Interpretation, Investigation, and Imagination
Museum Apps in the School Library

Annette Lamb and Larry Johnson

When the first museum apps were introduced a few years ago, they were mostly guides to a physical location, including directions, admission fees, and calendars of events.

Today museums are producing a wide range of content for all ages. From virtual science experiences to in-depth analysis of artwork, the world's museums are building apps that connect young people with exciting, interactive resources. While some of these apps continue to be used as part of a physical visit to the museum, others are intended to provide a virtual experience.

For more than two decades, the Exploratorium Science Museum in San Francisco has been a leader in online content for youth. Recently, they've produced two interactive book apps full of high-quality content for youth. Sound Uncovered and Color Uncovered both contain articles, videos, and interactives focusing on practical science knowledge and skills. While Exploratorium is at the forefront of this new wave of engaging apps, other museums are also exploring ways to bring their museum content to life for virtual visitors.


Sound Uncovered from Exploratorium

Let's explore some of the areas on which museums are focusing their efforts that are relevant to children and young adults. Then we'll examine realistic connections to school library activities.

FOCUS ON EXPERIENCE

Some apps are intended to personalize the museum experience by adding interpretive layers for visitors. The United States Holocaust Memorial Museum app involves users in exploring the stories of individuals who experienced the Holocaust. Readers begin with an overview of an individual. For a more in-depth exploration, readers can then view photographs, artifacts, and survivor videos. At the end of each story, users can send an e-mail to their teacher about what they read. Users collect ID cards as they continue to read about more individuals. Stories can be searched by the person's age, gender, or name. Another aspect of the app allows students to visit the individual exhibits. They begin with an overview, then can view individual objects in the display.
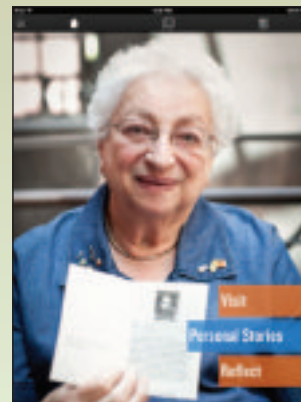
United States Holocaust Memorial Museum

The Field Museum in Chicago app allows users to create their own tours based on interests and themes. Using video and audio, scientists enhance the experience with information about the exhibits. Art museums including the Metropolitan Museum of Art, the Museum of Modern Art, the Guggenheim, and the Louvre provide virtual tours that include video and audio narration and interpretation.
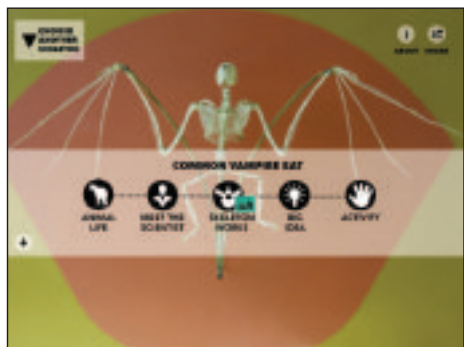
FOCUS ON AUGMENTED REALITY

Augmented reality involves using a device such as an iPad to add a layer of additional information over the current location. For instance, Smithsonian Mobile provides a guide to the Smithsonian museums and research facilities. Designed for people exploring downtown Washington DC, it uses the built-in GPS to show nearby locations and provide behind-the-scenes information.

The Cleveland Museum of Art app provides a "Near You Now" feature using way-finding technology. Users set their path and explore audio and video related to artwork along the route. Image recognition software in the app recognizes artwork and provides interpretive content.

The Skin & Bones app from the Smithsonian Institute allows visitors at the Natural History Museum in Washington DC to view the skeletons on display in the Bone Hall in interesting ways. The nine augmented reality experiences provide 3D tracking as users move through the exhibit. Or the app can be used from anywhere

to explore the inner lives of animals. The app includes games and interactives, along with thirty-two videos. Audio is also woven into the app.

Skin & Bones from the Smithsonian Institute

Many of the National Park Service locations have created apps that include maps, augmented reality walking tours, historical content, and other information. NPS National Mall, NPS Boston, and NPS Independence Hall are a few examples.

FOCUS ON EXHIBITIONS

Museums develop exhibits to showcase their collections of artifacts. In some cases, they create an app version that can be used by people unable to visit the exhibit. Exhibition apps are a great way to focus on a particular set of documents or time period in history. For instance, "To the Brink: JFK and the Cuban Missile Crisis" is a collaborative exhibit developed by the National Archives and the JFK Library and Museum. The app contains the same photographs, documents, and recordings as the physical exhibit.

To the Brink: JFK and the Cuban Missile Crisis app

App-based exhibitions may focus on people, places, objects, or themes. Illustrator Art Spiegelman is best known to high school students for his graphic novel *Maus*. However, an app exhibit at The Jewish Museum explores his diverse body of work over five decades. The app includes visuals showing his work and audio narration.

The Children's Museum of Indianapolis hosts an exhibit focusing on the "Power of Children," exploring the lives of Anne Frank, Ruby Bridges, and Ryan White. The Choose Your Path app was developed as an extension of this exhibit. This interactive experience teaches children how to handle bullies online, on the playground, and in the classroom.

Choose Your Path from the Children's Museum of Indianapolis

FOCUS ON INVESTIGATION

Museums are constantly involved in fascinating scientific investigations in order to put together their exhibits. The National Gallery of Victoria's Fashion Detective e-book app provides a unique look at the forensics and fiction behind four leading crime writers in Australia. The e-book app includes audio and interactive elements, as well as detailed text about fashion and textiles.

In some cases, app users are asked to participate in an investigation connected with the content of an exhibit. The Power

of Poison app from the American Museum of Natural History is a companion to a physical exhibit, but it can be used as a stand-alone interactive. Students are challenged to solve cases of accidental poisoning. Along the way, they learn about poisonous animals, common items that can be poisonous, and toxins found in different species.

The Museum of Science + Technology in Chicago has produced a number of apps that actively engage students in hands-on activities. The goREACT app involves students in a virtual chemistry activity. Users drag and drop elements to create chemical reactions. A guided mode provides suggestions for creating nearly three hundred chemical reactions. In the Virtual Heart app, users explore internal and external views of the human heart. Students can see and hear what happens when the number of beats-per-minute changes.

goREACT app from the Museum of Science + Technology in Chicago

FOCUS ON FUN

Finally, some museums produce apps that are simply fun for children. For instance, lots of children enjoy picking out clothing. What's Your Style? from the Children's Museum of Indianapolis involves youth in exploring the history of clothing, from poodle skirts to Peter Pan collars.

Many museums produce games, trivia, and scavenger hunts. The Specimania app contains collectable cards related to the artifacts, animals, fossils, plants, and other objects in The Field Museum in Chicago. The game includes trivia questions connected with each card.

Time Lens from Museum Victoria is a scavenger hunt around the Melbourne Mu-

seum that can be played at the museum in Australia or anywhere in the world. Users travel back in time to explore fossils, inventions, historical artifacts, and more.

Time Lens app from Museum Victoria

SCHOOL LIBRARY CONNECTIONS

While some museum apps don't have direct connections to standards and the curriculum, others can easily be woven into the standards for twenty-first-century learners and Common Core standards across the curriculum.

COLLECTIONS CONNECTIONS

Museum collections are a great starting point for learning experiences across the curriculum. They can also be used to kick off interesting library activities. The Design Museum Collection for iPad app explores interesting objects from London's Design Museum. A video commentary is provided for each item. Use the app as inspiration for creating your own library design museum. Ask students to choose an artifact they'd like to research and share. Use the app as inspiration for the format and contents. Use a tool such as PowerPoint or Prezi to create a slide for each object with audio narration.


Design Museum Collection for iPad app

Your Art from the National Gallery of Art features 130 works by familiar artists. Audio narration supplements the collection. For elementary children, 50 of the world's greatest paintings are featured. Post images of the artwork on a wall in the library and ask children to vote for their favorites after listening to information about a few featured artists.

The e-Museum from the National Institute for Cultural Heritage provides digital representations of around one thousand treasures from four museums in Japan, in categories including painting, calligraphy, sculpture, architecture, metalwork, ceramics, and more. Users can view the object and a description, select from different views, make bookmarks, and save comments that can be shared through Twitter. Ask students to select and share an artifact from a particular time period. Then discuss how the artifact reflects the time it was produced.

Besides art and history, science museum collections can jumpstart library activities. The Chandra X-ray app from the Smithsonian Institution contains a collection of astronomical images taken at the Chandra X-ray Observatory. The x-ray images would be an exciting way to review science concepts related to x-rays. Ask students to select one of the images that they think is an interesting example of the use of x-rays in our universe.

The Stories from Main Street project from the Smithsonian Institution is collecting and sharing stories from America's small towns and rural communities. Ask students to listen to the stories in different categories, such as sports, music, food, and work. Then set up a recording area in the

library and involve your entire school in adding stories to the collection. A similar Smithsonian app titled The Will to Adorn focuses on collecting stories about how people dress for school, work, play, and special occasions.
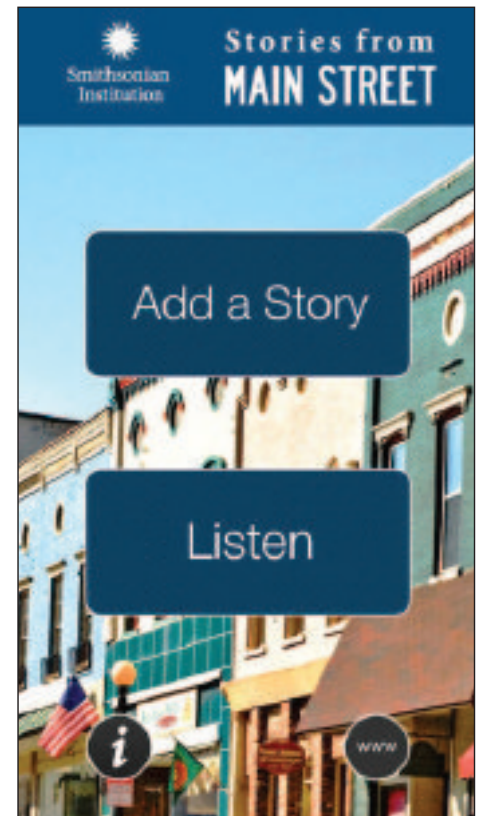
Stories from Main Street app from the Smithsonian Institution

CONTENT CONNECTIONS

Some museum apps provide quality content that students can use in research and informational reading experiences. From dingos to dinosaurs, museums around the world house exhibits focusing on all kinds of creatures. Museum Victoria has developed field guides to the fauna of Australia.
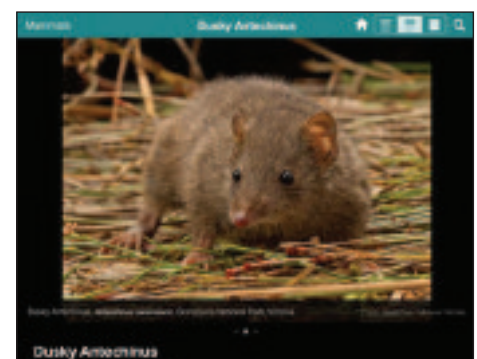
Field guide app from Museum Victoria

A guide is available for each of the states. The apps contain mammals, birds, fish, reptiles, frogs, and invertebrates. In addition to detailed information about the creature, the app includes maps, audio calls, and images. This app is particularly fun because so many of the animals are different from those found in North American.

While most museum apps are free, some of the more in-depth apps are for purchase. The Tate Guide to Modern Art Terms from the Tate Museum provides a concise art dictionary of three hundred art terms covering movements, styles, schools, techniques, and art theory. Works from the Tate Gallery are used to illustrate the key ideas.

Picasso: The Making of Cubism 1912–1914 is a new app for purchase from the Museum of Modern Art. Exploring Picasso's career, the app features over four hundred images and the latest research regarding his work. Video clips enhance the experience.

CURRICULUM CONNECTIONS

Some apps are rich in history, science, and social sciences topics that connect directly to the K–12 curriculum. The Pterosaurs: Flight in the Age of Dinosaurs app from the American Museum of Natural History provides an in-depth examination of pterosaurs, including interactive animations, images, and interviews with paleontologists. Designed with children in mind, the colorful, interactive app uses engaging, clickable images to keep young scientists interested. The factual information would work well for a science unit focusing on dinosaurs.

Whether studying ancient or recent history, many museums provide historical information. The Explore 9/11 app contains both map and story modes. The map reveals images, audio, and video. The story mode explores chapters detailing the history.

Pilot Pals from the Smithsonian National Air and Space Museum contains four learning games including gears, weather, rocket stacking, and airplane parts. Aimed at children four to six, the app provides audio support for nonreaders. For each in-

teractive, children choose an airplane then solve a problem.

Pilot Pals app from the Smithsonian National Air and Space Museum

Playscape from the Children's Museum of Indianapolis is another app designed for young children. Created for ages five and under, the app includes four activities. Children can create their own forest collage, touch fireflies, help fish swim downstream, and construct a contraption.

Arts & Science of Birds from The Field Museum explores the connection between artistic and scientific perspectives on birds. An interactive evolutionary tree provides access to multimedia stories about painter Peggy Macnamara's watercolor techniques, as well as insights into the museum's bird collection and birds of the world. This app would be a wonderful introduction to wildlife art for art teachers. The Art of Science app from the Australian Museum is another example of an app that bridges art and science.

Faking It from the Metropolitan Museum of Art is a short app that demonstrates how image-editing software can be used to manipulate photos. It's an excellent app to kickstart a discussion of the history
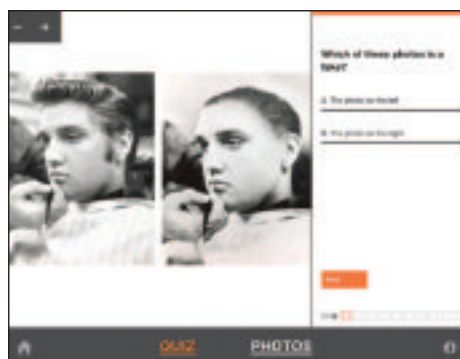
Faking It app from the Metropolitan Museum of Art

of photo manipulation and how it's used in propaganda and advertising. Users are asked to identify the photos that are fake and figure out how they were altered.

CREATION CONNECTIONS

Many general museum apps contain tools for zooming in on artwork, bookmarking favorites, taking notes, and sharing artifacts with others. For instance, the Rijksmuseum in Amsterdam's Museum app allows users to browse the museum's collection. A magnifying glass, set of binoculars, time machine, infrared scanner, sketch pad, and magic wand are all provided to enhance the experience.

The easy-to-use MoMA Art Lab app allows uses to create sound compositions, a shape poem, group drawings, and many other art activities. Students use MoMA artwork to inspire their own creative works. A tutorial helps users learn the app, and audio support is provided for nonreaders.


MoMA Art Lab app

The NGA Kids Art Zone app explores paintings from the National Gallery of Art. Students use portraits, landscapes, still-life, and abstract paintings to inspire their own digital artwork. Children begin with a virtual walk to explore artwork. Clicking on the artwork allows young artists to change or add elements in the artwork, such as the sky, background, and figures. In some cases, the artwork contains animation and sound. Each piece of artwork provides an exploration of different artist techniques.

Designed for children four through eight, the Tate Kids Draw & Play app from

the Tate Museum provides tools for children to create their own drawings and audio. The activities weave in ideas and starters created by renowned illustrators.
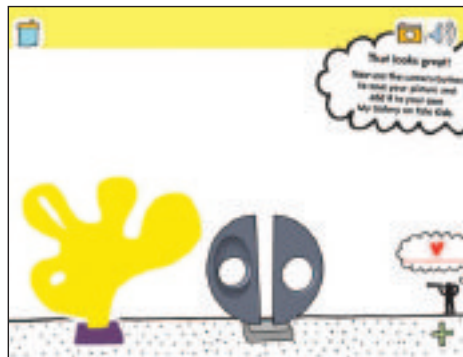
Tate Kids Draw & Play app

A fun photography app is available through the Tate Museum in connection with an exhibition on Eadweard Muybridge. Before motion pictures and video, this famous photographer introduced a series of freeze-frames of the moving world. The Muybridgizer app provides a gallery of images to explore and tools to create Victorian-era images in rich sepia tones.

Finally, the National Archives DocTeach app provides educators tools to find and use engaging activities that focus on primary source documents. Users can browse activities by topic or enter a classroom code. Educators wishing to create activities can use the website at http://docsteach.org/.

CONCLUSION

School field trips have become costly, and many parents no longer take family vacations to museums. As such, it's important for teacher librarians to think of creative ways to bring museum resources to young people. Museum directors who have embraced the creation of apps provide another avenue for students to enjoy and learn from their resources.

You may not be able travel around the world, but apps are just a click away.

Most museum apps are available for free in both Apple and Android formats. For many more resources, go to the *Teacher Librarian* Facebook page at https://www.facebook.com/teacherlibrn or follow us on Twitter at https://twitter.com/TeacherLibrn.

RESOURCES

9/11 Memorial Mobile Apps
http://www.911memorial.org/apps

American Museum of Natural History
http://www.amnh.org/apps

Art & Science of Birds
https://itunes.apple.com/us/app/art-science-of-birds/id766912914

Australian Museum
http://australianmuseum.net.au/Mobile-Apps

Children's Museum of Indianapolis
http://www.childrensmuseum.org/exhibits/playscape/app
http://www.childrensmuseum.org/exhibits/power-of-children/choose-your-path-app

Cleveland Museum of Art
https://itunes.apple.com/us/app/artlens/id580839935

Design Museum Collection for iPad
https://itunes.apple.com/us/app/design-museum-collection-for/id510964197

Exploratorium
http://www.exploratorium.edu/explore/apps

The Field Museum
https://itunes.apple.com/us/app/the-field-museum/id719184903

Guggenheim
http://www.guggenheim.org/new-york/visit/app

The Jewish Museum
https://itunes.apple.com/us/app/art-spiegelman-co-mix-at-jewish/id730898435

Metropolitan Museum of Art
http://www.metmuseum.org/metmedia/interactives

MoMA, The Museum of Modern Art
http://www.moma.org/explore/mobile/index

Musee Du Lourve
https://itunes.apple.com/us/app/musee-du-louvre/id337339103

Museum of Science + Industry
http://www.msichicago.org/online-science/games-and-apps/

Museum Victoria
http://museumvictoria.com.au/discovery-centre/museum-victoria-apps/

National Archives
http://www.archives.gov/social-media/mobile-apps.html

National Gallery of Art
http://www.nga.gov/content/ngaweb/visit/tours-and-guides/mobile-app.html.html

National Gallery of Victoria
http://www.vic.gov.au/social-media/mobile-apps/fashion-detective.html

National Institutes for Cultural Heritage
https://itunes.apple.com/us/app/e-museum/id413457009

National Park Service
https://itunes.apple.com/us/artist/national-park-service/id447866742

Rijksmuseum
https://itunes.apple.com/us/app/rijks-museum/id621307961

Smithsonian Institution
http://www.si.edu/Connect/Mobile#SocialMedia

Specimania
https://itunes.apple.com/us/app/specimania/id480234800

Tate Museum
http://www.tate.org.uk/context-comment/apps

United States Holocaust Memorial Museum
http://www.ushmm.org/information/apps/ushmm-mobile