

Digital Practices and Strategies of
Western United States Museums
during the COVID-19 Pandemic

Nathalia Whitecar

Museum Studies/Digital Curation Program

Johns Hopkins University

AS.460.674.81FA20

December 2020

Abstract

The COVID-19 pandemic forced museums globally to shut their doors, yet many continued to extend content and resources through virtual means. This paper highlights some of the efforts of museums in the Western United States as they have pivoted digitally through educational resources, digital programming, virtual exhibit tours, and enhanced collections access. Further discussion of five museums of different institutional types provide a deeper look into the policies, strategies, and pre-existing practices that aided in the quick turnaround from physical to digital. As many museums were pressed for time in content development and its release, this paper concludes with recommendations for policies and procedures that will help prepare museums for a successful virtual future.

Keywords

COVID-19; digital engagement; virtual museum; digital strategy

Table of Contents

<i>Introduction</i>	4
<i>Methodology</i>	5
<i>Results: A review of current literature and conference sessions</i>	6
<i>The Case of Science and Technology</i>	10
The Leonardo	10
The Tech Interactive	16
Denver Museum of Nature and Science.....	18
<i>The Case of Art and History</i>	20
Church History Museum.....	21
The Frye Art Museum.....	23
<i>Discussion and Recommendations</i>	26
<i>Conclusion</i>	28
<i>References</i>	29
<i>Figure References</i>	32
<i>Appendix A: Annotated Bibliography</i>	34

Table of Figures

Figure 1 The Leo At Home webpage.....	12
Figure 2 Hot spots from October 2020 Leonardo virtual tour views, first floor galleries....	13
Figure 3 Marketing graphic for The Leonardo's virtual tour.....	14
Figure 4 Dollhouse view of virtual tour and Matteredtags.	14
Figure 5 Miniature poster exhibits created by Virtual Mind Riot participants	15
Figure 6 The Tech Interactive at Home website	17
Figure 7 DMNS at Home webpage and “Teach” filter options.....	19
Figure 8 The Mormon Trails game	22
Figure 9 The Trails in the 1850s, from the Mormon Trails online exhibition	23
Figure 10 Frye From Home: Frye Families	25

Introduction

In early 2020, businesses and cultural institutions globally faced the unprecedented challenges associated with the COVID-19 pandemic. Businesses were forced to close their doors to the public, yet museums still had a mission to serve. As physical doors closed to roughly 90% of museums globally (more than 85,000 institutions), new virtual doors were opened as museums turned to digitization projects and other innovative ideas to continue sharing their collections and educating their audiences (UNESCO 2020). But just how have pre-existing digital practices and strategies been adapted to reflect the needs of the COVID-19 pandemic? Utilizing social media accounts and existing online collections were the obvious first step towards sparking at-home curiosity and exploration, but museums wanted to do more. It is said that 15% of museums increased their digital content beyond their collections by May through social media challenges and hashtag trends, inviting online viewers to participate and interact with collection items like never before (ICOM 2020). In addition to these initiatives, museums have also created online exhibitions and virtual tours, streamed content, and published educational resources.

By June 2020, at least 760 museums in the United States had plans of reopening, 75% of which had turned to digital means of operation during the pandemic, namely in terms of educational resources (AAM 2020). 64% of these museums anticipated cut backs on education and programming after reopening due to budgeting and staff reductions. In looking at digital practices of museums in the Western United States specifically, how have strategies been adapted for COVID closures and anticipated of reopening? And how do these compare across different institutional types?

Methodology

The following research on the pandemic's impact on museum digital practices and strategies was conducted using three methods: a review of relevant literature, open-ended interviews, and case studies. The literature reviews are focused on a gathering of information on general digital practices in museums, both pre-pandemic and during, and is not limited by geographic location. In addition to the current literature, the author attended four conferences virtually during the duration of the research process: Utah Museums Association (UMA), Blackbaud (BBCON), Association of Science and Technology Centers (ASTC), and the Visitor Experience Group (VEX) conference. The information gathered across conference sessions was reviewed and compared to current literature to establish what digital strategies museums have historically had with how they have been adapted during the pandemic.

During the conferences, many speakers discussed the roles their museums have played in the new influx of online presence during the COVID pandemic. The author contacted selected speakers after the conferences to identify individuals willing to participate in open-ended interviews. Using these interviews, five case studies have been compiled to represent a small sample of COVID based digital initiatives, in which digital plans, strategies, and projects are discussed in full. Discoveries made through interview sessions were then compared with findings from the literature reviews to answer the following questions:

1. How have pre-existing practices and strategies been digitally adapted to reflect the needs of the COVID-19 pandemic in museums of the Western United States?
2. How do these strategies play into anticipated reopenings? Will digital programming be a key activity in this new normal or do Western museums hope to reintroduce pre-pandemic programming?

3. How do these digital practices and strategies compare across different institutional types in the Western United States?

Results: A review of current literature and conference sessions

The digital museum transformation dates back far before the pandemic. Technology was first introduced into museums in the 1960s as a way to standardize and automate information regarding collections, i.e. collection management systems (Din and Hecht 2007). Ten years earlier, the Stedelijk Museum used a handheld device to delivery its Short-Wave Ambulatory Lectures through closed-circuit radio broadcasting, an early version of the museum audio guide (Tallon 2008). In the 1990s, CD-ROMs were utilized as a means of offering “virtual visits to existing art museums such as *Le Louvre* or the *Hermitage*” by highlighting collections or simulating a 3D space, such as the *Musée d’Orsay* (Huhtamo 2010, p 122). Apple Computer even released a disc for the SIGGRAPH ’92 conference using Quick Time VR that allowed for interactive exploration of a 3D museum gallery. Today, “mobility and connectivity are fundamental expectations” of visitors and in order for museums “to remain relevant to today’s public, museums must follow these trends and meet these evolving visitor expectations” (Tallon 2008, p xvii).

Prior to the pandemic, many museums utilized online platforms for content and engagement. For example, 69% of Italian museums were using social media (Agostino 2020), and almost half of museums globally participated in digital and social media activities prior to the pandemic, which then increased 15% during shutdown (ICOM 2020). According to Huhtamo (2010), “a 2002 Google search for ‘virtual museum’ brought up more than 141,000 hits; by January 2009, the figure had grown to over 1,190,000,” and today there are about 543,000,000 results (p 121). With no doubt, this large influx in Google search results could be a result of

museum closures. With the onset of the COVID-19, this digital transformation has been accelerated, and with it came a driver for digital innovations (Ciecko 2020). This digital pivot seen in museums is particularly important in regards to remaining relevant and keeping up with visitor expectation, as the preferences to stay home after Stay-at-Home orders lifted has grown over 50% and with it, a dramatic increase in daily media consumption (Dilenschneider 2020).

Before the virus reached the United States, museums around the world began closing their doors and due to these forced closures, many museums have had to rely on digital alone, not only as a tool for communication, but as a mean to deliver content. Dr. Zuanni (2020) of the University of Graz created a map of museums in Europe who have gone digital, organized into eight major categories: contemporary collection, social media, streaming, virtual tours, online exhibitions, games, educational content, and miscellaneous activates. Within weeks of the European shut down, American museums followed suit by closing their doors to the public and shifting their offerings to online platforms.

With new cases of COVID-19 being logged daily, new research and literature continues to come forward from within the museum and cultural sector. Many museums are beginning their phased reopening plans, yet many still rely on digital means to deliver content and serve their mission. Literature from American museums tends to lack analytical or quantitative data, yet displays reference to how museums continue to function while closed, using methods such as educational resources, online collections, mobile apps, and virtual programing. As we complete our ninth month facing the global pandemic, museums are beginning to track user engagement and virtual attendance, yet it is still too soon for many to determine the success of these new digital offerings.

An American Alliance of Museum (AAM) Survey conducted June 2020 states that a majority of museums have turned to online and virtual platforms for their educational resources (74% k-12 programming and 54% college programming). For example, the Frontier Homestead Museum and State Park in Utah created a digital classroom series intended for at home learning and teacher-oriented programs that included virtual activities that would typically have happened on site. Similarly, the 4th-6th grade Sky Watch program at Clark Planetarium moved to YouTube, in the 360° and VR compatible Dome from Home series. In addition to these educational video playlists, many museums have turned to virtual field trips utilizing digital tours, pre-recorded workshops, and lessons through Zoom and Google Classroom platforms. For example, the Los Alamos History Museum in New Mexico offers 30-minute Skype sessions with an educator on site to give tours to students (either at home or in the classroom) of the Homestead Romero Cabin, followed by a question and answer session.

The AAM survey (2020) continues to show that digital entertainment and activities were the second biggest focus of museums during closure. Many museums pivoted to online platforms for their workshops, festivals, and other programming. The Anchorage Museum moved its popular Movement Workshop virtually, which guided viewers of older generations through different stretches and movements. The Natural History Museum of Los Angeles hosted their week-long annual Dino Fest virtually, offering different activities (scavenger hunts, coloring pages, shadow puppets, and “dinosaur egg” dyeing) in addition to a series of recorded videos, all available on YouTube. Utilizing hashtag initiatives, the Artwork Archive of Denver brought followers together through the #ArtUnitesChallenge, in which daily prompts encouraged followers to share their creations and experiences. Some of the challenges included going on a virtual museum tour or recreating a piece of art in a different style. And for those who wanted a

little piece of the institution while listening to music, the Monterey Bay Aquarium released a series called Krill Waves Radio, which includes two hours of squid noises and lo-fi beats.

Additionally, AAM (2020) shows that 60% of surveyed museums have turned to video lectures. The Silver City Museum in New Mexico went digital during the pandemic through a lecture webinar series. Six total lectures are now available for the public on its website and on YouTube. The Jordan Schnitzer Museum of Art in Eugene, Oregon also shared lectures and curator talks on its YouTube channel.

Finally, the AAM survey (2020) states that 43% of museums surveyed have enhanced access to their digital collections. It is important to note that although “a museum website may be *available* ... it is only *accessible* if users have the connectivity to it” (Parry 2010, p 179).

According to the 2020 AAM survey, only 7% of respondents across the country had made their institution’s WIFI available to the community during closure as a way of enhancing access to their collections. For the purpose of this research, online exhibitions are considered as a means to enhanced access to museum collections. Museums in the Western United States turned to various methods of online exhibitions and virtual tours, such as Facebook Live videos, pre-recorded YouTube videos (both silent or curator led), interactive VR capable tours such as Matterport, Theasys, and 3D Vista. Exhibits have gone entirely virtual through PDF exhibit guides and catalogs, and PowerPoint or Microsoft Sway slideshows. For example, the San Francisco Museum of Craft and Design created an online exhibition running from June – December 2020 called Design by Distance, which showcases how designers around the world are responding to COVID-19. This exhibition is presented in a blog-like formatting through the website Curator Squared Virtual Views, a direct result of the pandemic to offer a space for “experience, thought, and provocation” (Duggan and Fox 2020). For those who enjoy the arts, but are a little too deep

into the year's newest video game to explore online exhibitions and resources, the Getty Museum provided digital codes of its art collection to be used in the game Animal Crossing New Horizons. Two different Utah museums utilized interactive VR compatible tours: the St. George Dinosaur Discover Site used lower budget method of volunteer work, a borrowed Richo-Theata 360° camera, and the online software, Theasys to develop its tour (Brunson 2020); and the Springville Museum of Art partnered with the company VR Wizards to develop a higher quality tour (VR Wizards 2020).

The Case of Science and Technology

According to Roland Jackson (2010), “given their focus on exhibitions, science centres and museums now have a natural opportunity to lead the process of developing electronic exhibitions and the associated means of information exchange” (p 153). These institutions have a clear advantage when it comes to the development of a virtual space as their missions and goals prioritize advancements in innovation. As an example of how Science and Technology institutions have adapted to the COVID-19 pandemic, three case studies will discuss in depth the strategies and process of museums involved in “virtual pivots” and “at home” initiatives: The Leonardo’s Leo at Home and the Matterport Virtual Tour; The Tech Interactive’s Tech Interactive at Home, and the Denver Museum of Nature and Science’s DMNS at Home.

The Leonardo

The Leonardo Museum of Creativity and Innovation in Salt Lake City, UT first opened in 2011, following a handful of years as an educational traveling outreach initiative, Leo On Wheels. Since opening, the museum has followed the mission to inspire creativity and innovation in people of all ages and backgrounds by fusing art, science, and technology in its

interactive STEAM exhibitions and maker spaces. The Leonardo itself is not a collecting institution, and relies on loaned objects for its exhibits. Additionally, the museum often hosts blockbuster traveling exhibitions, such as *Body Worlds*, *Mummies of the World*, and *The Dead Sea Scrolls*. Thus, in terms of online presence prior to the pandemic, the museum has only utilized social media platforms and its website for blog posts and occasional resources.

The Leonardo closed its doors to the public March 15, 2020 due to the COVID-19 pandemic and laid off or furloughed all but 15 of its 120 staff members. The majority of the remaining staff consisted of the marketing and engagement teams and led the Leo at Home digital educational resource initiative. The idea of the Leo at Home virtual campaign was decided in the days leading up to the museum's closure, as the rest of Salt Lake was waiting for guidance by local government and the CDC. A Google Document was put together for staff from various departments to brainstorm content ideas as the team knew they had to act fast, however many were removed from the project with the museum's official closure and cutbacks. The target audience for Leo at Home was teachers and parents and the program itself lasted seven consecutive weeks with the themes of Flight, Coding, Alive (the human body), Science of Sound, Earth Week, Engineering, and Mental Health. Each day of the week at least four posts were made to Facebook, occasionally Instagram or YouTube, and the museum's website under the categories of Community Classroom, Create + Connect, Leo Originals, and SPARK.

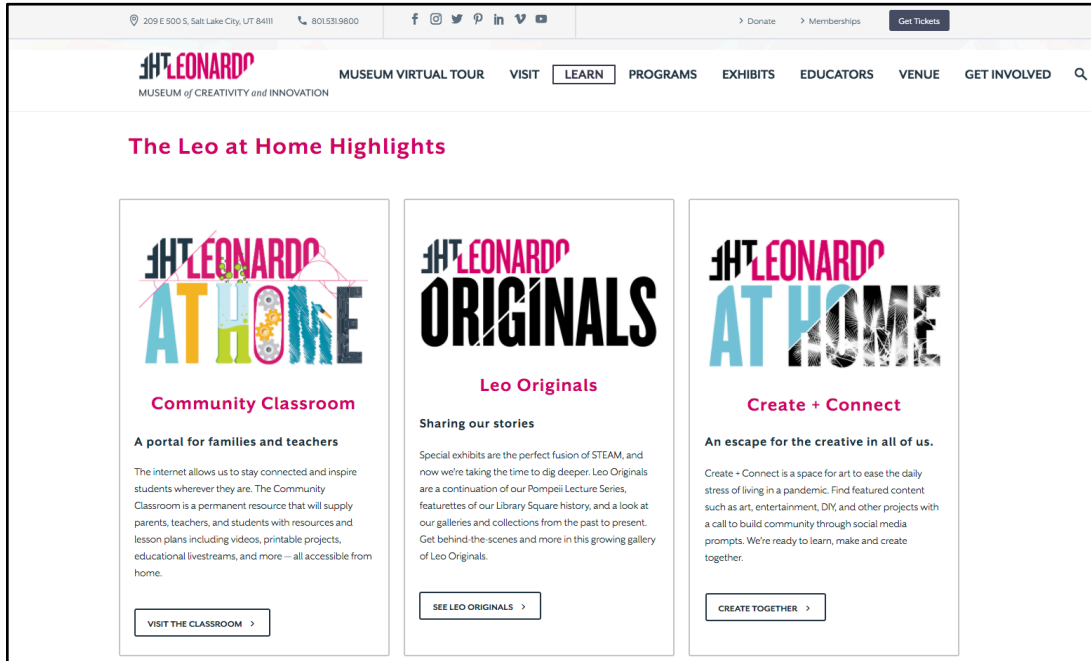


Figure 1 The Leo At Home webpage

The Community Classroom intends to remain a permanent resource for parents and teachers for at home learning. Content is organized by grade level and subject (science, art, technology, etc.). Resources include crafts and activities, story time, coloring pages, and miniature video lessons. Create + Connect offers similar content as the Classroom, but is focused on art and DIY projects that can be done by all ages. Leo Originals was a place to bring back past content, such as podcasts and videos, and as a continuation of current programming. For example, the Pompeii Lecture Series continued on a virtual platform through prerecorded videos posted to the Leo Originals. Finally, SPARK was an opportunity for The Leonardo to share external resources and content from community partners on Facebook and Instagram.

In addition to Leo at Home, the Leonardo contracted Virtual World Tours to complete a virtual scan of the museum and developed an interactive tour using Matterport. Once the digital imaging of all three floors of the museum was completed, The Leonardo uploaded 86 interactive tags to the general tour of educational and supplemental content, utilizing some of the new Leo at Home content. The Matterport tour was initially intended for virtual field trip and member use, however it was later released to the public on a donation or newsletter sign up basis. At the end of September, The Leonardo implemented a Treedis integration to the Matterport tour which allowed for tags to be opened within the tour rather than in a new browser or tab, and created the ability to put up a pay wall and compile additional analytical data. Because the primary use of the tour was still for virtual field trips, the tour remained free to the public, and the donation and newsletter signup landing page was removed. With this, the tour's daily visits and impressions increased exponentially, and Treedis' analytical reporting gave The Leonardo insight into gallery hot spots and tag clicks.



Figure 2 Hot spots from October 2020 Leonardo virtual tour views, first floor galleries.

There are drawbacks to this virtual tour, as the imaging is static so any change to exhibition spaces will not be reflected in the tour. For example, at the time of the scan The Leonardo was hosting the traveling exhibit *Pompeii*, which has since been deinstalled. With the end of the exhibit, two gallery spaces are now excluded from the virtual tour and any new exhibit to be placed in the O.C. Tanner Atrium or Human Rights Gallery will not be viewable. That said, the scan of the full museum can no longer be made public as the contract for the exhibit has ended, and the tour of the general exhibits will continue to show the title wall for *Pompeii* past its closure.



Figure 3 Marketing graphic for The Leonardo's virtual tour, posted to Facebook



Figure 4 Dollhouse view of virtual tour and Mattertags.

The museum did not stop at the virtual museum tour or at home educational content. Some of the more popular events, such as Leonardo Libations (a monthly wine pairing with local sommeliers), Sensory Friendly Mondays, and Trivia Night made its way onto virtual platforms using Facebook Live, Zoom, and Crowdpuurr. The Annual Gala was moved to the online platform Qgiv, which allowed for greater engagement among audiences that typically wouldn't have participated in fundraising events such as this. Just as the program itself focuses on rapid response innovations, the entrepreneurial program for high schoolers, Mind Riot, took a virtual pivot. Over a four-day period, participants attended digital key note sessions, and with guidance from mentors, worked in teams over Zoom to develop pitches to problems posed by COVID-19. These presentations were then printed as a miniature exhibit in vinyl and displayed on the museum's exterior windows for the community to see. Webinar series were also developed for members (COVID Conversations and Saturday Morning Drawing Classes), educators (Adapting to Online/Hybrid Teaching: Challenge-Based Learning and STEAM), and the public (Women Community Innovators Cohort).

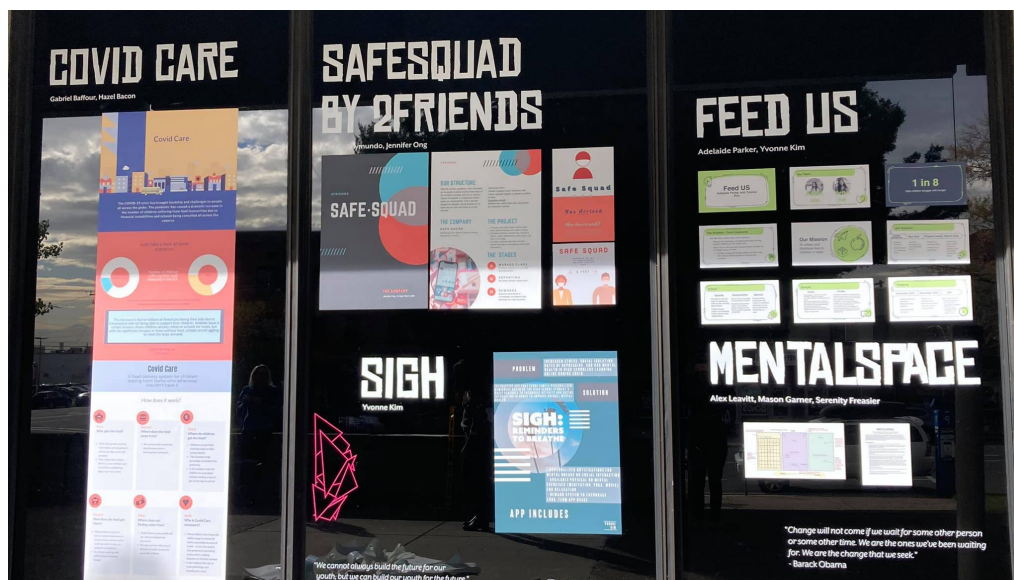


Figure 5 Miniature poster exhibits created by Virtual Mind Riot participants

Beyond the quick planning of Leo at Home in the days leading up to the museum's closure, The Leonardo has not had a plan or strategy in place for digital assets or digital engagement. There are no defined standards or requirements for file types, resolutions, or naming conventions, however best practices and typical social media file sizes are considered during creation of assets by the marketing department. All content created during closure has been saved to the museum's remote server, Google Drive, and staff's personal computers as they work from home with no immediate plans for long term storage or preservation.

The Tech Interactive

The Tech Interactive in San Jose, CA has a history stemming from Silicon Valley startups. In 1978, the Junior Leagues of Palo Alto and San Jose developed the idea of building a hands-on science and technology center. Within twelve years, The Garage was opened and served as a valuable resource for not only children, but young adults. By 1998 The Tech as it is known today was established and "celebrates the present and encourages the development of innovative technology for a more promising future" driven by the mission "to inspire the innovator in everyone" (The Tech Interactive, n.d.). As experienced by many, there was a frantic need to get content out as quickly as possible and within four days of the museum's closure, a new website was launched: thetechathome.org.

The COVID-19 pandemic not only posed a lot of challenges, but created a lot of new opportunities for this science and technology museum. The Bowers Institute Education Director, Erica Barrueto, explained that the pandemic "catapulted efforts" to develop virtual content and resources because The Tech was no longer limited to the Bay Area or focused on ticket sales and now had the opening to reach a global audience (Barrueto 2020). In fact, before the pandemic

hit, The Tech announced a 20-year vision of reaching 100 million people a year by 2039, and strategic goal to reach 20 million globally within five years (Barrueto 2020; The Tech Interactive 2020). The Tech was focused on providing unique ways to engage in design science by leaning on existing exhibit experiences and not only branching out, but reimagining what the STEAM activities could look like in a new setting. There was serious consideration during the shift from onsite to online as to how to stay relevant, how to add value, and how to give the public what they actually wanted and needed. The primary goal of the new digital content and the Tech Interactive at Home website was to be a trusted resource for parents and teachers for at home learning.

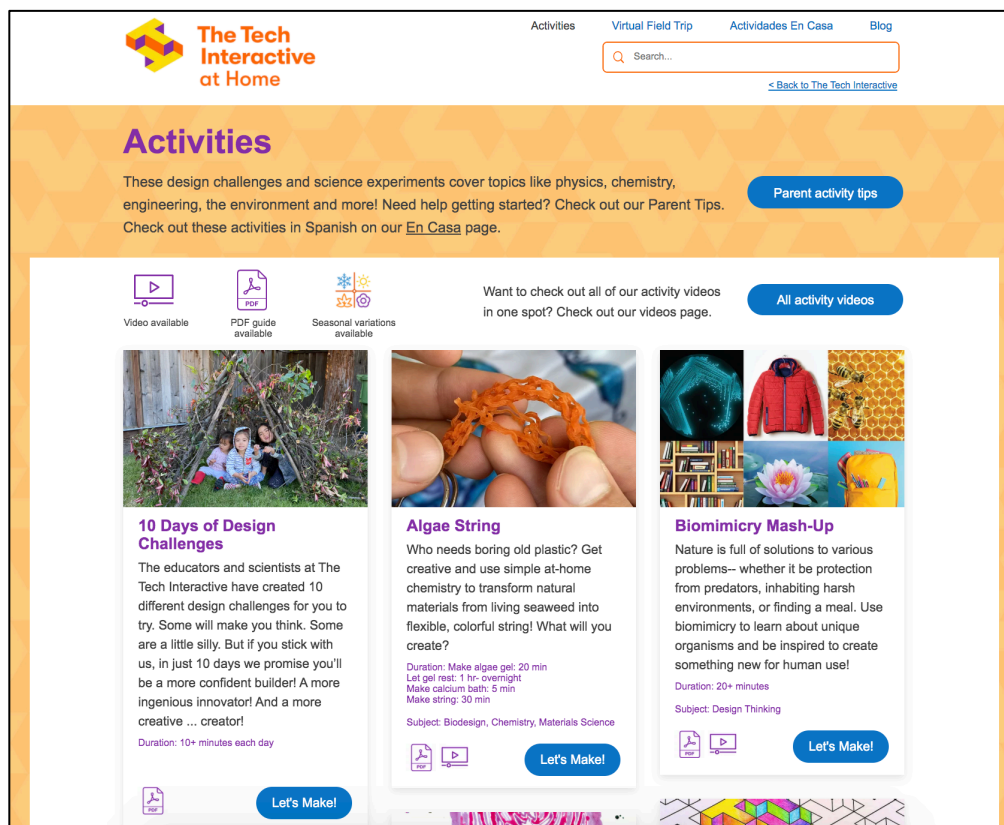


Figure 6 The Tech Interactive at Home website

The Tech team wanted these activities and resources to be more personal than a downloadable PDF. In the beginning there was “a mad dash to mine archives for educational

content” that could be adapted for at home use and engagement (Barrueto 2020). However, in developing a strategy for the new digital content, The Tech found it was key to separate the different audiences and define where and what platforms they were utilizing. Teens engaged more with TikTok and webinars; parents and children preferred Zigazoo and the repository-like structure of Tech at Home; and teachers often attended webinars and tended to use Pinterest and the museum’s website and video content. In addition to the audience definition, weekly content meetings were scheduled between exhibits, education, and marketing to discuss what to develop for each audience segment, when to release it and where, and how to curate the content to best fit each social media channel. Market research was also conducted to get a better understanding of what other museums have already released, so that the Tech could provide unique experiences.

Denver Museum of Nature and Science

The Denver Museum of Nature and Science reopened to the public in June 2020 after closing mid-March. During closure, the museum connected with 60,856 people through nearly 300 virtual programs and member-exclusive digital content (Sawaya 2020). Virtual presence is not new for the museum. Since 2006 it has provided online educator guides and digitized archival collections through the Rocky Mountain Online Archive (DMNS 2006). In 2010, the museum introduced the online video series, Science Bites, in which scientists discussed “the how and why behind headline news, as well as science topics occurring right in Colorado” (DMNS 2010, p 15). Today, the museum continues to provide virtual offerings following their reopening through the DMNS@Home webpage. DMNS at Home includes over 100 lessons, resources, and activities that can be done from home, such as Lunch with Educator Performers, COVID-19

Webinars, broadcast archives, and build your own crafts. Activities can be filtered by the categories watch, do, and teach, and once filtered, can be further organized by program type.

The image shows a screenshot of the Denver Museum of Nature & Science (DMNS) website's 'DMNS@Home' section. The page is designed for users to explore educational activities. At the top, there's a navigation bar with the museum's logo, a donation button for a challenge, and a menu icon. Below this is a large hero image of two children. A text block below the image encourages staying home and learning. A navigation bar with 'Watch', 'Do', and 'Teach' buttons is present. A filter sidebar on the left shows 'Teach' selected. The main content area displays a featured activity titled 'Lunch with Educator Performers: Great Science Fails' with a 'WATCH NOW' button. A detailed filter sidebar on the right shows 'Teach' selected under 'CATEGORY' and lists various activity types like 'Lesson Plans and Activities', 'Teacher Professional Development', 'Scientists in Action', 'Additional Resources', and 'Virtual'. At the bottom of the filter sidebar is a 'CLEAR FILTERS' button with a refresh icon.

Figure 7 DMNS at Home webpage and “Teach” filter options

In addition to DMNS at Home, the museum’s education team took more of their educational programming online, including their virtual Science Academy and scientific illustrator programs and Scientists in Action. One of the illustration programs within the Science Academy, Virtual Art Station: Titan, originally started as a 15-20-minute program done in the *Space Odyssey* exhibit but has since become a 45-minute virtual Zoom program that occurs 4-5 times a day, each session attended by up to 30 students. This program is targeted to grades 1-8 in which the younger grades draw to “create” scientific data, and other grades learn about atmosphere and composition (Avram 2020). These virtual programs do require materials, so the museum will send supplies to schools who request them prior to their scheduled session. Amanda Avram,

Senior Educator and Performer, said that the virtual program extended beyond Colorado schools and has reached schools in Canada, Hawaii, and Alaska as well (Avram 2020).

According to Section 8: Digital Collection of the Denver Museum of Nature and Science's 2017 Manual of Collection Policies, any digital information resource "that documents and supplement the Museum's disciplines, programing, exhibition, outreach, publication, and history in accordance with its mission" are contained within the digital collection. Born digital records and scanned or photographed records are also found within the digital collection (DMNS 2017, p 16). Digital objects are separated within two categories: the archival collection and ephemeral digital files. The Policy states that "digital objects not intended or accepted for the archival collections, including versions and copies of archival digital files such as those used for programming, exhibition, outreach, and publication, are considered ephemeral digital files" (DMNS 2017, p 17). Additionally, digital objects with "no foreseeable use beyond their initial (and usually) short-term use" are considered to be ephemeral, and are to be disposed of when they exceed their period of immediate use (DMNS 2017, p 17).

The Case of Art and History

According to Coburn and Baca (2004) of the J. Paul Getty Museum and Research Institute, "the library and archive communities have a long-standing history of organizing and managing their information in a way that facilitates access to their holdings" (p 14). This holds true for many collecting institutions, such as art and history museums, who have been digitizing their collections for years and publishing them online with essential metadata. Like science and technology museums, those with a focus of art or history have reacted to COVID-19 closures with an increased online presence through programming, exhibitions, and other resources. The

following three case studies provide a sample of how art and history museums have moved beyond their gallery walls during the pandemic.

Church History Museum

The Church History Museum in Salt Lake City, UT represents a worldwide religious institution and serves a global audience. Because of this goal and mission, all exhibitions prior to the pandemic typically had a virtual counterpart in one form or another. However, with the pandemic and the opening of the exhibition *Sisters for Suffrage* in November 2019, Curator Laura Howe explained that museum educators incorporated more content online than what was available in the physical exhibit, and past online counterparts (Reid et al 2020). *Sisters for Suffrage* celebrates the centennial of the 19th amendment and the 150th anniversary of Utah Women's right to vote. The physical exhibit gives the history of the development of the Relief Society and the role they played in the Suffragist movement in Seneca Falls just six years later through artifacts such as the Utah legislation document that enfranchised women in 1870. The online exhibition provides 13 pages of history, links to external resources and related articles, and images of some of the featured artifacts within the exhibit. The museum also provides a free downloadable PDF copy of the exhibition book that is sold within the gift store.

Previous online exhibit counterparts varied in content and interactive ability. The ongoing exhibit *The Heavens Are Open*'s webpage includes an interactive exhibit map, in which points of interest list featured artifacts, activities done within the exhibit, related articles, and photos of the gallery or artifact. However, this map does not provide content learned within the exhibit and only offers supplemental information. On the other hand, the exhibit *Mormon Trails*, which

opened in 2017, now offers additional resources, a video of the Pioneer's pathways, an online game to determine if you could make it to Zion, and a supplemental online exhibit.



Figure 8 The Mormon Trails game lets players choose a character and complete tasks to determine if they can make it to Salt Lake City alive. Along the way, players can read diary entries of the individual they chose to be. The game was developed in 2017, but released on Utah's state holiday, Pioneer Day 2020 (Reid et al 2020).

The online exhibit features five sections, each of which filled with images and labels. Each image can be clicked on for more information and options for sharing, and some artifact images link to additional content or can be zoomed in on. The museum also has 20 additional online art exhibits in similar formats of that of the *Mormon Trails*.

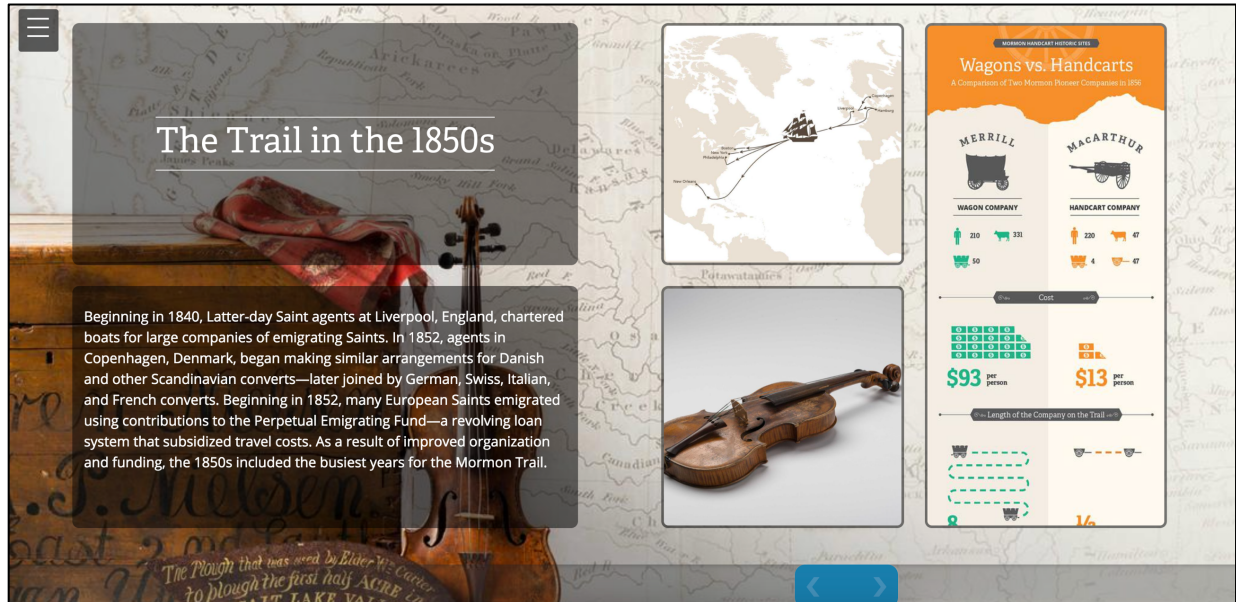


Figure 9 The Trails in the 1850s, from the Mormon Trails online exhibition

Beyond online exhibits, the Church History Museum utilized Facebook Live to continue their programming while closed to the public, like the Evenings at the Museum speaker series. The museum also shared other content online, such as gallery talks, object spotlights, and craft activities on social media.

The Frye Art Museum

The Frye Art Museum in Seattle, Washington closed its doors March 13. It first reopened to members and then the public on a limited basis in late October, and closed for a second time following state mandate on November 16. Even while temporarily opened, the museum continued to offer online resources, virtual screenings, and virtual exhibit opening events. The primary platform during its first closure, and continued “central point” of sharing content through the second closure, is the Frye From Home blog (Gooch and Cheng 2020).

With its development funded by COVID relief grants, Frye From Home was a way for the museum to stay connected with its audience and to bring art and activity to the community

(like with a free download of the *Frye Salon Zoom* background). Frye From Home welcomes viewers to connect with the museum on social media, watch guided artwork discussions and exhibit “close ups” (past and present), create with family friendly activities, and read the museum’s past publications and additional resources. The blog allows viewers to explore by topic, including museum programs like Mindfulness Meditation and Creative Aging, the founding collection and collection connections, and Frye Families and virtual visits.

As part of the museum’s mission and core values, accessibility took priority in the development of the Frye From Home Blog. Because museum admission is always free, programming and content remained free online. Additionally, the education department worked backwards starting with possible constraints, and developed content and activities that could be done with limited access to supplies and resources, prior to pairing the activities with collection pieces and themes. Collection pieces were often chosen that were too small to feature in group settings during in-person programming, or that were in storage, as a way of providing new and unique content. After the first month of this strategy, the education team began keeping track of what pieces were used so that they could determine where representation of medium or artist was lacking and flag them for future use. Traditionally the Frye had four main audiences: K-12, families, Creative Aging (those with dementia and their care givers), and the general public. Through Frye From Home, all but K-12 audiences were reached, based off the decision that this content source is already saturated, and teachers and students “don’t need another thing to look at” (Gooch and Cheng 2020). Michelle Cheng, the Frye’s Director of Education, stated that people’s expectations and needs are always shifting, and her team was mindful of what resources would fit the museum’s mission and aren’t just part of a trend (2020). It was because of this that additional content for families was developed in place of K-12 programming. The museum

received positive feedback regarding online programming, in that it provided for flexible scheduling options and ease of access.

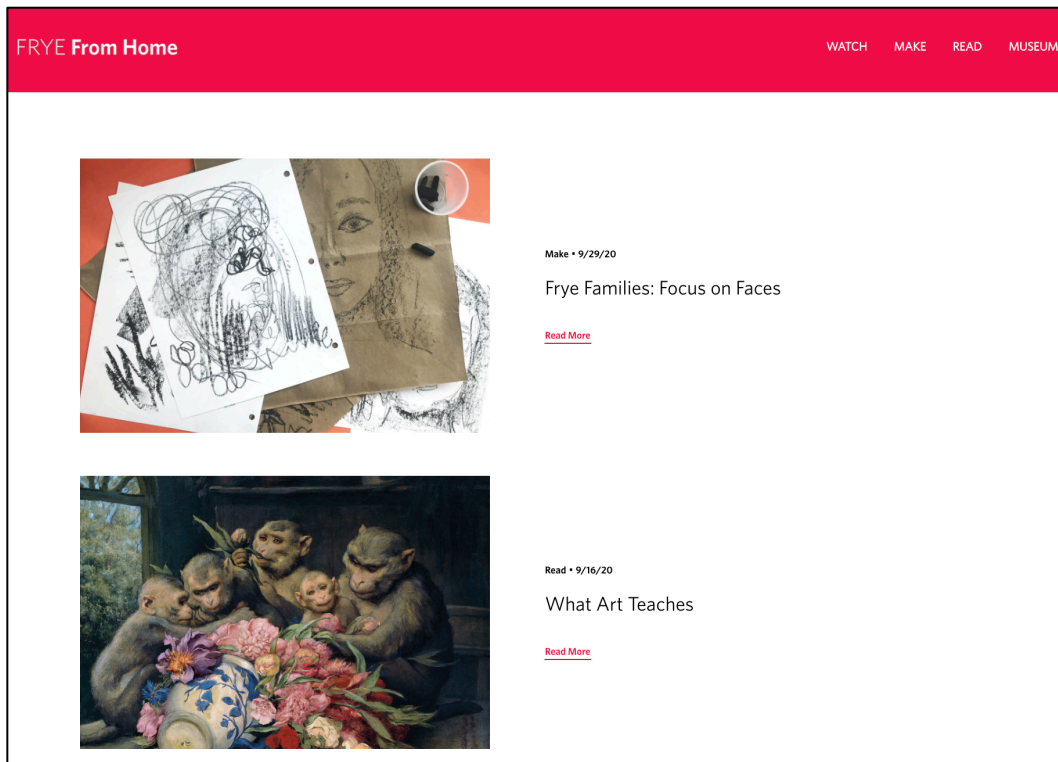


Figure 10 Frye From Home: Frye Families

In addition to the Frye From Home blog, the Frye launched its digital collection in October 2020 in conjunction with the museum's reopening. The collection features 1,519 works of art, and categories of contemporary and Pacific Northwest art, works on view, the founding collection and recent acquisitions. The collection can be browsed not only by work or category, but by artist, and advanced search options are available. Metadata included for works of art include creator, date, title, medium, dimensions, and credit line. Thumbnails of the collection pieces can be opened for better viewing, but zooming features are disabled. Despite the timing of its launch, the online collection was not a response to COVID, however its need was accelerated by the museum's closure. During the interview, both Cory Gooch, Chief Registrar, and Michelle Cheng, Director of Education, stated that the museum was behind in terms of

digital collection access and online programming. With closure and the redistribution of department budgets, the Frye was able to prioritize the development and finalization of this multiple year project.

At this time analytical research of the success of Frye From Home has not been conducted. Executive staff have been meeting to discuss what attendance means in a digital sense, and deciding what numbers to count (i.e. clicks, interactions, views). If numbers alone are to determine the blog's success, "attendance" has increased. However, the museum wishes to measure impact of content and not just the analytics, but does not have a way of doing this yet. Overall, the Frye Art Museum has seen a benefit in virtual programming and resources, and will continue to provide them through 2021. Cheng (2020) stated that she sees this virtual presence as a "nice new beginning" and hopes to see it continue beyond 2021 in a hybrid form as a way to serve complementary experiences. With this in mind, the Frye has recently posted the job position of Digital Program Assistant. While working with the education department, the primary responsibility of this new position is to support "the management of digital education content and helps to produce virtual education programs for a wide range of audiences" (Frye Museum 2020). Additionally, the Digital Program Assistant will "contribute to vision, strategy, and direction for digital media to impact and improve education programs" and to identify "opportunities where digital media can advance organizational objectives" (Frye Museum 2020).

Discussion and Recommendations

None of the museums studied for this research paper had preexisting digital strategies or plans that specifically influenced the digital pivot caused by the COVID-19 pandemic. The Denver Museum of Nature and Science does have a Collections Policy, which includes guidance for digital assets, however it is not clear that these policies affected COVID related digital

content. If anything, some practices and programs across museums continued in a virtual format, however as stated by the Frye's Director of Education, Michelle Cheng, "not everything translates well into digital" and careful consideration went into the elements that could so that it would "not lose its meaning" (2020). Audience research has been conducted by some institutions, in which important insights have been discovered that helped drive content creation. This research highlights one recommendation for the continued success of museums participating in online content and virtual programming: digital engagement strategies.

The Digital Engagement Framework was developed by Jim Richardson and Jasper Visser (n.d.), and guides institutions in the development of a plan that "lets you discover your organization's digital potential by asking questions about your target audiences, key assets, organizational vision, and more" allowing "you to design campaigns and projects that engage and reach out to people" (p 2). By examining key elements such as target audience, goals and values, assets and collection, an institution can ask the questions needed in defining a digital engagement strategy. Why are you doing this initiative and how does it relate to the mission? What will you be doing or utilizing (i.e. collection objects)? And finally, how will you fulfil this (i.e. what content and activities or what platforms will be used)? A digital engagement strategy will help guide content creation so that it is not only engaging, but relates to the museum's mission.

The second recommendation is the development of a digital asset management policy or digital curation policy to better prepare museums for a successful virtual future and as stewards of the newly created digital assets. This policy should include at the bare minimum the implementation of file format and resolution guidelines, file naming conventions, and storage requirements for digital assets. There are questions regarding the future archiving of digital

content created and published during COVID, yet no institution has addressed this fully. For example, the Frye Art Museum has acknowledged this possibility, but are still in the early phases of discussion and planning (i.e. do they continue to maintain the blog or start archiving certain posts). And, depending on the classification of COVID related content per its Collections Policy (archival collection or ephemeral), the Denver Museum of Nature and Science may archive digital assets or discard them after their intended use. Additionally, as discussed in a conference session for the Utah Museums Association, the VR Tour developed for the Springville Museum of Art could be downloaded and saved (VR Wizards 2020). As with any collections policy, a scope of collection should be defined in the digital curation or digital asset management policy that would help categorize the digital content developed during the pandemic. These policies will then guide the preservation and maintenance required for such digital objects through all stages of its lifecycle.

Conclusion

Similar to the findings of the American Alliance of Museum's 2020 Snapshot of US Museums' Response to the COVID-19 Pandemic Survey, museums in the Western United States followed similar methods for delivering content virtually, both during and after closures. There is no surprise in these findings. Many museums responded to the COVID-19 pandemic with digital content creation as necessity and a fast, quick, oftentimes cheap temporary solution, and frequently dug through archival storage for past content to be reused and adapted to the new virtual setting. With these quick and easy solutions, many museums bypassed strategic digital planning in the beginning, as most were working with limited to no lead time with reduced staff working from home. In fact, digital strategy and digital plans did not tend to exist prior to the pandemic for most museums in terms of digital curation and preservation. After time, Western

US museums began to develop plans and meet regularly in teams to discuss methods for content production. As museums continue to offer online programming and resources they reevaluate and assess needs, audiences, and success, some strategy has come into play. However, this is strictly on the basis of how to better support and offer the current systems in place.

Museums saw benefits to the “new normal” of virtual content, such as greater reach, wider audiences, and higher engagement rates, thus many have chosen to continue their availability following reopening. Some, like the Frye Art Museum, have even adapted and created positions specific to virtual content and programming creation and planning because “this is a good moment to reexamine programs and open doors for providing new opportunities” (Cheng 2020). Despite these new insights, many museums in the Western United States are still lacking digital asset management and digital engagement plans. It is recommended that if these digital initiatives continue, even if just through social media campaigns, museums create these policies and procedures as they will benefit in the continuation forward.

References

- Agostino, D. et al. (2020). New development: COVID-19 as an accelerator of digital transformation in public service delivery. *Public Money & Management*. Retrieved from <https://doi-org.proxy1.library.jhu.edu/10.1080/09540962.2020.1764206>
- American Alliance of Museums. (2020). A Snapshot of US Museums’ Response to the COVID-19 Pandemic. Retrieved from <https://www.aam-us.org/2020/07/22/a-snapshot-of-us-museums-response-to-the-covid-19-pandemic/>
- Avram, A. et al (October 19, 2020). Virtual Outreach Showcase [Conference Presentation]. Association of Science and Technology Centers 2020 Conference, Virtual.

Barrueto, E. et al (October 20, 2020). Pandemic Pivot: Moving from Onsite to Online in a Time of Turmoil [Conference Presentation]. Association of Science and Technology Centers 2020 Conference, Virtual.

Brunson, T. (October 1, 2020). St. George Dinosaur Discovery Site Virtual Expansion [Conference Poster Presentation]. Utah Museums Association 2020 Conference, Virtual.

Ciecko, B. (October 14, 2020). Coronavirus as The Unexpected Driver of Digital Innovation in the Museum and Cultural Sector [Conference Presentation]. Visitor Experience Group (VEX) 2020 Conference, Virtual.

Coburn, E. & Baca, M. (2004), "Beyond the Gallery Walls: Tools and Methods for Leading End-Users to Collections Information," Bulletin of the American Society for Information Science and Technology, June/July 2004, 14-19. Retrieved from <https://asistdl.onlinelibrary.wiley.com/doi/pdfdirect/10.1002/bult.323>

Din, H. & Hecht, P. (2007), "Preparing the Next Generation of Museum Professionals," in The Digital Museum: A Think Guide. H. Din & P. Hecht; eds., American Alliance of Museums, pp. 9-17.

Dilenschneider, C. (October 6, 2020). Survival Superpowers - Engaging Audiences in a Pandemic-Impacted World [Conference Presentation]. Blackbaud BBCON, Virtual.

DMNS (2006). 2006 Annual Report, Denver Museum of Nature & Science. Retrieved from https://science.dmns.org/media/1395551/ar_2006.pdf

DMNS (2010). Denver Museum of Nature & Science, Unearthed 2010. Retrieved from https://science.dmns.org/media/1394607/ar_2010.pdf

DMNS (2017). The Manual of Collection Policies for the Denver Museum of Nature & Science.

Retrieved from <https://www.dmns.org/media/3538/manual-of-collection-policies-2017.pdf>

Duggan, G. G., & Fox, J. H. (n.d.) Virtual Views. Retrieved from

<https://curatorsquaredvirtualviews.com/>

Frye Museum (2020). Digital Program Assistant. Retrieved from

https://fryemuseum.org/employment/digital_programs_assistant

Gooch, C. & Cheng, M. (November 16, 2020). [Personal Communication]

Hallman, T. et al (October 14, 2020). 45 x 45 Audience Engagement Ideas: Covid-19 Edition

[Conference Presentation]. Visitor Experience Group (VEX) 2020 Conference, Virtual.

Huhtamo, E. (2010). Chapter 12: On the Origins of the Virtual Museum. In R. Parry (Ed.),

Museums in a Digital Age (pp. 121-135) New York: Routledge

ICOM (2020). Museums, Museum Professionals and COVID-19: ICOM and UNESCO Release

Their Full Reports. Retrieved from <https://icom.museum/en/news/museums-museum-professionals-and-covid-19-survey-results/>

Jackson, R. (2010). Chapter 15: The Virtual Visit: towards a new concept for the electronic

science centre. In R. Parry (Ed.), Museums in a Digital Age (pp. 153-158) New York:

Routledge.

Parry, R. (2010). Introduction to Part Three. In R. Parry (Ed.), Museums in a Digital Age (pp.

177-180) New York: Routledge.

Reid, T. et al (October 1, 2020). Bold Ideas for Responses to Emergencies [Conference

Presentation]. Utah Museums Association 2020 Conference, Virtual.

Richardson, J. & Visser, J. (n.d.). The Digital Engagement Framework Workbook. Retrieved from <https://digitalengagementframework.com/digenfra3/>

Sawaya, N. (2020). Denver Museum of Nature & Science to Reopen June 23, The Art of the Brick to Debut with Museum Reopening. Retrieved from <https://www.dmns.org/press-room/press-releases/denver-museum-of-nature-science-to-reopen-june-23-the-art-of-the-brick-to-debut-with-museum-reopening/>

Tallon, L. (2008). Introduction: mobile, digital, and personal. In L. Tallon and K. Walker (Eds.), *Digital Technologies and The Museum Experience: Handheld Guides and Other Media* (pp. xiii-xxv). Lanham, MD: AltaMira Press.

The Tech Interactive (n.d.). About The Tech Interactive. Retrieved from <https://www.thetech.org/about-the-tech-interactive>

The Tech Interactive (n.d.). Annual Report 2019. Retrieved from <https://issuu.com/thetechmuseum/docs/tt-annualreport2019>

UNESCO (2020). Museums around the world in the face of COVID-19. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000373530>

VR Wizards (October 2, 2020). BYOL Museum Chats: How your visitors can experience your venue virtually during COVID-19 and beyond [Conference Presentation]. Utah Museums Association 2020 Conference, Virtual.

Zuanni, C. (2020). Digital responses from locked-down museums. Retrieved from <https://culturalpractice.org/digital-responses-from-locked-down-museums/>

Figure References

Figure 1 The Leo At Home webpage. Screenshot November 2020 from <https://theleonardo.org/leo-at-home>

Figure 2 Hot spots from October 2020 Leonardo virtual tour views, first floor galleries.

Screenshot November 2020 from The Leonardo's Treedis Analytics Account.

Figure 3 Marketing graphic for The Leonardo's virtual tour, posted to Facebook. Retrieved

November 2020 from <https://www.facebook.com/theleonardo/posts/10158728994697915>

Figure 4 Dollhouse view of virtual tour and Matteredtags. Screenshot November 2020 from

<https://my.treedis.com/public/tour/the-leonardo-general-exhibits>

Figure 5 Miniature poster exhibits created by Virtual Mind Riot participants. Retrieved

November 2020 from <https://www.facebook.com/theleonardo/posts/10159004813972915>

Figure 6 The Tech Interactive at Home website. Screenshot November 2020 from

<https://www.thetechathome.org/>

Figure 7 DMNS at Home webpage and “Teach” filter options. Screenshot November 2020 from

<https://www.dmns.org/learn/dmns-at-home/>

Figure 8 The Mormon Trails game. Screenshot November 2020 from

<http://broadcast.lds.org/elearning/development/psd/mormon-trails/current/web/index.html>

Figure 9 The Trails in the 1850s, from the Mormon Trails online exhibition. Screenshot

November 2020 from <https://history.churchofjesuschrist.org/exhibit/mormon-trails?lang=eng>

Figure 10 Frye From Home: Frye Families. Screenshot November 2020 from

<https://www.fryemuseum.blog/blog?tag=Frye%20Families>

Appendix A: Annotated Bibliography

Agostino, D. et al. (2020). New development: COVID-19 as an accelerator of digital transformation in public service delivery. Public Money & Management. Retrieved from <https://doi-org.proxy1.library.jhu.edu/10.1080/09540962.2020.1764206>

Focusing on 100 Italian State Museums, this article highlights the turn to digital during the pandemic and lists three dilemmas faced. It is important to note that COVID-19 is not the catalyst for the use of technology and social media, and the digital transformation dates back to the 1990s. Before the pandemic, 69% of Italian museums were already using social media. However, because of the forced closures due to the pandemic, many museums have had to rely on digital alone, not only as tools for communication, but as tools for delivering content. The three dilemmas brought on by this new shift include: user engagement (what do users actually want? Museums see a decrease in engagement), planning and control (museums move away from strategic plans), and free vs for a fee.

American Alliance of Museums. (2020). A Snapshot of US Museums' Response to the COVID-19 Pandemic. Retrieved from <https://www.aam-us.org/2020/07/22/a-snapshot-of-us-museums-response-to-the-covid-19-pandemic/>

AAM conducted a survey of 760 museums of different institution types in June regarding effects of the COVID-19 pandemic, with responses averaging to 622 museums per question. Although results mostly reflect financial standing, opening plans, and staff reduction, services provided during closure was discussed. A large percentage of respondents offered educational resources for all ages (74% k-12 and 54% college), as well as digital entertainment and activities (64%),

video lectures (60%) and enhanced access to digital collections (43%). Unfortunately, the museums surveyed were not listed and geographic location was not provided.

Avram, A. et al (2020). Virtual Outreach Showcase [Conference Presentation]. Association of Science and Technology Centers 2020 Conference, Virtual.

Amanda Avram is an educator and performer at the Denver Museum of Nature and Science. Prior to the pandemic, the museum already had a pretty established repertoire of virtual programs, but took more of the educational programming online during COVID forced closures. Some of these include the scientific illustrator programs (such as the Titan Virtual program), three different dissection workshops, and a puberty class. The museum reached beyond Colorado schools with this programming and have seen schools from Canada, Hawaii, and Alaska.

Barrueto, E. et al (2020). Pandemic Pivot: Moving from Onsite to Online in a Time of Turmoil [Conference Presentation]. Association of Science and Technology Centers 2020 Conference, Virtual.

The pandemic not only posed a lot of challenges for The Tech Interactive in San Jose, CA, but created a lot of opportunities. The pandemic catapulted efforts, because the Tech was no longer limited to the Bay Area and focused on ticket sales, but generated the chance to create resources and provide content for a global audience. The primary goal was to be a trusted resource for parents and teachers for at home learning. They were focused on providing unique ways to engage in design science by leaning on exhibit experiences and existing experiences and branching out and reimagining what the STEAM activities could look like in a new setting.

Brunson, T. (2020). St. George Dinosaur Discovery Site Virtual Expansion [Conference Poster Presentation]. Utah Museums Association 2020 Conference, Virtual.

The St. George Dinosaur Discover Site decided to expand their virtual presence due to their temporary closure when COVID hit. They created a virtual reality tour, free of cost, using volunteer work, a borrowed Richo-Theta 360° camera, and the Theasys online software. The tour includes an audio guide by one of the museum's paleontologists. Another way the site expanded their digital presence was through a virtual fall camp in partnership with Dixie State University, using Google Classroom, Kahoot!, Youtube, and SteamLabs OBS. The virtual tour has recently been tied to the museum's Google Analytics so exact numbers of reach and engagement were not presented during the poster session, however Tanner Brunson stated that at least six thousand people had viewed the tour since it has been posted.

Ciecko, B. (2020). Coronavirus as The Unexpected Driver of Digital Innovation in the Museum and Cultural Sector [Conference Presentation]. Visitor Experience Group (VEX) 2020 Conference, Virtual.

Brendan Ciecko, the Founder and CEO of Cuseum, discussed in a session at the 2020 Virtual Vex conference ways in which COVID-19 has been a driver for digital innovations. Predictions and solutions put out by Cuseum include phasing out physical touch points to be replaced by digital mobile and bring your own device solutions, the rise of contactless experiences and technologies, AR wayfinding, and mobile-enabled content and engagement. Ciecko shared a statistic by McKinsey & Co (June 2020) that 9 out of 10 executives believe that COVID-19 will change the way business is done over the next 5 years, however he feels that museums may be impacted for the next 10 years. Ciecko explains that with the pandemic, museums have increased

their capacity for digital engagement before and after a museum visit, beyond surveys, post-follow ups, and social media. There has been a surge of virtual events and experiences, including long-term sustainable events such as galas and classrooms. Ciecko also stated that Twilio (July 2020) reported that COVID-19 has accelerated digital engagement and digital transformation strategies by six years.

Dilenschneider, C. (2020). Survival Superpowers - Engaging Audiences in a Pandemic-Impacted World [Conference Presentation]. Blackbaud BBCON, Virtual.

Colleen Dilenschneider is the Chief Market Engagement Officer at IPACTS Experience, where she oversees audience engagement initiatives in the nonprofit and cultural sectors, and runs the website Know Your Own Bone. In this conference session, Dilenschneider debuted 14 new data slides for her website regarding cultural institutions and how they were impacted by COVID-19 and other current events. This data, current as of September 21, 2020, came from the ongoing monitoring of 224 visitor serving exhibition and performance-based organizations in the US; the National Awareness, Attitudes and Uses study; and IPACTS partners and case studies. The preference to stay home during the weekend has grown (52.8%), even among the people who are most likely to actually visit open institutions (43.5% high-propensity visitors). Because of the increased numbers of people staying at home, there has also been a dramatic increase in minutes of media consumption per day (470 minutes of digital media, 497 minutes for high-propensity visitors). This is important because as Dilenschneider explains, digital engagement increases intentions to visit and helps share our missions.

Hallman, T. et al (2020). 45 x 45 Audience Engagement Ideas: Covid-19 Edition

[Conference Presentation]. Visitor Experience Group (VEX) 2020 Conference, Virtual.

Three of the four conference speakers are located in California, one being the director of the Asian Art Museum, and two being leads on the Bay Area VEX Group. Speakers shared 45 ideas within five different categories of COVID related pivots in 45 minutes and then welcomed the audience to share things their museums have been doing. Six of these ideas fall within the Western United States and include moving in person programs online, virtual exhibits, social media challenges and hashtag campaigns, and even sharing their collections to video games.

ICOM (2020). Museums, Museum Professionals and COVID-19: ICOM and UNESCO

Release Their Full Reports. Retrieved from <https://icom.museum/en/news/museums-museum-professionals-and-covid-19-survey-results/>

ICOM conducted a global survey between April and May about museum shut downs, covering five themes: current museum standing and staffing, economic impact, digital and communication, collection security and conservation, and freelance work. Roughly 1,600 responses were collected from 107 different countries. Findings relevant to my research include wide spread closures (94.7%) and reduced programming and activities (82.6%), pre-pandemic digital and social media activity (almost half) with an increase in these practices during the pandemic (15%). Questions specific to digital activities highlight dedicated staff (26.1% full-time dedicated staff, 55.7% have other responsibilities), dedicated budget (23.8% dedicate 1-5% of budget and 5.4% dedicate more than 15% of the budget), changes in digital services (no

changes, yes but same as before, yes but increased, and started after lockdown). Each of these results was then further broken down by geographic region.

Reid, T. et al (2020). Bold Ideas for Responses to Emergencies [Conference Presentation].

Utah Museums Association 2020 Conference, Virtual.

In this group panel, 11 staff members of different cultural institutions and museums shared ways they responded to the COVID-19 pandemic. Many of which took this time to give examples of the new and pre-existing means of digital engagement that played a vital role in the museum's relevancy during the pandemic. These include virtual classrooms, fieldtrips, programming, activities, exhibitions, and games.

UNESCO (2020). Museums around the world in the face of COVID-19. Retrieved from

<https://unesdoc.unesco.org/ark:/48223/pf0000373530>

This May 2020 report released by UNESCO highlights the impacts of COVID in the museum sector, both economically and socially, with hopes to understand adaptations and constraints of this crisis. It states that although 90% of museums globally (more than 85,000 institutions) closed during the pandemic the majority, led by "big" museums, did not stop operations and provided educational resources through other digital means. It sheds light on the fact that even with digital content provided, more than half the global population is without internet access and other constraints keeping everyone from utilizing these resources equally. It is interesting to note that the AAM (2020) survey states that 7% of respondents made the museum's WIFI available to the public during closure, which in effect helps combat issues of accessibility. It is stated that this is only the first report by UNESCO to assess the pandemic's impact, thus searching for an updated or more current release will be necessary for a better understanding of the situation.

VR Wizards (2020). BYOL Museum Chats: How your visitors can experience your venue virtually during COVID-19 and beyond [Conference Presentation]. Utah Museums Association 2020 Conference, Virtual.

During this virtual session, the conference sponsor, VR Wizards, shared an overview of the work they have been doing for museums. Just before COVID hit, VR Wizards recognized the potential of VR for museum tours compared to the traditional web-embed Google street view 360° photos they had done previously. They believe that the ability to experience museums virtually is a great way for museums to remain accessible and relevant during the pandemic and even the future. Prior to the museum's reopening, VR Wizards worked with the Springville Museum of Art to create interactive virtual tours of three different galleries. These tours will be used for virtual field trips during the pandemic, and to increase accessibility to rural areas and patrons of diverse abilities after the pandemic.

Zuanni, C. (2020). Digital responses from locked-down museums. Retrieved from <https://culturalpractice.org/digital-responses-from-locked-down-museums/>

Dr. Zuanni of the University of Graz has presented a project to map the digital responses of museums to the COVID 19 pandemic. The majority of these museums are within Europe, and are organized into eight major categories: contemporary collection, social media, streaming, virtual tours, online exhibitions, games, educational content, and miscellaneous activates. Not only does Dr. Zuanni highlight the statistics that have arisen during the pandemic regarding museum closures and online/digital pivots, she brings up the questions regarding long term sustainability of these actions, such as the challenges of digitization and online availability,

metadata and metadata-enriched open collections, and the increase in contemporary and born-digital collecting.