way communication process. Synchronous delivery is defined as an interactive process between teacher and student that occurs simultaneously; in contrast, asynchronous delivery is an interactive process between teacher and student that does not occur simultaneously. Kaplan and Lynn (2003) refer to asynchronous delivery as a "different time–different place" mode and synchronous as a "same time–different place" mode. The asynchronous approach can include print materials, discussion boards, web logs (blogs), e-mail, recorded and streaming audio, recorded and streaming video, narrated slideshows, databases, web books, surveys or polls, shared calendars, and web site links. The synchronous approach can include conferencing via audio, video, or the web; real-time chat via an Internet or mobile connection; and instant messaging, white boarding, and application sharing.

Asynchronous delivery is a convenient method for students or instructors requiring flexibility in scheduling. In many settings, students are able to access learning material at their convenience and in a manner they deem fit. (Access to technological resources may still be a constraint for some students.) In addition, schedule demands of the instructors can be more easily accommodated when instruction does not occur at a specified time. Since real-time interaction is not necessary, the material presented and interactions that have occurred are usually published or recorded in some fashion for the student to refer to as frequently as necessary at any point in time. A primary disadvantage with this approach can be the impersonal nature of the learning process. Students must also be disciplined to interact with the material on their own, or an in-class facilitator must help maintain student focus and progress.

Synchronous delivery allows students to engage in real-time discussions about course material with the teacher and/or other students. In order to engage in the feedback process, however, students must be available at times in which the teacher and other students are also available. Thus, scheduling conflicts can occur. Synchronous approaches also tend to be more costly, particularly due to the technology needed for the student to have a quality experience. A high-speed Internet connection, as well as quality audio and/or video equipment (including software) is generally a 'must have' for students to realize the full benefits of a synchronous approach.

HISTORICAL DEVELOPMENTS

Technological developments have led to an enhanced learning experience for students engaged in either asynchronous or synchronous programming. Prior to Internet and computer access in schools, most early technologies did not allow for synchronous delivery, nor did they provide access to the breadth and depth of information that could be provided via synchronous delivery. The number of students that could be exposed to educational material has also increased due to technological advances. Literature on distance education includes the contributions technological advances have made to educators seeking to implement synchronous and/or asynchronous methods to deliver quality education to students all over the world (Sumner, 2000). The following offers a brief historical perspective on the roles technological advances have played in the practice of distance education in both formal and non-formal educational settings over the past 150 years.

The first generation of formal distance education occurred with the rise of the industrial society toward the end of the nineteenth century. Distance education at this time aligned with visions of democratization (i.e., increasing access to educational opportunities for underserved populations) and utilized the phrase "correspondence study" to describe the primary method utilized. Correspondence study could be considered an early form of asynchronous delivery due to its reliance on the delivery of educational materials to the student in print form through the mail. The development of the printing press, along with the mass production of pens and a more efficient, reliable, and affordable postal service facilitated the use of correspondence study. Isaac Pitman is recognized as the first to offer correspondence courses in England (Verduin & Clark, 1991). In America, Anna Eliot Ticknor is thought to be a pioneer (Holmberg, 1986), founding the Society to Encourage Study at Home, an organization composed primarily of women seeking educational opportunities during the early women's rights movement.

Distance learning by larger educational institutions began to emerge in the late 1800s, with correspondence studies being offered at all levels of public education through formal course offerings by public and private institutions of higher education (Willis, 1994). These same institutions also offered correspondence studies leading to academic degrees, including advanced graduate degrees as prestigious as a doctorate (Portman, 1978). The correspondence form of education was used to educate individuals across a variety of professional disciplines, including teachers, farmers, and businessmen. Holmberg (1986) reported on the required use of correspondence studies in the United States Armed Forces during both World Wars I and II. Technological advances, such as the radio, were considered ancillary (Bates, 1991) to correspondence study until the late 1950s and early 1960s, when early forms of digital media were first utilized as part of distance-education programming.

The second generation of distance education supplemented, and oftentimes completely replaced, print material with multimedia means of presenting content, including broadcast media via the television, audio and video cassettes, and to a limited extent, early computers (Nipper, 1989). The establishment of the Open University of the United Kingdom in 1969 is considered to be the hallmark of the second generation of distance education (Keegan, 1990; Sumner, 2000). Television-based educational programs such as *Sunrise Semester,* offered cooperatively by New York University and CBS Broadcasting, were also instrumental in defining this time period. These courses, as well as most distance-learning offerings during this period, failed to take advantage of the possibilities for providing synchronous delivery of educational programming. Instead, asynchronous approaches were the norm. The technological advances were largely used to facilitate an 'expert as teacher' model in which the teacher was the primary, oftentimes only, voice in the learning process. The students were relegated to working on their own with the print materials and other information offered via the teacher-chosen technological medium. By the third generation, technological advances were more fully realized and

utilized for providing quality asynchronous and synchronous delivery approaches. While the first Industrial Revolution focused on the development of new large-scale manufacturing processes, what is sometimes referred to as the second Industrial Revolution (Noble, 1995) focused on computer-based technologies (e.g., email, Internet) and other related communication devices (e.g., cell phones) to facilitate use of the information shared through the various digital communication systems available (Menzies, 1996; Sumner, 2000). These technologies provide distance educators access to a multitude of text-based and multimedia instructional materials consisting of resources designed to enhance the learning process, including print and/or digital textbooks and workbooks and/or CD-ROMs. Thus, this generation can be recognized as a continually developing field of computer-mediated instructional practices. The technologies and materials available convey information to students in many potential formats, as will be detailed in the following section.

DISTANCE TECHNOLOGY TOOLS: THE CURRENT LANDSCAPE

Web-based technologies for use in distance-educational practices began rapidly developing in the 1990s. Since this time, web access has increased considerably for public schools and the US population in general. Greenhow et al. (2009) report an increase from 35% to 100% in the percentage of public schools having access to the Internet. According to *Internet World Statistics* (www.internetworldstats.com), over 245 million Americans (nearly 81% of the population) use the Internet. The *New York Times* (Wyatt, 2013) reports nearly 98% of American homes have access to the Internet in some form.

The web has changed from a read-only informational and educational resource comprising largely expert-generated websites to an interactive, participatory, socially oriented platform where users can absorb, as well as generate, information and knowledge. The growth from a generally "read only" Web 1.0 (Cormode & Krishnamurthy, 2008, p. 1) to a "read-and-write" Web 2.0 (McManus, 2005) has had a profound impact on the type of distance educational programming that can be offered. The current landscape of distance-education is filled with the use of web-based technologies that support both synchronous and asynchronous approaches.

The development of Web 2.0 and the vast increase in Internet usage across the United States has facilitated the development of technologies and approaches for disseminating educational materials in a distance format. Social networking (e.g., Twitter, Facebook, MySpace), media-sharing tools (e.g., YouTube, Vimeo), social bookmarking services (e.g., Pinterest), collaborative knowledge development sites (e.g., Wikipedia), as well as creative works such as weblogs (blogs) are examples of recent developments that have aided in creating interactive educational experiences for students from afar. Traditional approaches based on print materials, as well as instructional audio and instructional video tools, are also still in use. However, computer-mediated instruction and classroom-based videoconferencing systems are much more common choices for distance educators. Computer-mediated instruction can take various forms including computer-based instruction and computer-assisted instruction. Computer-based instructional methods are effective for presenting a multitude of educational materials and facilitating a tailored learning process most appropriate for the situation.

Implementers of computer-based conferencing methods and other methods using audio and /or video technologies face several difficult decisions regarding delivery of material to the learner(s). These range from choices regarding the technologies employed (e.g., Web 2.0 applications or mobile learning) to the communication tools (e.g., synchronous vs. asynchronous). Moreover, these decisions must be made with consideration of the technical infrastructure and equipment available within the delivering and receiving institutions. Academic institutions at the forefront of distance education generally have the capability to utilize their preferred technologies for offering courses of varying formats through a course-management system. However, publicly funded educational entities and publicly or privately funded organizations such as art museums often do not have the same resources for offering a wide selection of courses across a variety of formats. These organizations must choose the best balance of costs and benefits of competing formats for their particular content, goals, and context.

Greenburg (2009) described the many obstacles distance-based educations face in deploying computer-based conferencing methods which rely on technology. Technology obstacles such as outdated equipment, insufficient bandwidth or technology infrastructure, insufficient quantities of equipment, and difficulty bypassing firewalls limit the effectiveness of such systems. Human resources are a concern as well, with inability to afford support personnel, lack of interest on the part of educators/administrators, a steep learning curve, and general resistance to change also being examples of hurdles to classroom-based videoconferencing systems. In addition, logistical concerns—such as lack of dedicated rooms or incomplete overlap in bell schedules and academic calendars—can be problematic. Once funding challenges, a focus on accountability tests, and inconsistent state and district policies and standards are also considered, these potential problems can seem quite daunting. Supporters of distance education have needed to create awareness of the availability, value, and quality of such technologies in order to overcome these obstacles.

CURRENT TRENDS IN DISTANCE EDUCATION FOR ART

Traditionally, the educational reach of museums was limited geographically due to the immobility of their collections. Museum experiences were therefore limited to those who had the means to physically visit the museums. However, the Internet and distance technology now provide opportunities for museums to reach a wide variety of local, regional, national, and international audiences (Falk & Dierking, 2000).

DISTANCE EDUCATION: THE MUSEUM CONTEXT

There are many ways these technological tools are used to expand exposure to museums' collections, including wide-ranging resources as simple as digital images of objects housed in the museum or as complex as complete multimedia lessons organized around collection highlights. In addition to technology-based art education methods, museums have utilized mobile museums, especially before such rich technology-based instructional opportunities were feasible.

The type of technology-based instruction implemented in the museum context generally fall into three forms (Din & Crow, 2009):

- **A** Technology-enhanced courses/experiences
- **B** Hybrid, or blended courses/experiences
- **C** Fully technology-based courses/experiences

These forms are distinguished by the degree to which students and teachers interact in physical proximity or at a distance. For instance, the technology-enhanced courses typically rely primarily upon face-to-face interaction in physical space with some online or distance interaction. The hybrid model involves a balanced combination of both face-to-face interaction in physical proximity as well as interaction online in cyberspace. Fully on-line experiences are conducted completely at a distance and participants may never meet in person. Though mobile museums are certainly a type of distance learning, they create same-place learning opportunities so do not fall within this taxonomy.

An example of the hybrid course experience is the Met's professional development workshops for teachers, in which teachers physically come to the museum for workshops then continue the educational collaboration online (Crow & Din, 2010). Videoconferencing programs are examples of fully technology-based experiences, whether individual programs or ongoing courses. Distance learning through videoconferencing is currently provided by a large number of art museums, such as the Amon Carter Museum of American Art (Amon Carter Museum of American Art, 2013), The Cleveland Museum of Art (The Cleveland Museum of Art, 2013), the Smithsonian American Art Museum (SAAM, 2013), and the Philadelphia Museum of Art (Philadelphia Museum of Art, 2013).

MOBILE MUSEUMS

A small number (about 17%) of museums are located in areas that have fewer than 20,000 residents (AAM, 2013). To reach these communities, museum educational programming has also extended to a traveling version of the art museum, termed "mobile museums." This approach provides an alternative method for reducing the boundaries between school students and museums by taking pieces of the museum's collection to the student. The mobile museum provides the additional benefit of giving students a chance to physically engage with the objects and materials. In their survey of museum administrators, teachers, and other stakeholders, Bontempi and Nash (2012) found that trunks and traveling museum exhibitions offering hands-on experiences were considered the next-best thing to classroom instruction. Museum employees believed these methods offered the chance to provide students with tactile stimulation, resulting in more memorable experiences. These methods can have the additional benefit of promoting group- and team-building activities and do not rely upon technology.

Currently, there are several examples of popular mobile museums. In New Mexico, the "Van of Enchantment" travels across the state to public events and libraries (Mobile Museums, 2011). The vans visit local schools, rural, and underserved populations who do not normally have access to a museum. Supported by grants since 1996, the "Van of Enchantment" provides a chance for underserved populations to interact and connect with cultural history. Another example of a successful program is the "Moveable Museum" in New York City. The Moveable Museums include four mobile science museums run by the American Museum of Natural History (AMNH). These vehicles visit schools, summer camps, community centers, and churches away from downtown New York. In 2010, these mobile science museums had over 22,000 visitors (Mobile Museums, 2011). The Los Angeles County Museum of Art's (LACMA) Ancient World and Maya Mobile museums travel to schools within the Los Angeles Unified School District (LACMA, 2013). These mobile museums are designed to integrate with state standards for history and science while teaching students about the art of the ancient world. Because the cost of providing a mobile museum can be more than $200,000 per year (Mobile Museums, 2011), such programs are often supported through grant funding.

On a smaller scale, organizations with even very limited budgets can create and support their own mobile projects. For instance, the San Francisco Mobile Museum (SFMM) is a "pop-up" museum project that is transported by one person in a car and can be broken down into segments (Mortati, 2012). These types of "pop-up" exhibitions travel to local parks and events, providing participants in the community interactive and collaborative art experiences. The works of art included in such small portable museums need not be by famous artists and are often created within the community explicitly for the temporary exhibition. Mortati (2012), the founder of the SFMM, encourages museums to consider these types of exhibitions because she believes it is a fresh way to engage the public and provides a more economical option for schools and communities, as well as museums, to experiment and grow.

As with traditional visits to museums, guided exploration of the works in a mobile museum can further elicit educational interaction rather than passive viewing. Whether in a marble gallery, portable van, or on a computer screen, viewing artwork alone does not guarantee a meaningful art experience, and the museum education staff can help promote the types of experiences considered to be positive for students. Because objects in mobile museums usually are less valuable than those securely housed within the museum walls, the mobile collections may provide a unique opportunity for the kind of physical interaction typically forbidden within a traditional museum setting.

VIDEOCONFERENCING

Videoconferencing is a synchronous tool utilized by several art museums across the country as a method of creating virtual field trips for school communities. Traditional videoconferencing involves a high-quality video camera at the museum site, transmitting audio and video of the presenter. Presenters may be professional museum educators, part-time instructors, or trained volunteers. Such equipment is designed to allow transition between or combinations of video of the presenter and content from a computer or document camera. Artwork shown through videoconferencing is typically a high quality digital or analog reproduction, though original works can be shown using the camera as well. Thus, there are many potential styles of interacting with works of art through videoconferencing. The preferred format will depend on the museum, or perhaps even the individual presenter.

Use of this technology by art museums continues to be widespread. Polycom (www.polycom.com), an industry leader in video-based conferencing methods, reports that interactive video classes provided by the Smithsonian's National Museum of African Art (NMAfA) have increased in popularity from 800 classes a year in 2011-2012 to an anticipated 1,600 in 2013 (Polycom, 2013). The Amon Carter Museum of American Art in Fort Worth, Texas (Amon Carter Museum of American Art, 2013) offers a variety of interactive lessons aligned with national and state standards. These lessons are centered on the Amon Carter's collection, which includes artists such as Frederic Remington and Charles M. Russell, to tell the story of the American West.

Videoconferencing is also a hallmark of The Cleveland Museum of Art's distance learning program (The Cleveland Museum of Art, 2013). Founded in 1999, this program uses video tools such as the green-screen technology, high-resolution image bank, and a technical producer to facilitate a guided discussion and interaction between the presenter and the audience. The Cleveland Museum of Art distance learning programming consists of over 40 different videoconferencing lessons on a wide range of topics including math, science, art, and history.

WEB-BASED LEARNING EXPERIENCES

Initially, museums' on-line presence tended to serve as a static extension, primarily for display, but has since developed into a dynamic participatory experience (Crow & Din, 2010). Museums began to build their online presence in the early 1990s. By 2006, museums received over 500 million on-line visits (AAM, 2013). These numbers continue to grow as the American way of life becomes increasingly digital. The use of the museum's website as an educational resource will be discussed in more detail in a later section of this report focusing on art

museums' goals and methods for distance learning.

Web-based learning tools provide a multitude of methods for museums to provide educational materials to individuals, schools, and communities. Crow and Din (2010) outline numerous educational and economic benefits of the use of online learning. Educational benefits include the ability to extend educational encounters for students across the globe, an opportunity to engage with students to improve online programs, and a method by which museums can engage audiences via digital communication. Economic benefits are also important because of the reality of cost restrictions museums often face. Web-based technologies offer the chance to provide the benefits of the museum experience on a large scale while minimizing the direct costs to both museums and schools. Expansion of high-speed Internet access, coupled with advances in web-based delivery tools, allows museums to take advantage of financial resources by expanding the digital resources available online, minimizing the cost of physical space, providing the ability to keep information and resources up-to-date, facilitating collaborations with multiple audiences, and increasing marketing opportunities (Crow & Din, 2010).

The types of web-based tools and online platforms continually develop at a rapid pace. A 2009 survey of arts museums by Wetterlund and Sayre (2009) found that museums in the United States have a wide variety of online educational programming ranging from online collections (54% of those surveyed), activities or lessons (64%), interactive activities and games (23%), to videoconferencing and e-learning (11%). Due to the speed of growth in this area, these figures are likely higher presently. The Internet provides a cost efficient, flexible, engaging, and effective mode of delivering information to a variety of audiences, but the scope of activities offered by museums tends to vary by the size of the museum. For instance, small museums did not report any videoconferencing or e-learning programming—compared to 40 percent of the larger museums (Wetterlund & Sayre, 2009) with such capabilities.

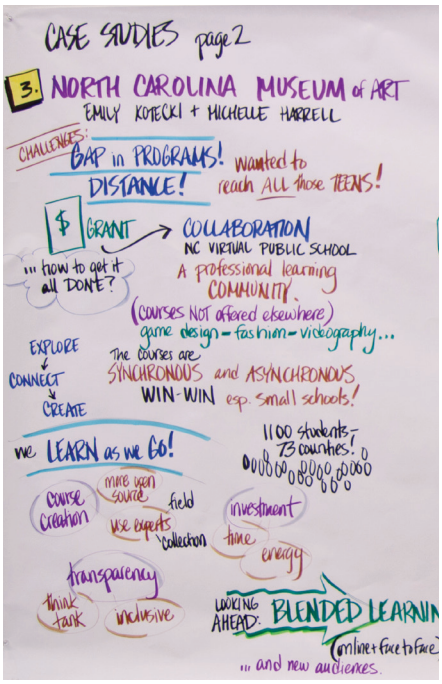
Asynchronous web-based delivery includes tools such as blogs, wikis, social networking sites, threaded discussion, and course-management systems (CMS) (Crow & Din, 2009). These tools can be accessed at any time, and individuals do not have to be engaged at the same time to participate in activities or discussion. Currently, many museums are using social networking websites such as Facebook, Twitter, Tumblr, and Instagram to connect with visitors, schools, and communities. However, in some instances, active online communities may become more synchronous to the extent that participants choose to engage in real-time exchanges. Another example of an asynchronous tool is the Google Art Project (Google Cultural Institute, 2013), which provides an online collaborative platform to virtually tour galleries around the world. At the time of this report, Google reports that museums from over 40 countries have contributed to the more than 40,000 high-resolution images available on their website (Google Cultural Institute, 2013). The Met's Heilbrunn Timeline of Art History (Met, 2013) is another example of a dynamic, asynchronous tool that schools, communities, and virtual visitors can access at their convenience via the web.

Synchronous web-based tools currently being used to allow museum educators to engage with students at the same time from different places include webinars and instant messaging. These tools facilitate real-time communication, interaction, and collaboration on projects, presentation, or meetings. There are numerous examples of these tools being used by museums across the United States. For instance, the Denver Art Museum provides online teacher webinars (Denver Art Museum, 2013) in which teachers can participate in a 60-90 minute presentation by an expert on a variety of topics such as enhancing curriculum with online resources from the Denver Art Museum, Denver Museum of Nature and Science, History Colorado Center, and Resource Area for Teaching. The Denver Art Museum's webinars permit teachers to interact via chat features and interactive exercises.

MASSIVE OPEN ONLINE COURSES

Massive Open Online Courses (MOOCs) are a relatively new but exceedingly popular type of web-based technology that allow previously unimaginable numbers of students to complete courses on a wide variety of topics. MOOCs are increasingly being utilized by top universities and organizations worldwide to offer free online learning opportunities. In such courses, a course designer will have previously created a full course curriculum, with lessons, supporting materials, assignments, and assessments. Students in the courses can interact with their "classmates," who may be located anywhere in the world.

Though these courses do require extensive preliminary effort to construct, they can be reused to reach as many students as have interest in the course with minimal per-student costs for the institution.



MOOCs are generally offered under the connectivist model or the Stanford model. The models differ primarily in respect to pedagogy but both make use of the Web 2.0 platform and other continually developing technologies. The connectivist model, referred to as a cMOOC, emphasizes creativity, autonomy, and social-networked learning along the lines of the synchronous delivery approaches discussed above. The cMOOCs operate from the perspective of a personal learning network where learning occurs across a network of connections. The Open Online Experience (www.ooe13.org) is an example of a cMOOC offering a connected learning environment for teachers interested in professional development focused on educational technology. The Stanford model, referred to as an xMOOC, involves the use of a rigorous curriculum and assessments without the social element involved in the connectivist model (Quinn, 2012, February 29). The xMOOCs are recognized as the standard for course offerings through organizations such as Coursera (www.coursera.org), Udacity (www.udacity.com) and edX (www.edx.org). These MOOCs operate within the constraints of the virtual learning environment and the bounds of the content covered in a specific course.

This type of delivery platform has begun to take hold within art museum education as well, notably a program by The Museum of Modern Art (MoMA) in New York City. MoMA teamed up with Coursera to offer a professional development course for primary and secondary school teachers (Mazzola, 2013). The initial MOOC offered by MoMA included over 17,000 enrollees, from classroom teachers to museum curators. MOOCs offer a great deal of flexibility in either synchronous or asynchronous delivery approaches. Although MoMA's MOOC was not conducted in real time, it is possible to consider their MOOC as a synchronized experience because teachers were given a syllabus and had to follow along and participate within a specific time frame. If the course were open-access without a timeline and content-related discussion forums, then it would be more appropriate to consider their course asynchronous.

INSIGHTS FROM THE INTERVIEWS

Participants in the interviews shared their recommendations and experiences about selecting the type of equipment and platform that best suit the unique needs of a museum's planned distance learning program. Once a museum has selected either more traditional videoconferencing technology or fully web-based platforms, many choices remain. According to a professional who specializes in distance technology, expansion in options has accelerated in the past year. Some of this growth is due to innovative technologies that allow previously incompatible equipment to connect. "It's really confusing right now. I will tell you. Five years ago, we didn't have as many options. Today, there are so many different options. It's great but it's also really confusing [for distance learning providers] to figure out what exactly they need."

For instance, there are certain strengths and weaknesses of long-established equipment and platforms, while at the same time new technologies emerge that may have the potential to be effective tools for these purposes. It can be challenging to fully vet these nascent technologies and even more challenging to attempt to predict future developments. As one museum educator said: "The problem is we're in this infancy moment. Nobody really knows what is going to be the main method of communication and we don't want to miss out on something." The same participant suggested that a solution to this ongoing dilemma is to develop content that could relatively easily migrate to different technology platforms while maintaining its essential components:

> **"Make sure that when you're creating contents [you keep] your mind flexible as to the platform. It used to be when we would create content, like when you write a book, the content is really married with the format of the book, and it takes us as educators a long time to understand how to create content that's independent of this format."**

Such advice is essential in today's distance-learning environment because the formats are constantly changing.

Toward this purpose, it is beneficial if at least one staff member working for the museum's education program is able to maintain expertise about current and emerging distance-learning technologies. As a participant from an organization that specializes in using technology to expand art education observed: "Our lives are increasingly digital and it's important that every organization has someone that is keeping up with it [so] you know the benefit

to your organization." This may be difficult for museum education programs already facing tension regarding funding for their distance education program, but it may be important to consider when planning new programs or when asking how existing programs might improve.

One museum educator offered a reflection from her museum's own experience. As she described, it can be tempting to purchase equipment early on; instead, she recommended waiting until the program's goals, methods, and technology needs have been more fully developed. In some instances, a museum might purchase equipment only to learn that it is not compatible with the technology in the schools the museum most seeks to serve or even with other equipment the museum seeks to utilize. As a participant stated: "Have a plan in place before getting the equipment."

As web-based technologies become more pervasive, the types of learning activities available are becoming more varied. For example, social media sites, group video chats, and media sharing sites such as Pinterest and Instagram open new doors for learner engagement. A museum educator whose museum's distance programming had historically focused on a knowledge-spreading approach has developed zeal for transforming the program's goals and methods with new technologies. As this person indicated: "we're very excited about the potential of all of these different types of technologies that we can start to [use to] interact with our audiences more regularly instead of having this sort of one way, expert voice. There is a lot of opportunity. This is an exciting time."

Multiple participants suggested that organizations must not lose sight of their educational purposes in light of the allure of novel distance-learning tools. One organization that has historically been an innovator in distance learning for art education discussed a tendency for organizations wishing to expand technology to become fixated on the use of a technology and allow their educational program to be molded by the format and limits of that technology. "There is this common, common problem where people are tempted to just...shoehorn a program into the platform, where we'd like to look at it the other way around." Instead, participants preferred to use the technology to serve the goals of the educational program rather than allowing the technology to determine the program's methods.

> **"We try to figure out what we're trying to accomplish in each of our programs... and then identify how the technology works for us.... So there's always going to be a platform out there or two [that suits our needs well.... We need some kind of technology solutions accomplishing what we're trying to accomplish."**

As museum education programs solidify their goals, pedagogical orientation, and content examples, the optimal technology for those purposes may become more apparent.

This philosophy is important in developing programming as well. The current digital landscape is far different than the serene space of an art gallery: it is often faster, louder, brighter, and more cluttered. It is in this space that art museums seek to establish expanded arts education opportunities. Moreover, students are often more accustomed to the sometimes frenetic style of such media than the type of learning environment museum educators may consider optimal. One participant urged that distance educators seek to keep students engaged through high-quality educational practices rather than capitulating to short attention spans. "I'm afraid that if they want the kids to be engaged...instead of [adding] more engaging questions, they're going to add more flashy, poppy, crazy stuff because kids like TV, right?" A general sentiment expressed by participants was that those using these technologies must constantly be guided by their educational goals and mission rather than relinquishing power to the technology itself.

DISTANCE LEARNING FOR ART: MOTIVATION AND ACCESS

Background Literature: Museum Education and Access

THE EDUCATIONAL MISSION OF MUSEUMS

To begin a discussion of distance education by art museums, the general mission of art museums must be addressed. People not affiliated with museums tend to view museums as a repository of artifacts (Talboys, 2011). Yet, individuals connected to the museum community understand the complex role museums play in society, particularly the educational role. In fact, the educational role of the museum is embodied in the international definition of a museum. The International Council of Museums (ICOM) defines a museum as "a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment (ICOM, 2013)." The founding charters of some of the nation's oldest museums, such as the Metropolitan Museum of Art (Met) and Boston Museum of Fine Arts, explicitly cite education as the primary purpose of the museum (Zeller, 1989).

The educational foundations laid out in these early charters were intended to have effects far beyond the study of art history or the practice of a particular technique. Education was also intended to elevate the character of the common man through discussions related to traditional ideals such as imagination, beauty, grace, and morality. George Brown Goode of the Smithsonian Institution encompassed the early foundation of these philosophical ideas when he referred to public galleries as the "people's museum," full of ideas rather than collections of objects (Zeller, 1989). Current museum educators may note how educational objectives have developed over time along with conceptualizations of the purpose of art. Early educational programming tended to be adult-centered gallery talks and lectures (Burham & Kai Kee, 2011).

In addition to the broad focus on serving the needs and interests of the general population, museums also took a particular interest in school communities. Museums and schools began to establish connections in the early 1900s. By the late 1930s, education programs in museums had expanded to include more child-centered programming (Burham & Kai Kee, 2011). In the last decades of the 20th century, the American Alliance for Museums (AAM) reports *Museums for a New Century* (Commission on Museums for a New Century, & AAM, 1984) and *Excellence and Equity* (AAM & Hirzy, 1992) firmly cemented emphasis on education and collaboration between museums and schools. The AAM also reports that museums currently spend more than $2 billion a year on educational activities with K-12 students; host visits from 55 million students in school groups; and provide more than 18 million hours of instruction via staff visits to schools, traveling exhibits, and teacher professional development (AAM, 2013).

MUSEUM ACCESS FOR RURAL STUDENTS

Dwindling school funds make it challenging for schools, regardless of location, to come to the museum for on-site field trips (Terrero, 2012). Although schools next door to the museum in urban settings and those a hundred miles away in rural communities face similar financial burdens, rural schools struggle more than others to physically make it to a museum. Two of the strongest barriers to both physical and virtual access to museums for rural students are the distance between rural locales and museums and access to high-speed broadband technology. Prior to outlining

these barriers, a definition of "rural" is necessary.

There are no clear-cut definitions for determining what constitutes a "rural" school community. Depending on the definition of rural, the percentage of local educational agencies (LEAs; school districts) classified as rural can vary from 11 percent to more than 60 percent and include between 2 to 25 pecent of all public school students (Apling & Kuenzi, 2008). Common definitions for rural tend to rely on either population density or distance from an urbanized area, but some definitions combine the two metrics. In particular, the National Center for Education Statistics' (NCES) coding scheme, urban-centric locale codes, use the Census Bureau's designation of urban areas at the census tract level to create a code for each school district by accounting for proximity to an urbanized area and population size. These locale codes classify schools and LEAs into four major categories—city, suburban, town, and rural (NCES, 2013a). Within each main type are three subcategories based on the population and/or distance from an urbanized area. The following table details the NCES urban-centric school locale codes.

NCES's Urban-Centric Locale Categories

Locale	Definition
City	
Large	Territory inside an urbanized area and inside a principal city with population of 250,000 or more
Midsize	Territory inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000
Small	Territory inside an urbanized area and inside a principal city with population less than 100,000
Suburb	
Large	Territory outside a principal city and inside an urbanized area with population of 250,000 or more
Midsize	Territory outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000
Small	Territory outside a principal city and inside an urbanized area with population less than 100,000
Town	
Fringe	Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area
Distant	Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area
Remote	Territory inside an urban cluster that is more than 35 miles from an urbanized area
Rural	
Fringe	Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster
Distant	Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster
Remote	Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster

Source: NCES, 2013c

The system assigns school district-level codes based on where the plurality of students in the district attends school (Strange, Johnson, Showalter, & Klein, 2012). If no single code accounts for the majority of students, then locale codes are based on the combination of the main category (city, suburban, etc.) and subcategory. First, the largest percentage of students determines the broad locale (city, suburban, etc.), and then the smallest or most remote subcategory for the broad locale determines the individual locale code (NCES, 2013b). Urban-centric locale codes use geocoding information (i.e. precise location of schools based on longitude and latitude) to differentiate rural school districts located just outside an urban area (fringe) from those that are located in more distant or remote areas (Apling & Kuenzi, 2008). Compared to other rural taxonomies, the NCES urban-centric codes permit policy decisions or research conclusions to be made at the school district level.

AAM (2013) reports that approximately 17 percent of museums are located in rural areas consisting of fewer than 20,000 residents. In contrast, approximately one-third of our nation's schools are defined as rural by the urban-centric locale codes (NCES, 2013). As reported in the "Teaching Art in Schools: Challenges Faced in Rural and Urban Schools" section in this report, there is a significant pattern of differences in whether a high school had offered a field trip to an art gallery or museum in the previous year—with schools in cities and suburbs offering such trips more often by about 10 percentage points compared to schools in towns and rural areas. The same pattern of results was demonstrated for arts-related field trips outside regular school hours. As importantly, arts specialists in rural schools have reduced opportunities to experience art museums in person. Art specialists in rural elementary schools rated their participation in viewing original works of art in galleries or museums as significantly less frequent than those in city schools. To the extent that art specialists' practice can be shaped by interacting with works of art in museum settings, these differences may affect the art education their students receive.

Rural students often face geographical boundaries for them to get to school, let alone to a museum. For instance, a New York Times article detailed the lengthy school day of rural students in Utah due to long bus rides (Dillon, 2004). Additionally, Howley, Howley, and Shamblen (2001) compared school bus experiences between rural and suburban children in five states and found that rural students were more likely to spend thirty minutes or more on the bus and travel over unpaved roads. Given these types of conditions for rural students to get to their schools, it is conceivable that travel to the closest art museum is even more time consuming. The analyses described in the section of the current report titled "Teaching Art in Schools: Challenges Faced in Rural and Urban Schools" showed that rural and town schools were less likely than city and suburban schools to offer a field trip to an art museum. The isolation, large distances between areas, and sparse populations are characteristics of rural schools that effect the cost of transportation, types of extra-

curricular activities and classes offered, inhibit the ability to hire and retain teachers, and limit general access to goods and services (Malhoit, 2005). Interviews with rural teachers have revealed that teachers believe lack of resources for field trips and students' lengthy bus rides are some of the rural school and community factors that hinder them as teachers (McCracken & Miller, 1988).

Goals and Practices: Insights from the Interviews

THE EDUCATIONAL MISSION OF DISTANCE EDUCATION

As described in the previous section, one goal of distance education provided by art museums is to provide access to high-quality museum experiences for those with limited access to the museum using traditional mechanisms. This sentiment was expressed clearly in the interviews. In particular, the participants discussed how modern technology is increasing their ability to meet this goal. One individual involved with a museum's distance-education program summed it up well: "What can we do for visitors that cannot be here? Museums have been thinking about that for a long time, but now we've got technology that can help us do that in new ways." An expert in distance-education technology echoed the sentiment that technology is allowing museums to more easily and effectively provide educational services to rural areas:

> **"I think also with all these new software-based technologies coming out, there's going to be a rise in more affordable content for some of the smaller and rural schools, but also for the smaller and rural museums, they are going to play now."**

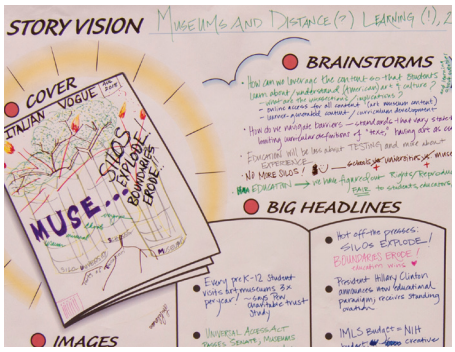
Given the concern documented throughout the report about funding and art education in rural schools, this content is likely to be particularly beneficial.

Beyond focusing on rural communities surrounding the museum, distance education can easily reach schools throughout the country and world, providing additional benefits of exposure and collaboration across this space. One east-coast art museum discussed the need to expand its coverage to more areas: "Our goal is to fill up the whole country evenly, rather than continue to reach primarily the east coast, with a pretty strong showing on the west coast, then a sort of gap in the middle of the country." One museum that is currently developing its distance education program discussed the desire to extend the reach of the museum's educational programming internationally as well:

> **"What we hope to do is expand our educational programming so that we can take the museum to school groups that would never have the opportunity to come here. And we have had discussions with our people—our educators in other areas and other countries—about the possibility of doing linkages between classrooms and educational programs across great distances."**

It is intriguing that in this quote, the participant used the phrase 'take the museum to school groups' rather than thinking of a virtual field trip in which students virtually come to the museum. Though the distinction is subtle, it suggests different ways of thinking about distance education.

One participant discussed how distance education perfectly complements the existing educational programming of the museum and the museum's overall mission. That is, this participant discussed how technology is allowing the museum to engage more viewers and learners: "Our goals have not changed, our over-arching goals. In the end, we want to offer access, in as many ways as possible, to as many different types of learners as possible, to our collection and what we do here....Now that technology is changing, we're looking



to those technologies to be able to help us continue to do that in new ways."

Thus, the goals of distance learning need not be seen as separate from the museum's mission as a whole, though the steps taken towards that goal may look very different than traditional elements of its programming. One way to increase the continuity between distance and in-museum education programs is to emphasize the museum's permanent collection in both formats, as will be discussed in the next section.

THE UNIQUENESS OF THE COLLECTION

One of the most consistent themes across the interview participants was that each museum has a unique and valuable role to play in national distance education because of the specific works housed in each collection, which by the nature of original art cannot simultaneously belong to a second museum as well. One participant discussed the idea that each museum has works that other museums do not as part of the rationale for the partnership between teachers and museums:

> **"We'd want to bring it back to the object. So, how is the gallery unique? Why would this classroom, or this teacher be interested in doing some sort of distance learning with [this particular museum]? Well, I would guess that it is probably our collection, mostly."**

A second participant discussed the contribution that museums can provide in

terms of understanding and appreciating the objects in their collection and spreading those qualities to a wide audience. This participant believed that distance education can be implemented in a way that provides valuable interaction with the object even though the learner is not in the museum:

> **"We have these amazing artwork collections, one of a kind. That's what makes us unique as museums, I think. And I think most of us on site still realize the unique beauty and ... the importance of the original object, and we don't want to deflect from that. But I think there are ways to be inspired by the original object, to inspire ideas, and help people have meaningful experiences off site as well, but with that original object in mind."**

Another participant mentioned international distance learning as consistent with the museum's goals. As this participant explained, a major component of the museum's strategic plan "is Globalization, and clearly distance learning is a great way to have a global reach."

Though museums are free to draw from digital images in the public domain to create connections to their collection, it appears likely that museums will focus programming on their permanent collections. One participant explained, "We wanted to be focused on our permanent collection and highlight those objects that are unique to us." Because of this, the value of distance education for art museums is not limited to those who cannot easily visit a museum. The fact is, visiting all the major art museums in the country—let alone the world—is a lofty and nearly unachievable goal, even for those whose lives focus on art museums. An interview participant who is involved with expanding online educational opportunities for diverse learners worldwide emphasized this point: "Obviously, it's not feasible for most people to be able to travel to the best museums in the world and see the great pieces of art, but some of the museums that we've seen have been able to really creatively capture the experience." The challenge of distance learning for museums is to do much more than allow individuals to 'see' the works but rather experience and learn from them as well through well-designed and well-implemented programming.

DISTANCE LEARNING FOR ART: BELIEFS AND PEDAGOGY

As anyone who has had to rush through an art museum due to time constraints knows, attempting to view many works quickly can reduce the full museum experience by favoring quantity over quality.

SELECTING CONTENT

As anyone who has had to rush through an art museum due to time constraints knows, attempting to view many works quickly can reduce the full museum experience by favoring quantity over quality. Perhaps each reader of this report has a unique strategy for a one-hour visit in an encyclopedic museum in a new city. Similarly, there is a need to deliberately favor quality over quantity in art museum distance education. One participant described feeling like presenters sometimes try to cover too much because they know museum access is limited for the audiences: "They feel like these kids are never going to come to the museum and so they need to see as much of the collection as possible." Instead, thoughtful selection of content can be an important and meaningful professional experience for museum educators, analogous to curating a new exhibition: "the unique opportunity that we have with our mode of distance learning is that I get to curate a show every time I make a presentation."

Participants differed on the relationship between in-museum content and distance-education content. For example, one participant said the two types of learners could be thought of as distinct audiences and content selected accordingly: "... we need to think of the offsite visitor as a different audience almost and create programming for that purpose." In contrast, an expert in distance learning said that parallel programming is an effective way to provide quality experiences to both in-museum and distance audiences: "There's no problem with taking what you are already doing for onsite visitors and developing that into outreach videoconferencing because you're not going to hit the same people."

Whether in-museum and distance audiences are seen as two separate types of audiences or two formats for reaching the overall target audience, it is important to balance the two methods. A participant from a well-established distance-learning program described this ongoing trade-off: "Who and where is your audience? How much are you serving your online audience or your potential audience versus your current in-person audience, and what is the balance between those two things?"

BEST PRACTICES TRANSCEND FORMAT

The pedagogical practices discussed by interview participants from museums resonated with the recommendations of museum education views, such as those of Rika Burnham and Elliot Kai-Kee. In these practices, learners are active participants in constructing their own meaning from art rather than passive recipients of expert knowledge. One participant shared, "I really like the idea of students driving their learning and being responsible for their learning and finding out what they want to know." That is, even the goals of the exchange are dynamic and can be shaped by the students rather than fixed at the outset. Depending on the orientation of the school, some students may be unaccustomed to this teaching style: "The students may be surprised to learn that they are not just listening to an expert, but they're actively engaged in either figuring out a problem or working cooperatively with their classmates on something—or doing more than viewing art."

However, the distance format requires additional effort to accomplish this. An experienced distance-learning educator described efforts to continue to be learner centered despite being separated from the students and perhaps having few background details: "To be learner centered you have to be able to really diagnose the

needs of that class within the first five to ten minutes of meeting them. You have to figure (that) out by what you ask them and what they're saying. You have to figure out their personal level of knowledge, then adjust what you're going to teach." The very nature of inquiry can take somewhat of a different meaning. One participant explained that in inquiry-based learning, "the idea is very much connecting an audience with an object in a personal way, (creating) multiple points of entries so that you're never tapping only the visual."

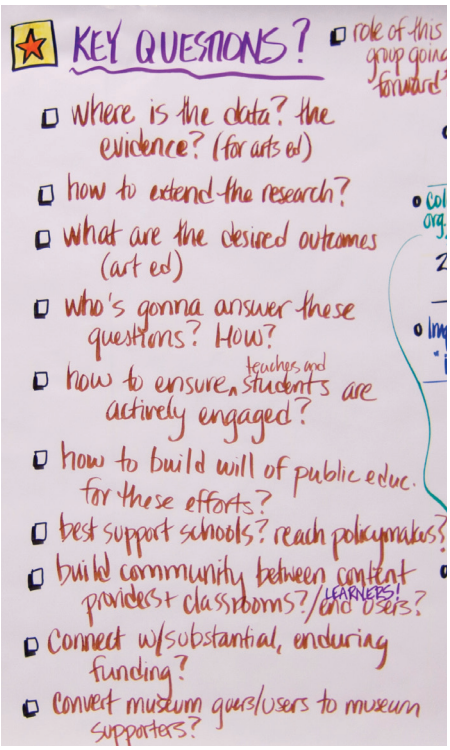
CHALLENGES AND OPPORTUNITIES OF DISTANCE LEARNING

There are unique challenges in transforming the museum experience to a distance format, and the optimal process might not be immediately apparent. Namely: "How can you take onsite programs and adapt those to be delivered successfully over this technology? You can't hand that artifact to the student, but what can you do instead?" Technological limitations, such as low resolution, camera angles, microphone positioning or quality, or the light level in the classroom, can impair the educator's ability to perceive subtle student characteristics and emotions. For example, if the classroom lights have been dimmed to better see the video feed, it makes it more difficult for the educator in the museum to notice details about students' level of engagement or frustration. The technology and distance can create a context in which "you're missing all of the social cues that people are most comfortable with," thus increasing the challenges of active learner engagement.

Skilled distance educators can overcome the challenges of the format to provide valuable and authentic learning. In particular, some of the emotional power of a work of art may come from standing in front of it, in its actual size, accurate colors, and detailed texture. An art museum educator working in distance formats attempts to convey the same emotional power through a screen.

> **"There are some people who think that it lessens the experience or it weakens the museum experience for a child if they're not standing in front of an original work of art. I would agree that it is not exactly the same experience, but I think that some of the things ...can (nevertheless) be gained in viewing art (remotely)... the personal experience, the emotional experience that a person has in being able to see something that was of museum quality created by someone else. I think that while it may be not quite as perfect as actually being in the museum itself, I think you can still have those personal connections at a distance."**

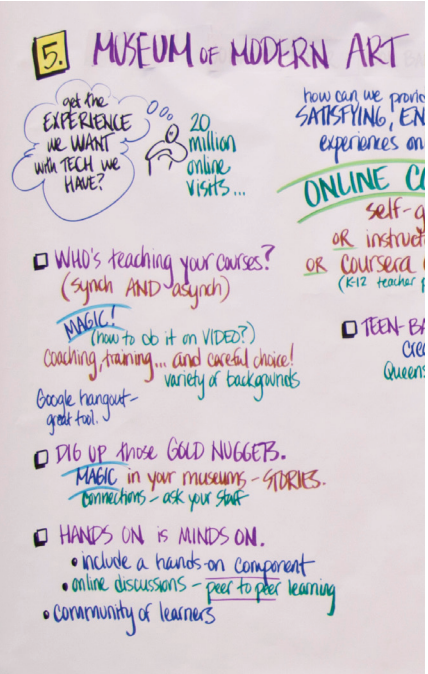
Though accomplishing this might not be easy, it may be seen as essential for art museum distance learning.



A key component of inquiry-based learning is the presenter asking open-ended questions that allow the students to creatively express themselves rather than repeat facts they have learned. One presenter reflected on lessons learned from distance learning and said "I have learned how hard it is to ask a good question. It really isn't easy, and it's really important to ask good questions with video conferencing, because you have such a short time together." Students also need to feel comfortable responding to a presenter they have never met. To build this learning context, it is beneficial to start with a question that "is welcoming and encouraging, and giving (the students) the time that they need to be able to think through that question and come up with a response that's relevant to the artwork and what they're doing in the class."

However, there are also unique benefits of emerging distance technologies and web-based platforms. In particular, web technologies that promote participant interaction and learning from each other may be quite different than some traditional teaching approaches. At first, some individuals or institutions might be uncomfortable with relinquishing control and expertise, but the effect on learning can be powerful. As this participant described: "Technology is also helping us see things in new ways. We might not ever have imagined, before, having conversations with visitors or allowing the non-expert voice to become part of the conversation. And I think that's something that museums are opening up to more and more now."

Diverse content provided by a wide range of museums can allow for partnerships between museums to the benefit of all learners. Because distance learning increases appreciation for works in other museums, it "allow[s] us to have a shared understanding of these objects that exist and these collections and the importance of them in our culture." This participant then added, "I'd like to see that done right." Doing distance education 'right' is more possible than ever with the technologies described.



DISTANCE LEARNING FOR EDUCATOR PROFESSIONAL DEVELOPMENT

The educational benefits of web-based and mobile delivery methods are not limited to students: teachers also benefit from the collaborative environments created by the use of these tools with school communities.

DISTANCE LEARNING FOR TEACHERS OF ART

One of the roles of a museum educator is the education of teachers and student teachers (Talboys, 2011). In order to accomplish this goal, museum educators must first demonstrate to teachers that museum resources can enhance their teaching and instruction. Some museum programs specifically target distance-learning programming at teachers.

The Met offers a blended (online and in-person) professional development workshop for elementary school teachers (Crow & Din, 2010). In developing their teacher professional workshops, Crow and Din (2010) reported challenges in shifting their thinking from traditional lesson plans to instructional design that incorporates interactive multimedia experiences. They also note the challenges of being initially overwhelmed by the potential possibilities, tools, and formats. The first workshop, which went live in 2007, took over six months to develop and involved a high indirect cost to the museum in terms of staff time. Expenses other than staff time were relatively low, and the initial time investment paid off by producing materials that could easily be adapted for future applications. Since the launch of their workshops, the museum has continued to offer multi-week blended programs and single-session webinars, with over 500 US and international teachers participating by 2010 (Crow & Din, 2010) and many more in recent years through ongoing programming.

In an interview for the current report, a representative of the Met described how the museum's philosophy about distance education for teachers is consistent with its in-museum program for teachers, as well as the museum's overall mission:

> **"Our guiding principles for developing this webinar for teachers is that we really, honestly draw upon the same goals that we're looking at for our on-site programs for teachers. We want teachers to leave the workshop or the webinar empowered with the skills and the confidence that they need to integrate works of art in their teaching; whether they are visual arts teachers, or social studies teachers, or general education teachers. We're often trying to incorporate strategies for teachers to use these works of art, and at the same time, providing them with resources that the museum has produced, so that it makes it as easy as possible for them to do that, and to put that into practice."**

This comment emphasizes the development of a teacher's self-efficacy along with their knowledge and skills. Ideally, teachers can be transformed in the way they approach teaching art or teaching with art such that their increased self-efficacy along with their knowledge and skills makes them more effective in the classroom.

Interestingly, this same sentiment was repeated by a representative from Art21: "I think instead of teaching teachers how to teach kids, what we want to do is inspire teachers to find how they could translate their own interests and curiosities and passions in curricular topics that they need to address." Art21 has a long history of using various media to improve the teaching of art. Part of their program includes an extensive, long-term professional development collaborative. In speaking in our interview about the development of distance-learning technologies to

improve how art is used for instruction, an Art21 representative emphasized that the teachers learn most when they can learn from each other, not just the content provider. Thus, these connections between teachers across the country or world are another benefit of distance learning for teachers of art. For this to be possible, however, the organization needed to select a platform that facilitated these goals. By emphasizing the collaborative and active role of teachers in the learning process, their professional development program has become reshaped into something more dynamic and valuable than just teaching educators about teaching art:

> **"Now I really talk about building a community in practice ... kind of passionate and curious about the same kinds of ideas that we are, so that we kind of collectively construct this community....I really don't talk about it as a program like a professional development experience. I talk about it as 'Come join our community.' We definitely facilitate that community and kind of nurture it in different ways."**

As museums envision their goals and methods for distance education, these issues are essential to keep in mind when programs are targeted at educators.

PROFESSIONAL DEVELOPMENT FOR ART SPECIALISTS: COMPARATIVE ANALYSES BY LOCAL TYPE

The selected analyses reported in this section were completed using data from the Survey of Elementary School Visual Arts Specialists, completed by the National Center for Educational Statistics (NCES) during the 2009-2010 school year. The survey was completed by visual arts specialists in elementary schools nationwide. The following results describe participation in selected professional development topics in the previous year. The reported topics of professional development show a limited emphasis on developing skills and understanding in the practice of art, increasing understanding of art topics, and research about art and student learning. Across the locale types, roughly half of respondents said they had not received any training in these categories.

Specialists in rural and town schools were less likely to participate in professional development emphasizing developing their knowledge about visual art. This may be an area of educator professional development for which art museums could provide particularly valuable programs. Similarly, specialists in rural schools were the least likely to participate in professional development emphasizing integrating technology into visual arts instruction. With the ever-increasing richness of digital resources for use in visual arts instruction, this gap may also be important to reduce through distance education in order to ensure rural students have equal access to arts resources online.

As the table to the right indicates, there is a clear shift in professional development towards the topic of standards, integration with other subjects, and student assessment. Across the locale types, incorporating state and district standards into art instruction was the most common professional development topic, with at least 75 percent of respondents participating in such development. Respondents in city schools were most likely to be exposed to this professional development topic. This result is consistent with the growing emphasis on the integration of content standards with art instruction. Respondents in rural and town schools were significantly less likely to participate in professional development emphasizing connecting visual arts with other subjects. These findings suggest the need for further research to more closely examine how visual art and other content areas are being integrated in the different locale types and whether such integration promotes or compromises access to art experiences for students.

Specialists were also asked to rate the benefit of these professional development sessions on their instruction. Despite the differences in the pervasiveness of professional development topics between the locales, there were few significant differences between locales in participants' ratings of the benefits of the professional development they received. Among the professional development topics addressed in the survey, the topics of incorporating state and district standards and student assessment had the lowest ratings across each locale type. (These differences in ratings between topics were not evaluated for statistical significance.) Thus, the most common topic of professional development—training about standards—was seen as substantially less valuable to art specialists' practice than professional development about art topics, for which professional development was more

Hours of Professional Development Emphasizing Selected Topics in the Previous Year

	City	Suburban	Town	Rural
	Applied Study in Art Studio			
None	46%	45%	62%	50%
1-8 Hours	35%	38%	21%	32%
More than 8 Hours	19%	17%	17%	18%
	Developing Knowledge about Visual Art			
None	36%	41%	**58%**	**51%**
1-8 Hours	45%	40%	**27%**	**35%**
More than 8 Hours	19%	19%	**15%**	**15%**
	Connecting visual arts with other subject			
None	23%	27%	**40%**	**40%**
1-8 Hours	53%	53%	**42%**	**44%**
More than 8 Hours	23%	20%	**18%**	**17%**
	Research on arts and student learning			
None	51%	51%	65%	59%
1-8 Hours	35%	39%	26%	29%
More than 8 Hours	14%	11%	9%	12%
	Integrating educational technologies into			
None	35%	32%	47%	**47%**
1-8 Hours	50%	53%	41%	**41%**
More than 8 Hours	14%	15%	12%	**12%**
	Incorporating state and district standards			
None	17%	22%	20%	23%
1-8 Hours	53%	52%	51%	51%
More than 8 Hours	30%	26%	29%	26%
	Student Assessment			
None	28%	28%	36%	32%
1-8 Hours	51%	53%	49%	47%
More than 8 Hours	21%	19%	16%	22%

Significant pairwise differences are bolded.

limited. These results suggest that there may be a demand for additional training opportunities expanding art specialists' knowledge and skill in teaching art, rather than academic content integration and standards. When comparing specialists' ratings on the topic of incorporating state and district standards across locale types, specialists in city schools indicated doing so would be most helpful for their classroom teaching. This rating was significantly higher than for towns or rural areas. It would appear that there is additional pressure in city schools to support other content areas through their visual art instruction.

Additional analyses were completed using data from the Secondary School Arts Education Survey: Fall 2009, conducted by NCES. The surveys were completed by high school principals nationwide regarding arts programming in the school. In terms of professional development offered by the school or district for visual arts teachers, it appears that teachers in rural and town schools have less opportunity. Schools in towns and rural areas offered workshops with professional artists or arts groups, and in-school seminars specifically for visual arts teachers significantly less than schools in cities or suburbs. Though the differences were not significant for off-site seminars for visual arts teachers, the pattern remained the same, with towns and rural areas offering such programs less than cities or suburbs. Again, the results support the thesis that rural areas are in particular need of additional programming for art instruction, in this case, professional development for visual arts teachers.

To what extent do you believe professional development in [topic] improved your classroom teaching?
(1= Not at all to 4 = Great extent)

	City		Suburban		Town		Rural			
	Mean	Sig.	Mean	Sig.	Mean	Sig.	Mean	Sig.	F	p-value
Applied Study in Art Studio	3.13		3.12		3.12		3.27		0.85	0.465
Developing Knowledge about Visual Art	3.19		3.13		3.25		3.09		0.69	0.557
Connecting visual arts with other subject ares	3.15		2.99		2.92		2.94		2.53	0.057
Research on arts and student learning	3.04		2.95		3.03		3.05		0.41	0.749
Integrating educational technologies into instruction	3.09		2.94		2.78		2.94		2.03	0.108
Incorporating state and district standards	2.88	+Town +Rural	2.74		2.55		2.61		4.73	0.003
Student Assessment	2.76		2.56		2.45		2.74		3.35	0.019

Professional development opportunities offered by the school or district

	City		Suburban		Town		Rural			
Variable	% Yes	Sig Diff	% Yes	Sig Diff	% Yes	Sig Diff	% Yes	Sig Diff	F	p-value
In the past 12 months, did your school/district offer workshops with professional artists or arts groups for visual arts teachers?	50%	> Town > Rural	42%	> Town > Rural	25%	< City < Suburban	26%	< City < Suburban	17.31	<.001
In the past 12 months, did your school/district offer in-school seminars or conferences for visual arts teachers?	30%	> Town > Rural	35%	> Town > Rural	17%	< City < Suburban	14%	< City < Suburban	17.12	<.001
In the past 12 months, did your school/district offer off-site seminars or conferences for visual arts teachers?	58%		59%		50%		52%		1.92	0.124

TEACHING ART IN SCHOOLS: CHALLENGES FACED IN RURAL AND URBAN SCHOOLS

ATTRACTING AND PAYING SPECIALIZED TEACHERS IN RURAL SCHOOLS

Art education in schools is typically provided by, or at least coordinated and supported by, trained and qualified art specialists. These art specialists not only have extensive art and art history knowledge, they specifically have background in the unique pedagogies required to appropriately teach art. In particular, art specialists in schools can be seen as blending some of the characteristics of traditional content area instructors with the specialized knowledge of art that many in the art museum world have as their background. Therefore, the availability of dedicated art specialists in schools can be a tremendous benefit for student learning in art.

However, schools vary in their ability to sufficiently provide qualified art specialists to the extent that these benefits can be realized. Rural schools face particular challenges in attracting teachers and in providing funding to support dedicated art specialists. It may be particularly challenging for a small rural school to recruit, hire, and pay a dedicated art specialist, so it is likely that teachers of art in rural schools teach other subjects as well, teach only part time, or travel between several school communities.

A 2003 report by the American Association of School Administrators and Appalachia Educational Laboratory surveyed administrators of rural school districts to document special challenges they face (Schwartzbeck, Prince, Redfield, Morris, & Hammer, 2003). A primary struggle in providing specialized instruction in rural schools is attracting teachers. This survey showed that, in particular, administrators of smaller districts found attracting qualified teachers difficult, with 41 percent of administrators in districts with less than 250 students saying it was “very difficult” or “extremely difficult” to attract teachers. Leading reasons superintendents cited for challenges in attracting teachers were lower salaries, geographic and social isolation, and lack of adequate housing. Over half the superintendents in very small districts cited the need to teach multiple subjects as a reason teachers did not want to start working in that particular district. With a current emphasis on core tested subjects, it is not clear how much emphasis administrators of small schools could place on attracting talented art specialists, even if funds were available.

Many believe that certain provisions of the reauthorization of the Elementary and Secondary Education Act, more commonly known as No Child Left Behind (NCLB), have increased rather than ameliorated this inequity. Under the original language of the law, every teacher would have been required to meet the definition of a ‘highly qualified teacher’ by having full certification, a bachelor’s degree in the subject he or she is teaching, and demonstrated competence in knowledge of the subject and/or of teaching, typically through an exam such as those in the Praxis series. However, it is common in rural schools for teachers to teach more than one subject. In 2004, the Department of Education provided alternate methods for being considered a ‘highly qualified teacher’ for rural teachers who teach multiple subjects.

The Department of Education wrote that it modified the requirements in recognition of the special challenges faced by rural schools. In discussions with teachers, administrators, and parents from rural schools, the Department officials “frequently [had] heard that the highly qualified teacher provisions of the No Child Left Behind law don’t adequately accommodate the special challenges

faced by teachers in small, rural districts." Therefore, the modifications of the 'highly qualified teacher' requirement allows rural multi-subject teachers to demonstrate qualifications in their primary area of teaching or training, then follow a simplified route to meeting requirements for other subjects. In addition, middle school teachers with training focusing on kindergarten to eighth grade—another key feature in rural education—could be considered qualified if the state deemed their training appropriate for the content they teach. On the other hand, these modifications can create a disparity in access to qualified art specialists if teachers in other locales are held to higher standards than those in rural schools.

The 2003 rural superintendent survey also investigated how the original NCLB requirement would have been likely to affect the availability of teachers in their schools (Schwartzbeck et al., 2003). Based on these results, it appears that this change in the law truly was needed. This work showed that there was an association between school size and the number of subjects taught by one teacher, with teachers in smaller schools teaching progressively more subjects as the size decreased. A majority of districts with fewer than 250 students rely on multi-subject teaching, according to this survey. One respondent described the trade-off between requirements for teacher qualifications and the availability of teachers, given rural districts' limited per-student funding: "They are wonderful teachers, who know their subjects extremely well, but just cannot be expected to jump through hoops for everything they teach, and still be expected to remain a rural teacher."

ART IN SCHOOLS: COMPARATIVE ANALYSES BY LOCALE TYPE

In order to provide empirical comparisons related to art education according to locale type, federally collected data were analyzed. These empirical comparisons provide information that can be used to inform important decisions about access to art in different types of areas. Details of the statistical approaches utilized as well as general statistical terminology are provided in the sections titled Research Note 1 and Research Note 2. Referencing these sections is not necessary for a complete understanding of the results given the thorough discussion provided in the narrative. Significant differences in locale types are indicated with 'greater than' and 'less than' signs in the column for each locale. Whenever those comparisons are present in the table, the difference between the two locales was found to be statistically significant. Detailed results are provided for readers more familiar with statistical methods.

Elementary Education

The following analyses were completed using data from the Survey of Elementary School Visual Arts Specialists, completed by the National Center for Educational Statistics (NCES) during the 2009-2010 school year. The survey was completed by visual arts specialists in elementary schools nationwide. It is important to note that this survey does not address art instruction by professionals other than those designated as visual arts specialists. To the extent that non-specialists provide visual arts instruction in elementary schools, and to the extent that the prevalence of this practice differs across locale types, the following results may not fully reflect the visual arts instructional experiences of elementary school students.

Across all four locale types, approximately 90 percent of the responding visual arts specialists had a major or minor in visual arts or visual arts education. There were not large differences in these percentages. Not surprisingly, specialists in rural schools reported viewing original art at museums or galleries significantly less than those in city schools. This is relevant as museums consider how to best provide teachers with the experiences that would help them better include art works in their instruction.

Does the respondent have a major or minor in visual arts or visual arts education?

	City	Suburban	Town	Rural
Yes	87%	92%	86%	91%
No	13%	8%	14%	9%

Outside of your school duties, to what extent do you participate in viewing and responding to original works of art at museums or galleries? (1 = Not at all to 4 = Great extent)

City		Suburban		Town		Rural		F	p-value
Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
2.99	> Rural	2.92		2.77		2.72	< City	4.40	0.004

In the last 12 months, how frequently have you taught visual arts through virtual field trips using technology?

	City	Suburban	Town	Rural
Never	65%	61%	58%	61%
A few times a year	24%	28%	32%	31%
Once a month	3%	6%	3%	5%
2 to 3 times a month	3%	3%	3%	1%
At least once a week	5%	2%	4%	3%

How adequate is the support for teaching visual arts at this school in the area of having technologies - electronic equipment used in the study and creation of art? (1 = Not at all adequate to 4 = Completely adequate)

City		Suburban		Town		Rural		F	p-value
Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
2.52		2.62	> Rural	2.43		2.34	< Suburban	3.16	0.024

How much emphasis do you give to the student learning goal of using technology to gain knowledge and skills in visual arts? (1 = No emphasis to 4 = Major emphasis)

City		Suburban		Town		Rural		F	p-value
Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
2.52		2.66		2.39		2.56		2.41	0.066

Support for teaching and student motivation (1= Strongly disagree to 4 = Strongly agree)

	Urban		Suburban		Town		Rural		F	p-value
	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
Parents support me in my efforts to educate their children.	3.02	-Rural -Suburban	3.22	+Urban	3.16		3.33	+Urban	6.23	<0.001
The administration supports me in my work.	3.29		3.36		3.39		3.41		0.85	0.465
Community organizations/ groups support my efforts to educate students.	2.82	-Rural	2.96		3.00		3.07	+Urban	3.28	0.02
Students are motivated to do well in visual arts class.	3.34		3.48		3.50		3.50		2.46	0.061

In all locale types, approximately 60 percent of specialists reported that they had not taught visual arts through virtual field trips in the past year. This value was highest for specialists in city schools, but due to the structure of responses, a significance test was not performed for these comparisons. There is clearly room to expand the use of virtual field trips widely, with a majority of elementary visual arts specialists not accessing this potential resource in the surveyed year.

Specialists in rural schools reported significantly less adequate technological support for teaching visual arts than in suburban schools, but not significantly different from city schools. There were no significant differences across the locale types in the degree of emphasis specialists reported giving to addressing the learning goal of students using technology to gain knowledge and skills in visual arts.

There were intriguing differences across locales in perceived support for arts instruction. Specialists in rural areas indicated that they had significantly more support from both parents and community organizations in their efforts, compared to those in city schools. Parental support was also rated significantly higher in suburban schools than in city schools. Although other analyses in the current report, as well as arts education literature, suggest that there are fewer opportunities for support from arts organizations in the community, visual arts specialists receive strong support from the community in rural schools. This indicates that despite some disadvantages in rural arts education, there is a potential to increasingly utilize partnerships with community organizations in rural areas. There were no significant differences between locale types in specialists' perceptions of students' motivation to do well, with all locale types having high ratings for student motivation in their visual arts classes.

Secondary Education

The following analyses were completed using data from the Secondary School Arts Education Survey: Fall 2009, conducted by NCES. The surveys were completed by high school principals nationwide regarding arts programming in the school. The results of the data analyses reveal some important distinctions between the locale types in arts education in high school and visual arts education in particular. In other ways, though, there is a surprising degree of continuity across the four locale types. It appears that overall suburban schools have the most desirable profile of results. Though city schools and rural schools have their unique areas with less favorable arts access, these types of communities also demonstrate specific advantages, as will be discussed.

First, the results showed that nearly all high schools surveyed include visual arts instruction during their regular school hours, though the amount of instructional time per student is not evaluated in this item. Comparing the percentages of schools teaching visual arts, rural schools do show the lowest percentage (84%), but this was significantly different only from suburban schools. City schools were not significantly different from any of the locale types in the percentage of schools teaching visual art.

Across the locale types, a similar percentage of schools—approximately 70 to 80 percent—reported having written curriculum guides for visual arts. Again, only the difference between suburban schools and rural schools reached significance at the .05 level.

Collaborations and partnerships are also a potentially valuable resource for schools' arts programs, and in this area rural

Was Visual Art taught at your school during the regular school day?

	City	Suburban	Town	Rural
Yes	89%	94%	92%	84%
No	11%	6%	8%	16%

Significant difference, suburban > rural.

Does your school have a written curriculum guide for Visual Arts that your teachers are expected to follow?

	City	Suburban	Town	Rural
Yes	77%	83%	73%	69%
No	15%	11%	18%	17%
N/A	8%	6%	9%	14%

Significant difference, suburban > rural.

Did your school have partnerships/collaborations with the following to help meet its arts education goals?

	City		Suburban		Town		Rural		F	p-value
	% Yes	Sig Dif	% Yes	Sig Dif	% Yes	Sig Dif	% Yes	Sig Dif		
Individual Artists or craftspeople	0.40		0.41		0.40		0.32		2.61	0.051
Cultural or Community Organizations	0.51	> Rural	0.45		0.49		0.38	< City	4.14	0.006
Museums/galleries	0.42	> Rural	0.33	> Rural	0.33		0.23	< City < Suburban	8.43	<.001

Arts curriculum, programming, and activities

	City		Suburban		Town		Rural		F	p-value
	% Yes	Sig Diff	% Yes	Sig Diff	% Yes	Sig	% Yes	Sig Diff		
Is integration of arts with other academic subjects currently underway in your school?	65%		59%		57%		59%		1.21	0.360
Is integration of technology into arts instruction/learning currently underway in your school?	86%	> Rural	87%	> Rural	80%		77%	< City < Suburban	4.26	0.005
Are new/expanded partnerships with community organizations/entities for support in arts instruction currently underway in your school?	48%	> Rural	44%	> Rural	37%		30%	< City < Suburban	7.84	<.001
Does your school currenly provide/sponsor arts-related field trips outside regular school hours?	81%		83%	> Rural	75%		74%	< Suburban	3.11	0.026
Did your school sponsor field trips to art galleries or museums?	68%		68%		56%		59%		3.83	0.010 *Note*

Note: Though the overall F test was signficant, the pairwise comparison used a correction for familywise error rate, allowing for a signficant overall F test without significant pairwise comparisons.

schools in particular seem disadvantaged compared to urban schools. When asked about schools partnering with groups to help meet the school's arts education goals, respondents in rural schools reported such partnerships with cultural or community organizations, as well as with museums or galleries, significantly less often than respondents in city schools. Rural schools were also significantly less likely than suburban schools to have partnerships with museums. While the pattern is consistent for collaborations with individual artists or craftspeople, it was not found to be statistically significant.

Respondents were also asked about features of their arts education programs. In each locale, approximately 60 percent of respondents indicated that their schools integrated art with other academic subjects, with this value being (non-significantly) higher in city schools than rural schools. Rural schools were significantly less likely to integrate technology into arts instruction than city schools or suburban schools. Similarly, rural schools were significantly less likely than city or suburban schools to have been developing or expanding partnerships with community organizations to support arts instruction.

Significantly fewer rural schools than suburban schools offered arts-related field trips outside of regular school hours. This question includes art-related activities other

How adequate is the following at your school? (Recoded as 1 = Very inadequate to 4 = Very adequate)

	Urban		Suburban		Town		Rural		F	p-value
	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
Funding for arts instruction	1.59	< All	1.94	> City	1.91	> City	1.98	> City	9.16	<.001
Facilities for arts instruction	2.02	< Town < Rural	2.19		2.32	> City	2.21	> City	4.13	0.006
Materials, equipment, and tools for arts instruction	1.95	< All	2.16	> City	2.21	> City	2.16	> City	4.63	0.003
Instructional time	2.20	< Suburban	2.45	> City	2.40		2.32		4.21	0.006
Number of arts specialists	2.03		2.23		2.09		2.07		2.21	0.086
Arts professional development	1.68		1.81		1.68		1.65		1.61	0.186
Student interest or demand for arts instruction	2.39		2.55	> Town > Rural	2.26	< Suburban	2.28	< Suburban	10.23	<.001
Parent or community support for arts instruction	2.01	< Suburban	2.29	> City	2.15		2.14		4.84	0.002

than visual art (such as plays or concerts). Though the pairwise differences in the percent of schools who had sponsored field trips to art galleries or museums was not significant, rural schools and schools in town were less likely to have sponsored such trips than city schools or suburban schools, with the difference between rural and suburban schools being statistically significant.

The following set of analyses examines funding and resources for arts instruction, as well as student and community beliefs about arts instruction. City schools had significantly lower ratings for funding for arts instruction and arts instructional materials than did schools in any other locale type. City schools also had significantly lower ratings for arts instruction facilities than rural schools or schools in towns.

There were no significant differences in the ratings of the availability of arts specialists or arts professional development in the different locale types. (These two questions are not limited to visual arts and may be influenced by the presence of content areas such as music.) Ratings of student interest or demand for arts instruction was significantly higher in suburban schools than rural schools or schools in towns. Parent or community support for arts instruction was rated as significantly lower in city schools than in suburban schools, but rural schools were not significantly different for this item.

In general, the reports of these analyses indicate that city schools have significantly less material resources for arts instruction than the other locales. Rural schools seem to have relatively more material resources available for arts instruction, but responses to other questions indicate that students and visual arts instructors in rural schools may not have full access to other important features of high-quality visual arts education programs.

Rural schools lag the other types in building partnerships to support arts instruction. In particular, this difference was substantial for collaborations with art museums, suggesting that distance education from art museums may bridge an empirically demonstrated gap in this kind of access to partnerships for arts education. Also especially relevant to the topic of the report, rural schools may particularly benefit from programs directly aimed to increase the integration of technology into arts instruction since this was another significant difference in the findings.

There is also a need to improve access to professional development for visual arts specialists in rural schools and schools in towns. Visual arts specialists working in rural schools or in towns were less likely than those in city or suburban schools to have an opportunity to participate in school or district sponsored workshops with professional artists or in-school professional development in visual arts instruction.

TECHNOLOGY ACCESS AND USE IN RURAL AND URBAN SCHOOLS

For many years, questions of equity in Internet access had focused on whether schools were wired with the Internet.

INTERNET AND BROADBAND ACCESS IN SCHOOLS

Now that nearly all schools have Internet access of some kind, equal access relates more to the speed of the Internet connection and the prevalence of hardware for students to use. Though schools may technically have Internet access, limited download speeds or obsolete equipment can impair learning opportunities for students. Therefore, one must be cautious in interpreting figures about access to technology because potential differences in quality between schools may not always be clear. In particular, there are documented differences in access to high speed Internet, a.k.a. broadband, for rural communities, and "broadband Internet access has become the crux of today's policy debate on equal access among urban and rural communities" (Stenberg, 2009, p. i). Further, outdated definitions of what constitutes broadband may not reflect the demands of today's multimedia environments.

Broadband Internet access for rural areas tends to be related to a combination of factors such as poverty in the state, population density, and even the ruggedness of terrain. As documented by Stenberg et al. (2009), North Dakota, South Dakota, Appalachia, and parts of Montana, Minnesota, Missouri, and Oregon have particularly poor quality Internet speeds. When policymakers prioritize broadband access though, even highly rural areas can increase the availability of this resource. For example, it may be surprising that some quintessentially "rural" states like Nebraska, Kansas, and Vermont have relatively high broadband access "suggesting that policy, economic, and social factors can overcome common barriers to broadband expansion" (Stenberg et al., 2009, p. iii).

Rural schools vary in access to high-speed Internet access, a prerequisite for multimedia distance learning for art. For instance, Nebraska's statewide distance-education network has one of the nation's highest percentages of fiber-connected districts and high bandwidth rates to rural areas (40Mbps – 100Mbps) (Distance Education Workshop, 2008). Alabama's ACCESS program is an example of a state with an extensive statewide distance-learning network to equalize education access across the state (ACCESS, 2013). The ACCESS distance-learning plan has four key components to provide: 1) web-based Interactive Videoconferencing (IVC) courses; 2) technical infrastructure to deliver and connect IVC labs statewide; 3) support centers to train, evaluate, and support e-teachers; and 4) statewide support and coordination for distance learning (ACCESS, 2013). Some of the courses made available statewide through ACCESS are the state's required arts survey courses in dance, music, visual arts, and theater as well as foreign languages and advanced subjects (Hartigan, 2011).

Access to broadband is expected to change during the next few years because of funds made available by the 2009 American Recovery and Reinvestment Act (The Recovery Act, 2009). Based on this mandate, the Federal Communications Commission (FCC) delivered a National Broadband Plan to connect the nation with fast, affordable Internet (National Summit, 2010). Additionally, President Obama's ConnectED initiative is designed to bring high-speed Internet connections to K-12 schools across the nation in an effort to connect 100 percent of American students to broadband (National Telecommunications & Information Administration, 2013a).

Urban schools face similar barriers as

rural communities in their ability to access both the physical and virtual museum offerings. The technological divide within urban school districts such as Chicago can be quite vast between schools (Pandolfo, 2012). Income barriers for both schools and individual students are pervasive and detrimental to the ability to connect to museums whether children are living in the city or in rural areas.

HOME INTERNET ACCESS

There is even more variability in Internet access and connectivity speed at the home level for school-aged students. A smaller percentage of nonmetropolitan (one type of rural classification) households have access to broadband, high-speed Internet that facilitates the use of data-intensive programs or activities, compared to metropolitan households (Stenberg et al., 2009). Of those households with Internet, there is a gap between metropolitan and nonmetropolitan communities in the percentage of users with broadband access. The National Telecommunications & Information Administration's (NITA) analysis showed, based on current data from 2013, that while 71 percent of people living in census tracks identified as rural had access to at least basic broadband service (defined as 3 Mps download speed), such access was nearly universal in urban census tracts (98%) (NITA, 2013c).

Some of the largest differences between access in rural and urban areas are in the highest download speeds available (U.S. Department of Commerce, 2013). Measures of download speed provide more detail than questions of whether a community has broadband access and thus can better illuminate differences that exist in high-speed Internet access. Analysis by the NITA (NITA, 2013c) revealed startling gaps in access to higher-speed Internet (10 Mbps or more). Among individuals living in rural census tracts, just 15 percent had access to these types of connections, compared with 70 percent of individuals living in urban census tracks. In particular, when examining areas with very low population density, access to high download speeds was remarkably lower than other types of locales. NITA's national broadband map of the rural vs. urban divide shows that ten states have a greater than 10 percent difference in speed availability between the two locales (NITA, 2013b). Some of the largest gaps between rural and urban are found in Arizona, Wyoming, New Mexico, and West Virginia.

When it comes to home Internet access (including non-broadband access), prevalence seems largely tied to income levels, with very little gap between urban and rural households with the same income level (Stenberg et al., 2009). However, broadband access is limited for even higher income rural households. Thus, there is an additional relationship between broadband access, distance from a metropolitan area, and income level. Even high-income nonmetropolitan households report less than 85 percent access to broadband (Stenberg et al., 2009).

Although poverty is a limiting factor for high-speed Internet access in both urban metropolitan and rural nonmetropolitan areas, the majority of the poorest counties in the US are from rural areas (Malhoit, 2005). Statistics reported by the Economic Research Service (ERS) section of the US Department of Agriculture (USDA) indicate that the 2010 poverty rates of people living in nonmetropolitan (rural) areas was higher than those from metropolitan (urban) areas, 16.5 and 14.6 percent respectively (USDA, 2013). In fact, the majority (340 of 386 counties) of the nonmetropolitan counties were classified as persistent-poverty counties. Counties are classified as persistent-poverty if 20 percent or more of the population have lived in poverty over the last 30 years (USDA, 2013). The joint factors of poverty and distance may place particular strains on counties with high poverty rates and low population density. Such factors must be thoughtfully considered when developing distance-learning programs that target these communities.

Results from the Analyses

INTERNET & TECHNOLOGY ACCESS

In order to provide empirical comparisons about technology use and access and locale types, we completed a series of analyses using the data from the Educational Technology in U.S. Public Schools, fall 2008, survey conducted by NCES. (For more detail about the method of analysis, see the Research Note.) This survey was completed by school principals nationwide.

To what extent do you agree with the following statement as it relates to using educational technology in the instructional program at your school? (1 = Strongly disagree to 4 = Strongly agree)

	City		Suburban		Town		Rural		F	p-value
	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif	Mean	Sig Dif		
Technology is a priority of the district administration	2.99	< All	3.20	> City	3.24	> City	3.22	> City	6.86	0.001
Technology infrastructure is adequate (e.g. adequate internet speeds)	2.86	< All	3.15	> City	3.10	> City	3.11	> City	8.11	<.001
Technical support for educational technology is	2.66	< Suburban < Town	2.89	> City	3.02	> City > Rural	2.81	< Town	7.98	<.001
Funding for educational technology is adequate	2.03	< All	2.30	> City	2.31	> City	2.32	> City	7.55	<.001
Funding for educational technology is being spent in the most appropriate way	2.68	< All	2.95	> City < Town	3.26	> All	3.05	> City < Town	23.31	<.001
Use of educational technology is adversely affected by competing priorities in the classroom	*2.84*		*2.80*		*2.74*		*2.80*		0.56	0.641

Note that the last question is worded such that higher values are less favorable.

In many ways, principals in city schools seemed to be the most dissatisfied with technology in their schools. Principals in city schools had the lowest ratings for their districts' commitment to giving priority to technology, as well as the adequacy of technology infrastructure, compared to the other locale types. For nearly all items, ratings were significantly more favorable in rural schools than city schools. It is not clear from the results whether the differences in ratings are prompted by concrete differences in the availability of technology or influenced by different perceptions and expectations for what technological resources should be provided.

The vast majority of schools now have Internet access of some kind. Beyond the question of Internet availability in general, wireless network access is a valuable resource for distance-learning programs incorporating newer portable technologies such as tablet computers and smartphones. Principals were asked to select the most appropriate descriptor of the availability of Internet access in their schools. In each locale type, about 40 percent of schools had wireless network access available through the whole school, the most common response for each group. This result is encouraging for programs considering the use of innovative technologies in their distance-education programs. Among the locale types, city schools were most likely to report no wireless network assess of any kind, with a quarter of principals in city schools selecting this descriptor.

Which of the following best describes the wireless network access in your school?
Responses shown as percentages across rows by locale types.

	No wireless network access of any kind	Only from laptops to cart, cart connected to wall port	Wireless network access available in part of the school	Wireless network access available in the whole school
City	25%	8%	26%	40%
Suburban	22%	12%	29%	37%
Town	22%	4%	34%	40%
Rural	19%	10%	33%	39%

Note: Due to the format of the question, signficance tests were not completed for this analysis.

DIFFERENCES IN USE OF DISTANCE LEARNING

Statistics from the U.S. Department of Education (DOE) also demonstrate a divide between large and small districts in the percentage of public school districts enrolled in technology-based distance-education courses. Districts with enrollments less than 2,500 have less than 55 percent of students enrolled in distance education courses compared to 74 percent of students from districts with enrollments greater than 10,000 (DOE, 2013).

The types of distance-learning technologies most commonly used also varied by locale type. The Educational Technology in U.S. Public Schools survey also addresses the use of network connections for distance learning. The use of Internet for distance learning was significantly more prevalent in rural schools than urban schools, with about half of rural respondents saying it was provided in their schools, compared to about a third of city and suburban schools. Rural schools were significantly more likely to use Internet access for two-way interactive videoconferencing than urban schools, with about a third of rural schools reporting such use and only a quarter of city schools doing so. However, a majority of schools in all locale types reported using the Internet to provide high-quality digital content, without significant differences in the percent of schools using technology for this purpose.

A separate survey asked more detailed questions about distance learning. The following analyses were completed using data from the Distance Education Courses for Public Elementary and Secondary Students: 2009-10 survey conducted by NCES. The survey was sent to district superintendents nationally, and superintendents were asked to select the most appropriate individual(s) within the district to complete the questions.

Does your school use its district network or internet access to provide the following for teaching and learning?

	City		Suburban		Town		Rural			
	% Yes	Sig Diff	% Yes	Sig Diff	% Yes	Sig Diff	% Yes	Sig Diff	F	p-value
Two-way videoconferencing	24%	< Rural	28%	< Rural	29%		36%	> City > Suburban	5.49	0.001
Telecommunications (voice over IP)	18%	< Suburban	26%	> City	26%		21%		3.33	0.019
Distance Learning	35%	< Rural	37%	< Rural	44%		52%	> City > Suburban	11.49	<.001
High quality digital content (e.g. web-based learning, images, text, sound, video)	61%		69%		64%		63%		1.9	0.128

Across all locale types, asynchronous online distance learning was used much more than synchronous online instruction. There were no significant differences between locale types in the extent of use of synchronous distance learning, but asynchronous distance learning over the Internet was used far less often in rural schools than in the other locale types. In contrast, interactive two-way video was used in far greater percentages of rural schools than in the other locale types. Moreover, two-way interactive video was rated as being used substantially more often in rural areas than any other locale type, particularly compared

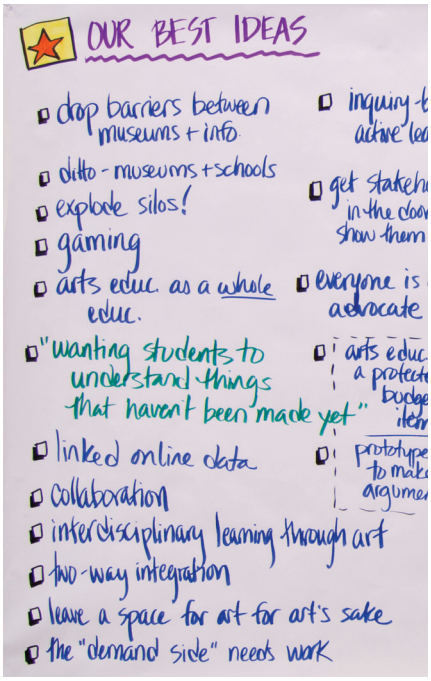
to cities. Within city schools, one-way prerecorded video was reported as being using slightly more often than two-way interactive video, whereas in rural schools, one-way prerecorded video was used much less often than two-way interactive video. (These differences were not tested for significance.)

To what extent were the following technologies used for the instructional delivery of distance education courses? (1 = Not at all to 4 = A large extent)

	City		Suburban		Town		Rural		F	p-value
	Mean	Sig Diff	Mean	Sig Diff	Mean	Sig Diff	Mean	Sig Diff		
Internet courses using synchronous instruction	1.96		1.80		1.88		1.95		1.12	0.339
Internet courses using asynchronous instruction	3.57	> Rural	3.47	> Rural	3.40	> Rural	2.95	< All	24.53	<.0001
Computer technologies other than internet	1.71		1.62		1.64		1.62		0.31	0.816
Two way interactive video	1.28	< Town < Rural	1.46	< Rural	1.70	> City < Rural	2.23	> All	43.33	<.0001
One way prerecorded video	1.54		1.53		1.40		1.42		1.81	0.144

There are also major differences in the purposes of distance-learning programs across locale types. The most striking pattern of differences is that rural schools had the highest importance rating for providing courses not otherwise available, while city schools had the highest importance rating for providing opportunities for students to make up for classes they failed or missed. Specifically, within rural schools, the importance rating was the highest for providing courses not otherwise available; in addition, between locale types for the importance of this purpose, rural schools had significantly higher ratings than other locale types.

Similarly, within city schools, the importance rating was the highest for opportunities to make up classes; in addition, between locale types for the importance of this use, city schools had significantly higher ratings than the other locale types. This is especially intriguing as art museums consider expanding distance-learning opportunities to rural schools due to limited access to art opportunities within the schools. These results are consistent with such a framework and rationale.



THE INTERSECTION OF EDUCATION POLICY AND ARTS EDUCATION

Background from the Literature

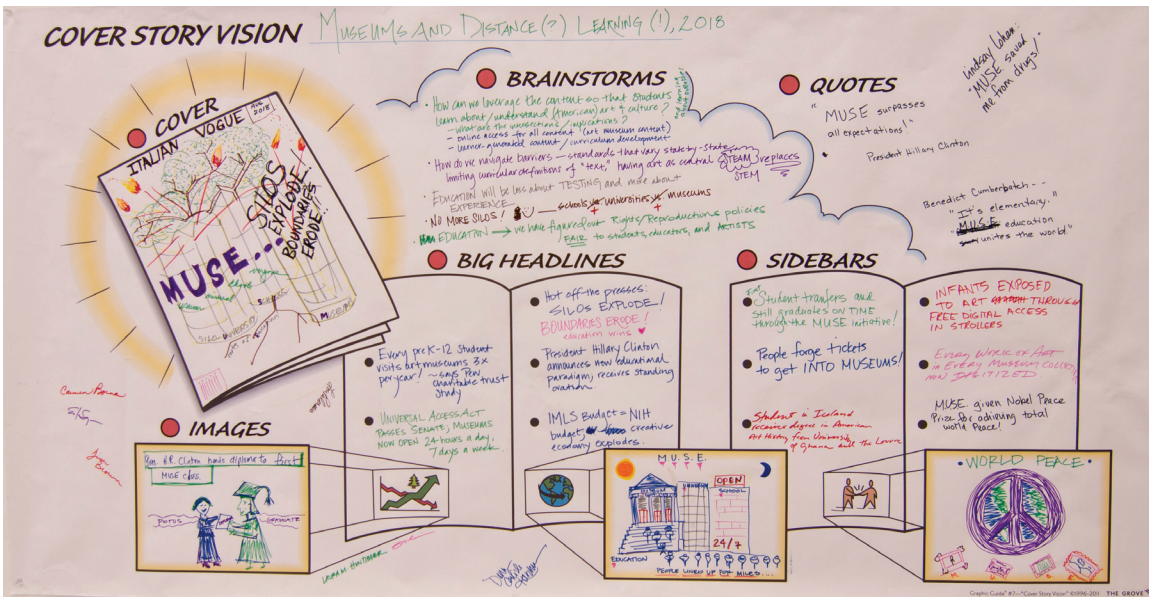
COMMON CORE STATE STANDARDS AND ART

As the Common Core State Standards (CCSS, 2010a & 2010b) are implemented across the country, arts education, like all education, is poised for a turning point. These common standards are a departure from a system of disparate content and expectations across states in favor of a consistently rigorous listing of knowledge and skills students need. For providers of distance education, common standards across states allows for greater integration into the existing curricula of the schools as those curricula become more similar. In addition, because these shared core standards were designed to promote higher-order thinking and problem solving, arts instruction may provide exposure to experiences that expand children's minds rather than simply encourage drilled and routine practice.

Following the lead of the Common Core State Standards in Language Arts and Mathematics, the National Coalition for Core Arts Standards has sought to provide a unified set of standards for art as well. "These new, voluntary National Core Arts Standards are framed by a definition of artistic literacy that includes philosophical foundations and lifelong goals, artistic processes and creative practices, anchor and performance standards that students should attain, and model cornerstone assessments by which they can be measured" (National Coalition for Core Arts Standards, 2013, p. 2). A major component of the art standards is the direct link to assessment of student knowledge and skills. Further, the contexts for learning progress continuously from early childhood education to grade 12. The authors of the art standards readily admit that some of the learning outcomes are unlikely to be widely met anytime soon, but instead provide aspirational goals for guiding change. The standards are "built on a balance between the existing structure of American schools and a reasonable aspiration to what the structure could be and should be" (p. 8). It is the hope of many that these standards will lead to better practices in arts education and in arts-integrated academic content instruction.

These draft art standards emphasize the artistic processes, such as creating, performing, responding, and connecting, for each arts discipline (National Coalition for Core Arts Standards, 2013). The English Language Arts Common Core standards are explicitly structured to support connections with other content areas such as history, science, and technology (CCSS, 2010a); thus, connections to artistic content areas are natural parallels. As in the Common Core, anchor standards in specific grades provide more specific information about expectations for student knowledge and skill. The deliberate parallels between these sets of standards allows for more direct connections between them to increase student learning by integrating artistic processes into content instruction as well as providing the opportunity to integrate Common Core learning goals into arts instruction.

To evaluate these links, the College Board compared the Common Core standards to the proposed arts standards (College Board, 2012). This evaluation noted a substantial number of explicit references to artistic disciplines in the Common Core standards, such as references to text illustrations and scripts of plays. The use of multimedia sources is encouraged throughout the standards. In particular, visual arts are strongly represented in the knowledge and skills students should are expected to master. Because the arts standards are still undergoing review, we will not repeat



specific findings from the report because the arts standards may have changed since the College Board report was drafted. However, the evaluation uncovered many direct links between the two sets of standards that will facilitate quality exchanges across the curricula.

ARTS INTEGRATION POTENTIAL AND RISK

As described, trends in education policy encourage the integration of art with other (typically, tested) academic content. Particularly as this practice expands, it is important to examine teachers' arts integration practices. Chapman (2005) compiled results from surveys of elementary classroom teachers about art instruction. Results presented in the current report include some analyses that are based on updated data from visual arts specialists. The Chapman paper, however, compares visual arts specialists with regular classroom teachers. One striking finding was that among visual arts specialists, 79 percent had received professional development regarding integrating art with other content areas, but only 46 percent of regular classroom teachers had received professional development addressing integration of art into their own teaching. Findings such as this indicate that the goal of arts integration into the curriculum may be put on the shoulders of art teachers more than classroom teachers. Chapman (2005) also discussed how the reported lack of time for collaborative planning on the part of arts specialists severely limits opportunities for ongoing interdisciplinary integration.

In Chapman's report (2005), though 88 percent of classroom teachers reported integrating art with other subjects, their reported activities do not seem to fulfill the ideals of high quality arts integration. However, Chapman appeared to believe that classroom teachers can learn to use art more effectively in their content area instruction. "If it is true that classroom teachers are well-poised to illuminate connections between the arts and other subjects, there can be no doubt that most classroom teachers lack the knowledge, skill, and compensatory support necessary to ensure that art learning is sound in content, standards-based, and systematically assessed" (p. 131).

Bresler (1998) described distinctions between the types of art produced or viewed in schools. Much of the art is what she called 'child art,' which is art produced by children but that typically is rushed and lacks the creative dynamic of the true artistic process. Lack of instructional time may influence classroom teachers to emphasize simple and brief projects despite their lack of fine art principles or opportunity for self-exploration. However, classroom teachers often lack the professional training to attempt more ambitious artistic exploration. A consequence of this type of practice is that although students are going through the motions of making a picture, etc., it lacks the meaning, creativity, and development of understanding that art is intended to illicit. According to Bresler (1998), when works of fine art were included in instruction by classroom teachers, the opportunity for students' creative growth is often similarly thwarted. "Remaining on a surface, perceptual level, the interactions with fine art rarely involved explorations of the artwork or the construction of personal meanings; ... [or] reflections on what made the artwork interesting or innovative" (p. 5). It is hoped that museum-provided distance education will promote the understandings of the deeper meanings of fine art while encouraging exploration on the part of the student.

There are many issues to be aware of when attempting collaboration between museums and schools to facilitate integration of art with academic content. Museums may prioritize connections with and understanding of their art, while some classroom teachers may expect the art to serve more as a glorified visual aid to content instruction. "School educators tended to view works of art as examples of an idea or theme, whereas art museum educators saw works of art at the core of

characterized by the principals as positive development for arts instruction in their schools" (p. 6). Moreover, in their study, this approach was more likely to be used in schools with higher concentrations of poverty. Worse, art teachers were sometimes forced to directly teach to state tests rather than their own designated area while the instructional time would still be counted as arts classes. Therefore, as Mishook and Kornhaber pointed out, though there would appear to be no on-paper reduction of arts course offerings, the true effect of the practice reduced the amount of art that was taught. "Although integrating the arts with other subjects can be a positive learning experience in both the arts and other areas of the curriculum, integration that places arts as secondary to 'academic' tested subjects does not serve the children's needs for a rigorous, well-balanced educational experience" (p. Mishook & Kornhaber, 2006).

Digital technologies are especially suited to expand exposure to high-quality arts integration, particularly as public support for teaching critical thinking increases, especially through the adoption of the CCSS. "Americans are optimistic about the power of the imagination and believe this is a critical skill needed to deal with the challenges of the present century" (Choi & Piro, 2009, p. 29). As Chio and Piro (2009) describe, students' digital interaction with works of art serves a dual purpose of engaging students' creativity and teaching them critical technology skills for the 21st century. "The arts, traditionally regarded as a subject with a high disposability quotient, may acquire new significance when paired with technology" (Choi & Piro, 2009, p. 32).

CRITICALLY EVALUATING THE IMPACT OF ART ON ACHIEVEMENT

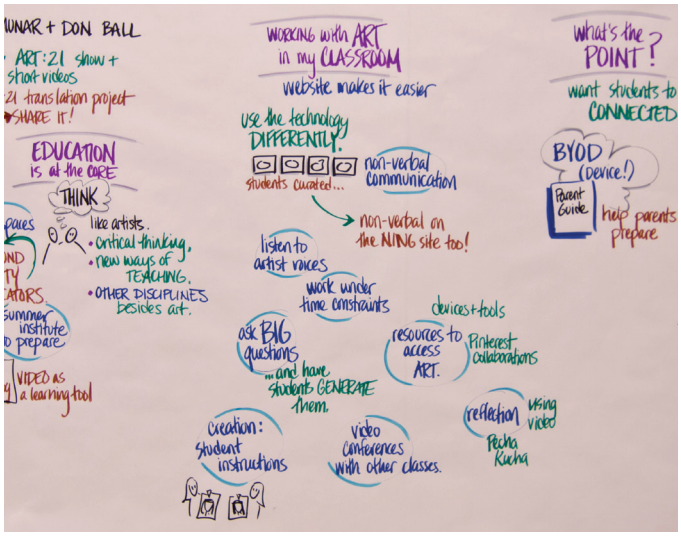
In preparing this report, we reviewed dozens of studies of advocacy papers examining or describing claims regarding the relationship between arts education and academic achievement. However, we found that conclusions about how study results can be interpreted and generalized often went beyond those justified by the design and analysis in stating the effects of art on student achievement. These concerns have been eloquently made by arts education figures such as Winner and Cooper (2000) and Eisner (1998). As Eisner described, it is dangerous when "arts educators who know what the arts have to offer [try] to give the consumers what they want, whether or not there is evidence to support it. Too often we promise more than we can deliver, a practice that by definition leads to disappointment" (p. 8).

Despite their admonitions against claiming causal evidence where no such evidence exists, it is common to find bold generalizations about the power of art to improve student outcomes based on research that does not support cause-and-effect interpretations (e.g. Arts Education Partnership, 2013). Many claims appear to be reiterated from a widely cited publication called Critical Links: Learning in the Arts and Student Academic and Social Development (Deasy, 2002). In that report, it is often difficult for a general reader to discern nuances between findings that show simple association and findings that more strongly suggest a causal relationship, and this ambiguity continues to be perpetuated throughout the literature. Consequently, it is very difficult for individual readers to know how to interpret the claims made from research findings about the effects of art on student achievement. We would recommend that for important purposes, users of research findings track down the original publication and carefully examine the methods and results.

LINKS TO THE STANDARDS: INSIGHTS FROM THE INTERVIEWS

Demand for links to curricular standards and recently, the Common Core standards, is apparent in museums' interactions with schools. The interview participants frequently discussed how important it was to link the museums' distance-education programming, as well as in-museum programming, to the jurisdiction's relevant curricular standards. For example, in collecting evaluations about distance programs that schools completed, one museum education leader found that "most of the feedback was about the links to standards."

Due to the heavy emphasis on critical thinking, inquiry, and evaluation in the Common Core State Standards, museum



educators may find that their current practices may easily link to the learning outcomes called for in the new standards or in many states' pre-existing standards. As one museum educator pointed out:

> **"Even if we think it's not a content standard, almost all of our standards have behaviors that we want to see, whether they're investigative behaviors, or critical thinking behaviors, or the 21st-century skills. We know through that kind of process if we're engaging**

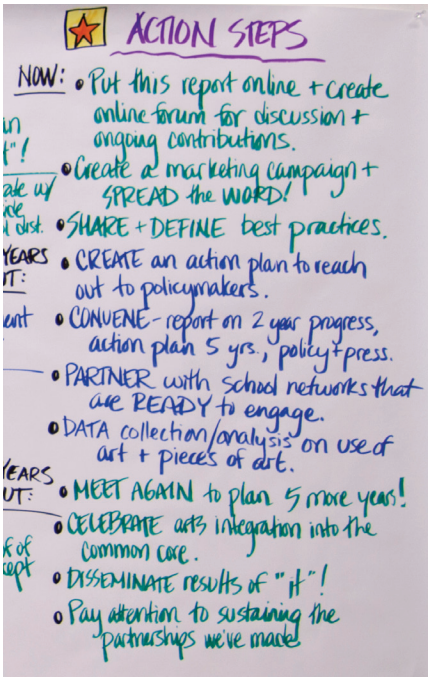
them in... inquiry, that they're doing some critical thinking and hopefully some creative thinking. They're making meaning of the images together, that we're not just telling them what they're looking at.

A museum educator described how this museum's distance learning program, which is aimed at teachers, has changed as a result of the Common Core State Standards.

It's a new way of thinking about our work, but over the past couple of years, we have been integrating Common Core State Standards in all of our work. Typically, because at the moment there are no Common Core Standards for art, we're often drawing on the anchor standards from the Common Core that come out of speaking and listening skills, or English language arts, and thinking about visual works of art as text, and making those alignments between the skills.

As the College Board evaluation demonstrated, potential links between the Common Core State Standards are prevalent.

A distance-learning expert described ways to effectively link art content to the standards: "I call it active curriculum engagement. You're taking the curriculum a



SHAPING A VISION FOR DISTANCE EDUCATION FOR ART

Art museums in America have always had a strong educational mission, and distance learning is an increasingly available method for realizing this goal by bringing art to more people.

Regardless of the physical location of students and school communities, an overarching goal of videoconferencing, web-based technologies, mobile museums, and other distance learning programs is to extend the reach of the museum to communities who are unable to visit the museum in person (O'Leary, 2011). Some traditional limitations of distance and technology are crumbling as access to high-speed internet expands and new technological innovations provide easy access to things previously thought impossible. An individual who has tracked developments in distance technology concluded that "technology has made possibilities limitless....The only thing that is the limiting factor now is time zone."

In the context of the digital age, it is important to remember that the tools and technology are not the goal of the museum initiatives (Crow & Din, 2010). Rather, they are the vehicle to encourage discussion and interaction with the works of art. Further, it is not enough to show the art to learners of even to just explain the art, relegating the learner to a passive role. The respondents in the interviews repeatedly described the desire to provide "authentic" and "engaging" learning experiences using distance technologies.

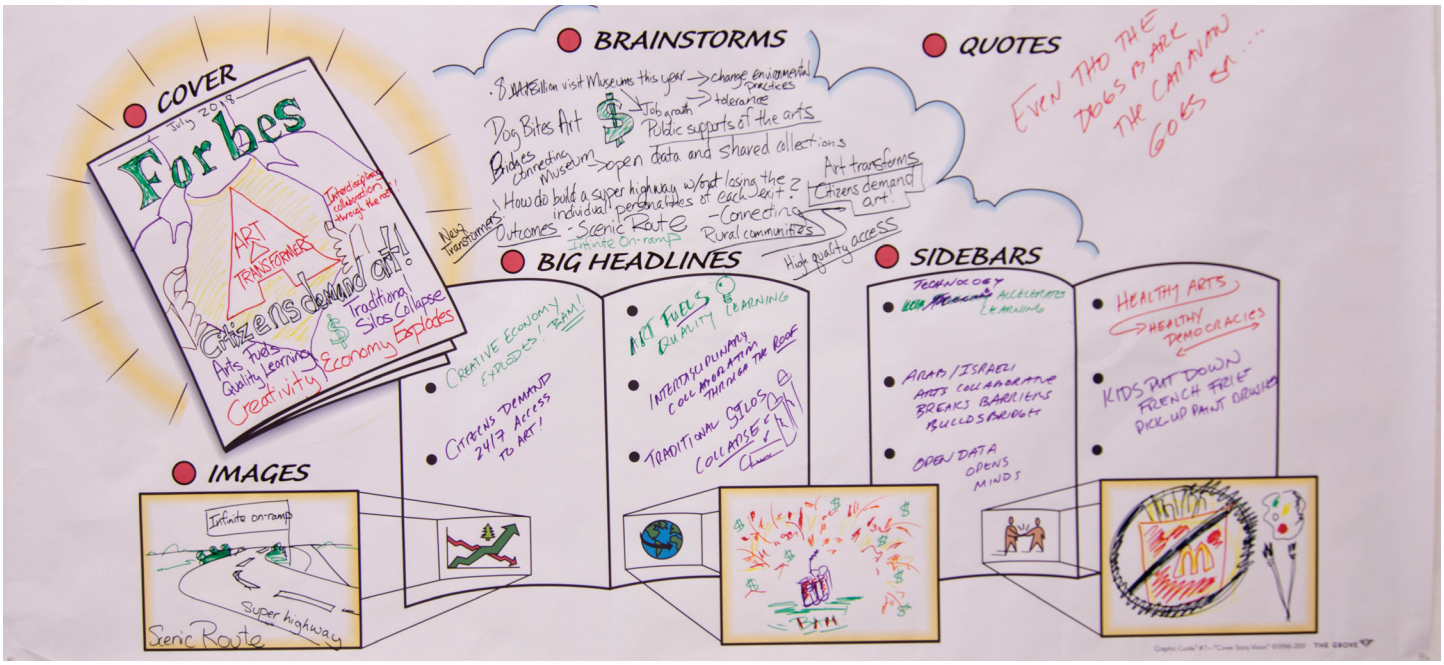
On the other hand, presenters must be cautious to not create frenetic graphic displays that draw attention away from the works of art. Rather than making elaborate presentations with technology, museums educators are encouraged to remember,

> **"I choose to work in a museum, and then our mission at this museum is to share American stories through art. Then the art should be what's it about, and even though I could make a very sexy presentation, the point of our time together isn't creating this flashy experience. It's engaging kids with the artwork that we have."**

The prevalence of these digital technologies brings with it an abundance of available information, which varies widely in quality and accuracy. It is in this context that museum distance learning programs may struggle to show the value of the programming if they seek to charge for access to it. Shifts in the pervasiveness of information in society have changed the value that consumers place on receiving content. "There is a sense in the world – [the millennial] generation, particularly - that information are to be free... And the challenge here is that most institutions don't have the money to sustain a distance learning program without charging some sort of fees." Securing ongoing funding may continue to be a major issue in the field, with free access obviously having the largest potential to increase access to art education.

Though distance has become less of a barrier to education, museums continue to hold up walls between effective collaboration. A starting point would be digital collaboration through more consistent documentation of their digital collection and physical collection, such as a more universal labeling scheme. "Museums don't historically have a tradition of having systems that talk to one another." As described, since each museum has its unique collections, different museums might be better seen as partners in a shared mission rather than competitors. In addition, art museums have a unique role, perhaps even responsibility, in the educational landscape.

> **"It's really our view that museums have a special place, in terms of being very object-focused and object-oriented, and our collections are really where we draw our uniqueness, and our strength.... Think about what is it that you are uniquely equipped to offer that other**



organizations, or even higher education, art education programs in universities that they may be able to offer very similar things online, but what is it that museums in particular, can really offer. ”

Working together with schools, policy makers, and communities, there is great potential for the effects of widespread distance learning provided by art museums.

For museum educators making decisions about their nascent distance education programs, the scope may seem daunting. However, in today's environment, there are far most opportunities than limitations. In talking to one such individual, the excitement was readily apparent: "The possibilities are so great. I have lots of big dreams." A representative from a museum in a similar position echoed the sentiment that even understanding the possibilities, let alone choosing the best course, takes time: "We're really in an exploratory stage of determining what's possible, what's practical, what's needed by audiences that will never come to the museum."

Art museums will continue to balance questions of audience, method, media, age level, duration, etc. Each museum is likely to reach different combinations of answers to these questions. Thus, each program will become unique, just as each museum itself is unique. Despite these differences, art museum's distance learning programs share the mission of engaging diverse learning in authentic art experiences – whether understanding, creating, or teaching about works of art – in an audience beyond those who step foot in the museum. The distance and in-museum education programming can work in tandem as museums strive to fulfill their educational missions in today's rapidly changing environment.

“ **We look towards the day where there's just going to be a continuous connection between online and onsite for people who are interested in engaging with art. It's really fulfilling the idea of a museum without walls. It's not going to replace the real museum visit but it's going to be complementary to it and part of the spectrum of ways that museums fulfill their educational mission that doesn't necessarily require people to be in the space.** ”

By working together to expand distance, perhaps museums can turn the whole country into an art museum without walls, thereby spreading the educational benefits that museum educators cherish.

RESEARCH NOTE 1

For readers who may not be familiar with interpreting results from such analyses, we will provide very brief statistical background. For the analysis used, the column labeled 'F' towards the right of the table is a measure of how strong a pattern of differences exists between the data for each locale. The far right column labeled 'p-value' indicates whether this pattern of differences was statistically significant, by comparing the result to a cut-off of .05. When the 'p-value' is below .05, then the results are considered statistically significant; if it is above .05, the results are not considered significant. However, for analyses like these that compare more than two groups, the researcher needs to perform follow-up tests to determine which groups are significantly different from each other. Therefore, we have also indicated which locale types were significantly different from each other with greater than and less than signs in the column for each locale. Whenever we include those comparisons in the table, it indicates that the differences between the two locales was found to be significant.

RESEARCH NOTE 2

For consistency within the current report, each analysis was completed as a general linear model. We have included summary data and key statistics in the form of tables. The authors intend to apply for an additional grant to complete additional analyses and prepare peer-reviewed journal articles fully describing the expanded results. These articles would also allow for more nuanced application of statistical methods on an item-by-item basis.

Follow-up comparisons between locales utilized the Tukey-Kramer method of family-wise error rate control. The use of family-wise error correction was appropriate since all four locale types are reported; however, it may be overly conservative in contexts where only two locale types are intended to be compared. For example, for research contexts in which the difference between city schools and urban schools is particularly of interest, then the results may demonstrate significant differences more often when such error rate control is not required.

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