MUSEUM EDUCATION ROUNDTABLE

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Developing a Model for Technology-Based Museum School Partnerships

Erika Sanger, Stan Silverman, and Anne Kraybill

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Be Informed. Be Connected. Join the Conversation.

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Developing a Model for Technology-Based Museum School Partnerships

by Erika Sanger, Stan Silverman, and Anne Kraybill

Collaboration and co-creation are essential for developing relevant and meaningful museum experiences whether onsite, offsite, or online. Digital tools offer practitioners new opportunities to innovatively partner and experiment with schools and communities across the globe. The following questions aim to foster dialogue and inspiration among colleagues, education departments, cross-functional teams, and teachers/community partners.

1. How does your team define collaboration? Give an example of a collaboration in which you have partnered or participated. Was it successful? If so, what factors contributed to this? If not, what were the challenges or setbacks?

2. What are some of the ways you and/or your colleagues work with teachers or your community partners? Do you seek their input? If so, in what ways?

3. How have you collaborated or co-created with teachers or community partners to develop experiences for their students/participants?

4. In what ways have you experimented with the format and delivery of programs or materials for teachers/students or community partners. If your experiments included technology tools, what were some of the success or challenges?

5. Everyone approaches the development of technological skills differently: How do you go about learning to use a new digital tool?

6. Assuming some in your group have tried some form of distance learning—from google chats, to online discussion boards, to more formal class experiences—what about your distance learning experience has worked for you? What did not? What would you like to see be done differently?

7. Have you served as a developer of distance learning? Again, why or why not? If so, how did the experience go for you?

8. The team in this article brought together educators from across the community to work on an online learning project. Who in your community might be best served through online tools? How might your team use digital tools to overcome distance hurdles?

9. More broadly, how might technology tools play a role in your overall delivery of educational programs and experiences? How might digital platforms serve your audience, and your pedagogical and program goals for engagement?

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10. The author's note that "As we entered the twenty-first century, technology has evolved rapidly. A constellation of interactive web-based technologies now exists that can help museum educators realize their most innovative interactive ideas." How can digital technology serve your innovative aspirations? How as a program/museum educator might you begin to explore possibilities? What might be your own action steps?

MER and EdCom will hold a Google hangout on Distance Learning on October 15, 2 p.m. EDT, featuring JME guest editor Anne Kraybill, Crystal Bridges Museum of American Art, and Naomi Coquillon, National Museum of American History. The event will be moderated by Susan B. Spero, John F. Kennedy University Museum Studies, and MER board member.

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Developing a Model for Technology-Based Museum School Partnerships

Erika Sanger, Stan Silverman and Anne Kraybill

Abstract In 2012, The New York Institute of Technology and the Albany Institute of History & Art collaborated to increase the capacity of museum educators and classroom teachers to develop successful partnerships and deliver new programs through the use of web-based technologies. The project aligned the content expertise of museum educators from throughout the United States with the needs of New York State K-12 teachers to develop, test, and implement content rich classroom lessons that integrated Common Core Standards in English Language Arts and Mathematics using three web-based distance learning tools: Safari Montage, BlackBoard Collaborate, and Moodle. This article addresses the successes as well as the challenges, from technical glitches to issues in pedagogical approach faced by participants, and suggests directions for the future of web-based museum program delivery.

The collaborative relationship between museums and teachers was criticized as being the "exception rather than the rule" by Elliot Eisner and Stephen Dobbs in their examination of the museum education profession in the mid-1980s.[1] Since then, museum educators have done a lot to strengthen the relationship with classroom teachers through teacher advisory panels, professional development programs, and collaboratively developing curriculum guides, but this trend is less common in museum-based distance learning programs. As we entered the twenty-first century, technology has evolved rapidly. A constellation of interactive web-based technologies now exists that can help museum educators realize their most innovative interactive ideas. But museum

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educators often still use these tools to simply deliver their programs to the classroom rather than leverage technology as a means to collaboratively develop content alongside classroom teachers. In an effort to bring together the expertise of museum educators and classroom teachers, the Technology Based Learning Systems department of the New York Institute of Technology (NYIT), in partnership with the Albany Institute of History & Art, received funding from the 21st Century Museum Professionals program of the Institute of Museum and Library Services to increase the capacity of museum educators and teachers to develop successful partnerships and deliver new programs through the use of web-based technologies, and share those lessons with the field as a model for future collaborations.[2]

The grant brought together 12 museum educators from throughout the country and 12 New York State classroom teachers who teach a variety of subjects together in a blended program to learn pedagogical and technical strategies to develop and implement museum-based online programs. The 12 museum educators spanned the nation from east to west coasts and from the mid-west to the south. Science and natural history museums, encyclopedic art museums, and museums whose collections focused on American art and history were included.[3] Teachers were selected from both public and private schools, with similar experience and technology criteria in mind; some had 1:1 iPad initiatives in their schools where every student was issued an iPad, many had interactive whiteboards in their classrooms, and some had worked in partnership with museums. The program made use of a blended format; museum educators and classroom teachers physically met for a week, and then continued their collaboration throughout the school year using online tools. The grant covered the cost of travel, equipment, training, evaluation, dissemination, and support for participants for two school years. This article describes the participants' training, and the collaborative projects that resulted. The strengths and weaknesses, and the voices of the participants shaped the discussion around how technology can be used to create true partnerships between museum educators and classroom teachers when curriculum and teaching are collaboratively developed and implemented.

Onsite Training

The 24 participants came together in August 2012 and trained in a four-day workshop at the NYIT Central Islip, NY campus. Each participant received a laptop, USB speakerphone and/or headphones with a microphone, USB flash

drive, webcam, a digital camera, and access to software. Participants received training in how to use the hardware and software, but the primary goal of the program was to develop dynamic partnerships between museum educators and classroom teachers to successfully co-create online learning experiences that engaged students and fulfilled curriculum goals. Therefore it was imperative that the bulk of the training focus on instructional design and best practice of other museum-based online learning programs. Experts in distance learning education from several museums, including the Metropolitan Museum of Art and the Folger Shakespeare Library, presented workshops about how to develop and deliver object-based content online.

The project was also purposefully launched just as the Common Core Learning Standards were being adopted by New York State. Classroom teachers had a significant learning curve in implementing these new standards, and museum educators had little exposure to this significant shift. New York State added to the Common Core by the adoption of images as "texts" for students to "read" with guided observation. It is part of a museum educator's practice to ask students to closely observe objects in collections, whether the objects are

Figure 1 Teachers and Museum Educators train onsite at the New York Institute of Technology. Image taken by Erika Sanger.

taxidermy or live animals in a science or natural history museum, material culture in a history museum, or paintings in an art museum. Museums educators know how to ask students to draw conclusions about what they see based on the evidence they gathered during their observations. This practice lies at the heart of the Common Core. To ensure that the content was aligned with curriculum standards, trainers from New York State Teacher Centers introduced participants to the Common Core and strategies to successfully transition. This comprehensive onsite training ensured that the museum educators and the classroom teachers were adept at using the hardware and software, included the common core curriculum standards, and that best practice would be at the forefront of the collaboration.

Teachers and Museum Educators paired off after the third day of the training, matched by project leaders who considered museum collection content, grade level curriculum requirements, level of technology expertise, and experience with museum school partnerships. To put all they had learned into practice, each pair created a mini-unit based on a site visit to the Fire Island National Seashore. This allowed the pairs to fully experience the new tools and skills they had acquired, and ensured that the project leaders could provide feedback if any questions arose.

Program evaluator Ellen Leerburger trained alongside program participants to deepen her insights into their process. The assessment included pre- and post-program surveys that helped measure how the project was meeting expectations and set benchmarks for technology skill development. She interviewed participants in December 2012 and June 2013. In June 2014, participants were asked for a self-reflective statement about the success of the project, the skills they acquired, how the project has impacted their practice and program delivery, and suggestions for the future. Their open ended responses bring to light considerations for museums moving forward.

Partnerships in Action

Museum/teacher partners worked together over the course of the first school year to develop and implement their lessons using the web-based technology. The NYIT staff provided on-going support. To keep all 24 participants connected, a Moodle online asynchronous community was established. Using Blackboard Collaborate, monthly webinars and individual team meetings were conducted. Trainings continued throughout project as upgrades, new tools, and additional functionality became available.

Figure 2 Teachers and Museum Educators put their new skills to practice by creating a unit based on the *Fire Island National Seashore*. Image taken by Erika Sanger.

While the NYIT provided ongoing support in employing the web-based tools, staff at the Albany Institute of History & Art provided support in how museum practice could be transformed online. Erika Sanger was challenged by colleagues to discover ways in which objects could be shared digitally and

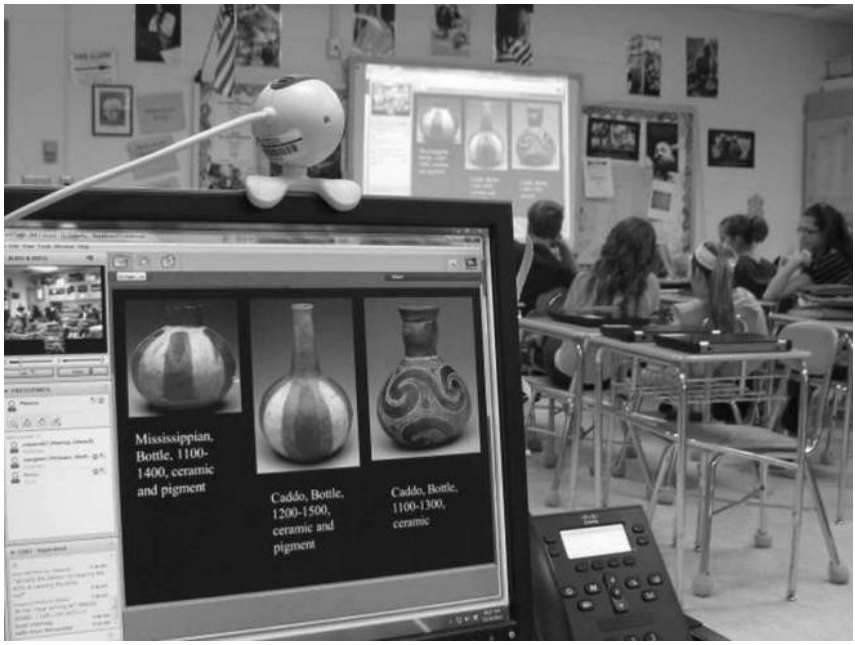

Figure 3 Museum Educators work with teachers using technology to connect to the classroom. Image taken by Erika Sanger.

how Common Core math might apply to objects of material culture. Some partner meetings with Erika also focused on technology-specific challenges such as balancing "talking heads" with discussion, the importance of a steady hand when filming, and judicious use of camera zoom. This structure of ongoing professional development and communication not only supported museum educator and classroom teacher level partnerships, but it created a network of practitioners that enabled participants to share ideas as well as experiments, failures, and successes.

One of the most successful partnerships was between a K-8 art/K-6 Spanish language teacher at Holy Angels Regional School in Patchogue, and the Mote Marine Laboratory (MOTE) and Aquarium in Sarasota, Florida. This was because of the sustained contact between the museum educator and teacher, the depth of the unit, and the project-based learning that engaged students immensely. Through a series of nine lessons, students learned to identify and describe a marine ecosystem, including the interactions of plants and animals, a shark habitat, and how marine ecosystems interrelate with man. In the first lesson, students learned they were going on a virtual field trip to

Florida. They were given mock plane tickets and travel folios in which to save their project work. Students used their computer lab time to identify the location of MOTE and the climate during the month of their visit to compare and contrast the climates of New York and Florida. In the second lesson students were divided into teams to research different marine ecosystems (e.g., Arctic, Lake, Gulf of Florida, and Atlantic Ocean), and to identify those that included sharks. In lessons three and four, the students created their own ecosystems using clay to make the animals and fish and presented their ecosystems to the class.

As the participatory component of the synchronous part of the lesson, each student came up with three questions that they wanted to ask the MOTE scientists and posted them on Moodle and in the chat feature of BlackBoard. When students returned to their class for the fifth lesson, the teacher had introduced human-made catastrophes or natural disasters into their ecosystems, such as oil spills, over fishing, or a hurricane. The students discussed how the catastrophe affected the ecosystem and proposed solutions to resolve the problem. In lesson six, students discussed what they would do on a visit to Florida and used the "How Dangerous are Sharks?" lesson created by MOTE to guide their learning. Lesson seven was delivered by MOTE in real time to the school. Students learned about the types of sharks, their behavior, anatomy, and physiology followed by the MOTE Shark Inquiry Experiment as lesson eight. In the culminating lesson, students created surreal ecosystems based on what happened in the ecosystem experiment that they created. For example, did the fish adapt to an oil spill by evolving gills that can filter oil? Did manatees develop armored bodies to protect themselves from boat propellers? The teacher reported that the students were far more engaged with this approach and their projects reflected a deeper understanding of the content.

Benefits and Challenges: Changes in Practice and Perspective

Throughout the project, museum educators and classroom teachers reflected upon the experience including unforeseen challenges and unexpected newfound perspectives. They learned the similarities and differences as well as the rewards and struggles in their respective professions. Museum educators gained an appreciation and awareness of the constraints and expectations of classroom teachers:

> Classroom teaching now seems very challenging to me! Things move very quickly in the classroom. In reality, they only have 45 minutes for a distance learning program including introducing the subject. It made me think more about pre-visit activities. Need to take that element of time and different learning styles into account. We face the same challenges with different audiences in the museum.
>
> I learned the nitty gritty of writing a lesson plan — I have never been so involved in the details. I lived the pros and cons of being a teacher. I had forgotten how much a teacher loves and values her students. How bound they are between testing, monitoring test, and their own teaching time is so limited by so many outside factors. This was a good reminder to me how hard it is.
>
> It was great to partner with a teacher. I learned so much about how a teacher goes about structuring a lesson plan. I had never created a rubric, for example. I learned so much about how a teacher develops, delivers and evaluates a lesson plan. To have to list all the common core standards was challenging — we're not a common core state. I HAD to learn our new standards as a result.[4]

Teachers also learned that they are similar to museum educators — that they just approach teaching from a different perspective. Some thought that museum educators had a more difficult time because they do not know their audiences as well as classroom teachers and others thought museum educators had an easier time because of their ability to dip in and out of classrooms. In the interviews, several teachers mentioned how the project reinforced the importance of informal education to supplement school-based learning and that they learned that they can turn to local museums as well as to all of the project participants in the future reflecting that:

> Museum educators are great teachers. When standing in front of our classroom virtually — she was very natural. They have so much more knowledge in some ways than a regular teacher and it's really important to tap that expertise.
>
> Being able to access museums through technology has had a huge impact on our kids who often don't leave their town. It opened up a new world for us and them.[5]

There were also many anticipated and unanticipated challenges. The museum educators and teachers proved to be adept at trouble shooting

technological glitches. When the audio failed during one program, the museum educator moved the student discussion to the chat feature. When the size of the picture files one museum educator wanted to share exceeded the storage capacity of Moodle, participants turned to an open access file sharing service to deliver the images. Two partners never saw the students they were working with — one because the lessons were all delivered asynchronously, the other because the school required broadcast permission slips which were not all received, so the entire class was blacked out of the visual feed. There were also issues with time zones as one educator's museum was located on the west coast and never able to synchronously connect with the classroom teacher's students. Those partners became highly skilled at developing lessons delivered exclusively on the asynchronous Moodle platform.

There was also an assumption that students who are "digital natives" would be naturally adept at learning online. This assumption did not hold and required that many projects change course to include an overview of the technologies and online tools that would be used for the program:

> I think that we thought students were a little more technologically versed than they actually were. We realized after our first draft that we had to be more explicit. They were more engaged than we had anticipated — in everything — it was really positive, but we had to add sections because they wanted to do more. Also learned that we had to give very specific and literal directions, second round there was a lot more interaction and discussion going on between students. [Museum educator]
>
> Time, scheduling, and the technology were challenges because she and I really tried to push the limits with how we got kids connected with the technology — we knew that larger groups lose some of the personal interaction, seeing the imagery, and so we threw caution to the wind and got 28 students with laptops and audio and ran into some technology nightmares but finally were really successful. From a teaching perspective … both the teachers and the students will have to have training. [Classroom teacher][6]

Museum educators and classroom teachers were also asked to reflect on the project as a whole. Several museum educators mentioned how prior to their participation they thought that distance learning was limited to what could be put up on a website or delivered through expensive videoconferencing equipment. After participating in the program, they understood that the field

offers multi-modal approaches and that synchronous and asynchronous programs can be combined with cross disciplinary classroom learning and extension activities to create new ways for students to learn. Others mentioned that they learned the importance of setting up a dialogue with teachers and how the project created a collaborative teaching and learning community in a way that they have not experienced before:

> I wanted to figure out how to take my years of experience with gallery teaching in new directions. This program, access to learning tools and training, and my partnership have been beneficial and essential to my growth as a museum educator in the twenty-first century. [Museum educator]
>
> I have learned how to use distance learning without the need for an entire technology system in the classroom. I also learned that museums have so many rich resources that I can tap into to supplement the content I teach in the classroom. Having the visuals for the students makes the lessons much more enriching than just text-based work. I've also learned how to properly use web-based platforms to connect virtually with different museums. [Teacher][7]

Conclusions

The partnerships between museum educators and classroom teachers fostered their appreciation for one another. They learned about the similarities and differences as well as the rewards and struggles in their respective professions. They came to realize that they are well suited to work together with cross-curricular explorations. Although museum educators have always been a resource for teachers, they often lacked an appreciation and awareness of the constraints and expectations classroom teachers must work within.

In addition, the partnerships promoted a sustained model for collaboratively developing curriculum and implementing teaching. While many museums replicate the experience of a one-time fieldtrip as a model for distance learning, this model ensured that both museum educator and classroom teacher brought together their respective expertise to co-create a program that specifically met the needs of the students. This can serve as a model for museums and classroom teachers as hardware becomes more readily available to classroom teachers.

There are limitations to this model; unlike programs that involved multiple classrooms or a whole school, this model required an investment of time in one teacher. Museum educators had to commit to working with a classroom teacher for at least one school year, which limited the scale at which most museums can effectively reach. But scale was not the metric of quality for this program. Cultivating deep and collaborative lessons and empowering classroom teachers with the skills and knowledge to leverage technology and museum collections was the main goal of the program. This was fulfilled beyond expectations and based on the success and lessons learned from this program, NYIT has recently increased its capacity to serve more museums, zoos, cultural institutions, and performance spaces.

Notes

1. Elliot Eisner, "Ten Lessons the Arts Teach," presented at Learning and the Arts: Crossing Boundaries Conference, January 2000.
2. Those model lessons are available on the NYIT's website, http://eez.nyittbls.org/resources#TOC-Lessons-and-Curriculum
3. Museums selected were: the Newark Museum, an encyclopedic museum in New Jersey; the Birmingham Museum of Art in Alabama; the Washington State History Museum and Washington State Historical Society; the Minneapolis Institute of Arts in Minnesota; Mote Marine Laboratory in Florida; Crystal Bridges Museum of American Art in Arkansas; and the Museum of Fine Arts in Boston, MA. In New York State the selected museums included the Baseball Hall of Fame in Cooperstown, the Fire Island Lighthouse, the New York Hall of Science, the Intrepid Air and Space Museum, and the Wild Center Natural History Museum of the Adirondacks.
4. Teacher and Museum Educator Comments, Collected during the 2012/2013 school year by Ellen Leerburger as part of the evaluation required by IMLS.
5. Ibid.
6. Ibid.
7. Ibid.

About the Authors

Erika Sanger is the Director of Education, the Albany Institute of History & Art. Her experience in the museum interpretation, school partnerships, and technology application in informal learning includes Curator of Education, Asheville Art Museum, and Director of Development, Penland School of Crafts, NC, as well creative and administrative roles in the education departments of The Jewish Museum, The New-York Historical Society, and The Brooklyn Museum of Art.

Stan Silverman is Director, Technology Based Learning Systems, of the New York Institute of Technology. Silverman has been a key figure in the evolution of instructional technology throughout New York State, and an advisor to numerous technology projects across the nation. This research and development program has

been a leading site for testing new educational technology products in their state of the art instruction and video conferencing facilities. He is also Chairperson of NYIT's Online Distance Learning Program.

Anne Kraybill is the Director of Education and Research in Learning at Crystal Bridges Museum of American Art. In her previous position as the Distance Learning Project Manager, she developed an online accredited course for high school students. She joined Crystal Bridges as the School and Community Programs Manager and developed and implemented all of the Museum's programming related to K-12 students, teachers, and pre-services teachers, as well as community groups. Anne has a B.F.A. in Photography from Maryland Institute College of Art, an M.A. in Museum Education from The University of the Arts, and an M.S. in Instructional Technology from East Carolina University.