CHAPTER 7

Researching Online Museums: Digital Methods to Study Virtual Visitors

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In the twenty-first century, digital technologies, social media, and mobile devices add a new interactive dimension to cultural experiences. Online environments provide spaces for a more advanced level of engagement for contemporary audiences, which increasingly intersect with influential and interactive marketing.[1] Marketing with social media is not just about delivering a message to consumers, but about building two-way relationships with key audiences. Effective audience engagement involves the online public in a number of cultural and social activities that include online conversations and social media forums, public contests and viral campaigns with mega-popular YouTube videos or even "advergames" consisting of interactive virals with subtle branding.[2]

[1] Glen Drury, "Social Media: Should Marketers Engage and How Can It Be Done Effectively?" *Journal of Direct, Data and Digital Marketing Practice* 9, no. 3 (2008): 274–277.

[2] Ibid.

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All of these online activities leave online "traces," which are constantly recorded in the digital realm as a visitor comments, posts, likes, visits, or shares. This online data on virtual audience behavior provides opportunities for a more nuanced and comprehensive audience research that aims to enhance relationships between institutions and the public. **Visitor or audience research** refers to the interdisciplinary study of human experiences based on a systematic collection and analysis of data to inform institutional decisions about their programs and offerings.[3] This chapter builds a framework of digital methods to study virtual visitors through a presentation of three key methodologies applied in online audience research, including quantitative, behavioral, and qualitative approaches.

Quantitative methods[4] in this field are concerned with audience statistics, including quantity, demographics, and geographic distribution of online visitors. This quantitative approach is especially valuable for building an audience social-demographic profile to answer such questions as who the virtual visitors are, where they come from, and what segments of population they represent. **Behavioral analysis**[5] complements statistical methods by offering insights into what people do online and how they interact with online content. This method's concern with the online behavior of virtual visitors explores audiences' pathways, and communication with each other and online content.

Qualitative methodologies[6] aim to explain online visitors' activities by revealing their motivations, interests, and preferences. These methods require not only a complex observation of virtual visitors but more nuanced research of online communities. This research is usually based on surveying and interviewing key audiences to get more comprehensive and realistic explanations of what drive visitors' interests and motivations, what define their preferences and how exactly they perceive content and messages delivered to them online. All three methods complement each other by offering insights from different, but interrelated perspectives.

[3] "Glossary of Visitor Studies Terms," Visitor Studies Association, accessed May 10, 2017, http://www.visitorstudies.org/glossary-of-terms.

[4] Alan Bryman, "The End of the Paradigm Wars?" In *The SAGE Handbook of Social Research*, eds. Pertti Alasuutari, Leonard Bickman, and Julia Brannen (Thousand Oaks, CA: Sage, 2008).

[5] Abbas Tashakkori and Charles Teddlie. *Handbook of Mixed Methods in Social & Behavioral Research* (Thousand Oaks, CA: Sage, 2003).

[6] Bryman, "The End of the Paradigm Wars?"

Together, they help us to understand: (1) *who* online audiences are; (2) *what* they do online; as well as, (3) *how* and *why* they do what they do.

This chapter focuses on the application of visitor studies methodologies to museums as cultural institutions that incorporate digital media into their cultural programming and social activities. Museums have traditionally been defined as major repositories of cultural heritage, the main keepers and exhibitors of historical, scientific, artistic, or cultural artifacts.[7] While in a physical museum, public access to collections can be quite limited, new media technologies provide unique opportunities to "visit" museums 24 hours a day. More importantly, contemporary museum visitors can participate in online discussions, share their opinions, curate their own exhibitions, rate museum objects in online galleries, collaborate with other visitors, and even contribute to museum online collections with their own creations.

Museums do not solely engage their audiences in new, digital interactive experiences for marketing purposes. However, as examples of this chapter highlight, they are based on similar social media marketing principles, such as "participatory" activities and public contests. These online "interactives" involve clicking through links, browsing pages, manipulating views of digital objects, as well as adding various textual, visual, or audio information to the online content of museums. Recorded through online applications, this data provides an advanced database of evidence illustrating museum visitor behavior online. **Museum audience (visitor) research** is a very important part of museum work, which is based on research activities and evaluation of actual, potential, and virtual visitors.[8]

Since the emergence of museum studies, a variety of methodologies have been successfully employed both by museum professionals and academic scholars. Counting heads, gathering demographics, mapping visitor paths in the museum, surveying audiences, and evaluating visitors' understanding of exhibitions have shaped the majority of museum visitor research in the past decades.[9] Through time, audience research has

[7] "Museum Definition," ICOM (International Council of Museums), accessed May 10, 2017. ICOM, http://icom.museum/the-vision/museum-definition/.

[8] Eilean Hooper-Greenhill, "*Studying Visitors*," in *A Companion to Museum Studies*, ed. Stuart McDonald (Oxford: Blackwell, 2006).

[9] Steve Bitgood, "Introduction: Visitor Studies—1988." *Visitor Studies* 1, no. 1 (1989): 5–8; George Hein, *Learning in the Museum.* (London: Routledge, 1999); and Boris Schiele, Ruth Rentschler, and Eve Reussner, *Museum Marketing Research: From Denial to Discovery* (Melbourne: Deakin University Press, 1992).

significantly advanced from a simple quantification of visitors and their characteristics to complex observations, interviews, and focus groups that aim to analyze and interpret visitors' behaviors in their interactions with objects in a museum setting.

With the development of the Internet and new media, museum visitor studies have been supplied with a plethora of new digital tools to study virtual museum "goers." If in a museum physical space video or audio recording is required to collect data demonstrating how people interact with museum objects, an online environment is a perfect recording tool in itself. It instantly traces all user activities and displays the visible records. From a marketing perspective, online audience research is a significantly faster, easier, and less expensive means of data collection than traditional interviews or focus groups, because it is based on the collection of data that people freely share online.[10] However, both in social media marketing[11] and in a museum world[12] there are important ethical issues that require further discussion. This chapter starts with a section "Studying Virtual Human Subjects," which specifically focuses on ethical considerations that define audience research in a museum setting.

The following sections provide a comprehensive guide to three types of research methods employed by contemporary museums to study online visitors. Illuminating how traditional museum visitor research tools informed emerging digital methods, the chapter describes important procedures of online museum audience studies. Step by step, three sections introduce more sophisticated online methods, which add new dimensions to the understanding of virtual visitors. The chapter commences its methodological framework with a section "Who Comes to Online Museums" that presents quantitative research, including statistics and demographics on online audiences. Then, it proceeds with details about behavioral research in the section "What Virtual Visitors Do in Online Museums." This section describes methods based on tracking online visitor pathways and observing their activities. Finally, the section

[10]Robert Kozinets, *Netnography: Doing Ethnographic Research Online* (London: Sage, 2010).

[11]Ibid.

[12]Natalia Grincheva, "Museum Ethnography in the Digital Age: Ethical Considerations," in *Internet Research Ethics for the Social Age: New Cases and Challenges*, eds. Michael Zimmer and Kataharina Kinder-Kurlandan (New York: Peter Lang, 2017).

"How and Why Virtual Visitors Communicate with Museums" presents qualitative methodologies that are based on complex observations and interpretations of online museum communities.

Studying Virtual Human Subjects: Ethical Research

Traditional museum visitor research activities should comply with the internationally accepted Code of Ethics for Museums, established by the International Council of Museums.[13] This Code of Ethics undergoes continuing updates, as new media technologies facilitate new research methods for visitor studies. Despite the fact that the majority of online museum spaces are public and easily accessible for anyone who wishes to join and contribute, observation in such "open" online communities can be quite controversial.

"Lurking" presupposes an invisible presence on a site, based on a one-way process in which a researcher acquires a powerful position to gaze on others, "appropriating their actions for the purposes of research."[14] Nonetheless, non-obtrusive "lurking" has established itself as a major strand of social science research on the internet,[15] because of the convenience of the data collection procedure, which does not affect participants' behavior.[16] Being non-disruptive, this method allows digital researchers to investigate large numbers of online participants and to achieve a high degree of accuracy in data analysis.

However, if engaged in passive methods of data collection, museums need to inform the online public that all user contributions in the form of comments, posts, or visual materials are widely and freely accessible in the public domain and can be used for the purposes of research. Many online museum spaces require participants to read and agree with

[13] "Code of Ethics for Museums," ICOM (International Council of Museums), accessed May 10, 2017, http://icom.museum/fileadmin/user_upload/pdf/Codes/code_ethics2013_eng.pdf.

[14] Debora Heath, Erin Koch, Barbara Ley, and Michael Montoya, "Nodes and Queries: Linking Locations in Networked Fields on Inquiry," *American Behavioral Scientist* 43, no. 3 (1999): 450–463.

[15] Christine Hine. *Virtual Ethnography* (London: Sage, 2000).

[16] Nigel Fielding, Raymond Lee, and Grant Blank. *Sage Book of Online Research Methods* (London: Sage, 2008).

their terms and conditions as a part of registration procedures. In these agreements, it is usually specified that participants' contributions automatically become part of a larger internet community and in certain cases are being employed by third parties for educational and research purposes.

In cases when museum online communities emerge on third-party social networks, like Facebook or YouTube, museums and researchers need to clarify their terms and conditions for nonreactive data collection. Even though social media audiences are usually informed by the networks' Terms of Use that data on visitor activities is potentially collected and reused, some special measures to protect the confidentiality and anonymity of online audience data is crucial for ethical research. These measures include avoiding using the personal information provided by online participants, such as their online names, age, nationality, profession, etc. Furthermore, confidentiality may require the omission of visual/textual user-generated content if it contains personal information on sensitive issues or if it could result in threats to participants' material or psychological well-being.

Although "passive" methods can appear to be quite convenient ways to collect reliable data based on simple unobtrusive observations, more active engagement with online communities can be very beneficial.[17] By crossing the line of online observation and initiating a dialogue with potential respondents through online interviews and focus-groups, museum managers can develop a more nuanced and detailed understanding of their audiences. In online dialogues, museum researchers are obligated to explain the purpose of their research, how data will be used and the protection of users confidentiality to participants. This helps a museum to establish a trustworthy reputation among their online public and, in many cases, it leads to a more candid and loyal relationship with online museum fans, supporters and active contributors.

Making sure that online visitors feel "safe" in online museum communities is a crucial component of any digital research that provides an important basis for making museums truly public spaces for enjoyment and interaction. While this section provides foundations for setting up a "safe" museum research environment, the next part illuminates initial methods for building productive virtual visitor research.

[17] Hine, *Virtual Ethnography*, 257.

Who Comes to Online Museums: Counting Virtual Visitors

The earliest visitor studies were mostly based on gathering *quantitative data* on museum audiences. These methods consisted of collecting information about museum visits on site and counting specific social and demographic characteristics of visitors such as their gender, age, social and family status, occupation, and place of residence. The huge popularity of statistical approaches that aim to understand the social composition of museum public can be explained by the growing importance for museums to become more socially inclusive spaces that can engage audiences from different social classes.[18]

In London, the major British museums began gathering audience statistics as early as the 1830s. They concentrated on gross visitor numbers in different seasons as well as on days of the week.[19] More advanced research about the demographic profiles of museum visitors started to demonstrate various patterns of museums use in 1884[20] and remains one of the most important methods to understand museum audiences. For example, interviews with the directors of major museums in London, New York, and Washington, DC, confirmed that the simplest quantitative methods are still the most popular methodology for measuring museum performance.[21] Museum professionals and academics consider individual characteristics of visitors to be important factors, which have a profound effect on how different social groups interact and engage with museum spaces, objects, and activities.[22]

With the development of the Internet, online visitor studies immediately employed the quantitative approach. In many museums, evaluating online audiences has largely been based on gathering and analyzing statistics that demonstrate unique site visits over a period of time, as well as web demographic data about online visitors. Furthermore, assessing success in social media spaces is heavily dependent on quantitative data that demonstrates the number of connections created in social networks

[18] Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge: 1995), 8.

[19] Ibid.

[20] Bitgood, "Introduction: Visitor Studies," 5–8.

[21] Ibid.

[22] Hooper-Greenhill, "Studying Visitors," 368.

online.[23] Contemporary museums constantly track online visitors and compile results in reports over regular intervals (daily, monthly, weekly, annually) in order to evaluate their performance online.[24] That is why, in the professional museum world, the audience engagement factor is very often understood in terms of quantitative data, such as the number of visits, number of visitors, and the length of time a user spends on a museum site.[25]

For example, Facebook data collection tools provide an excellent opportunity to explore online museum fans and their social demographics. Facebook Insights records the number of people who connected to the museum page by subscribing to its newsfeed or by "liking" its page. It provides invaluable details,[26] which allow museum managers to see who these people are, in terms of their gender, age, country of origin or location, as well as what languages they speak. The Facebook Insights page of the Hermitage Museum Foundation UK (see Fig. 7.1) demonstrates that there are slightly more female audience members than male. It also shows that people from the age groups 25–34 and 35–44 are the most engaged in the Facebook community. Finally, it reveals that people from 45 countries speaking 17 different languages follow the Museum Foundation page. This information is very valuable for museum managers as it helps to identify which potential audience segments need more careful targeting, and which age or gender groups could be more engaged with the museum activities and collections in social media spaces.

[23] Charles Van den Heuvel, Sandor Spruit, Leen Breure, and Hans Voorbij, "Annotators and Agents in a Web-Based Collaboratory Around Cartographical Collections in Cultural Heritage Institutions." Museums and the Web 2010, accessed May 10, 2017, http://www.archimuse.com/mw2010/papers/heuvel/heuvel.html; Georgia Angelaki, Rossella Caffo, Monika Hagedorn-Saupe, and Susan Hazan, "ATHENA: A Mechanism for Harvesting Europe's Museum Holdings into Europeana," *Museums and the Web* 2010, accessed May 10, 2017, http://www.museumsandtheweb.com/mw2010/papers/angelaki/angelaki.html; Wayne LaBar, "Can Social Media Transform the Exhibition Development Process: Cooking the Exhibition—An Ongoing Case Study." *Museums and the Web* 2010, accessed May 10, 2017, http://www.archimuse.com/mw2010/papers/labar/labar.html.

[24] Barbara Soren and Nathalie Lemelin, "'Cyberpals!/Les Cybercopains!': A Look at Online Museum Visitor Experiences." *Curator: The Museum Journal* 47, no. 1 (2004): 55–83.

[25] Ibid.

[26] Facebook Insights shows the demographics and geographic distribution of audiences in total absolute numbers, not normalized to the Facebook demographics.

Fig. 7.1 Facebook insights: Hermitage Museum Foundation UK

Another good example is the quantitative research conducted by the Van Gogh Museum in 2010 about their online audiences across various social media platforms. Highly visible and active on social media, the Van Gogh Museum engages its online visitors by providing participatory opportunities on its blog and various social media sites, such as Facebook, Twitter, and YouTube. The 2010 research revealed that people from different countries have particular social media preferences regarding their interaction with the museum. With foreign visitors constituting more than 80% of their total audience, the Van Gogh Museum has outstanding international appeal and recognition.[27] In 2010, the museum reached online audiences from around 135 countries, with the majority of audiences coming from Europe and North America. Social media significantly helps the Van Gogh Museum to engage wider international communities; 63% of visits to the museum website were from international users, compared to 90% of Facebook fans and Twitter followers[28] (see Fig. 7.2). The Van Gogh Museum's online audience

[27] "Annual Report 2010–2015," Van Gogh Museum, accessed May 10, 2017, https://www.vangoghmuseum.nl/en/organisation/annual-report.

[28] Natalia Grincheva, "How Far Can We Reach? International Audiences in Online Museum Communities." *The International Journal of Technology, Knowledge and Society* 7, no. 4 (2012): 29–42.

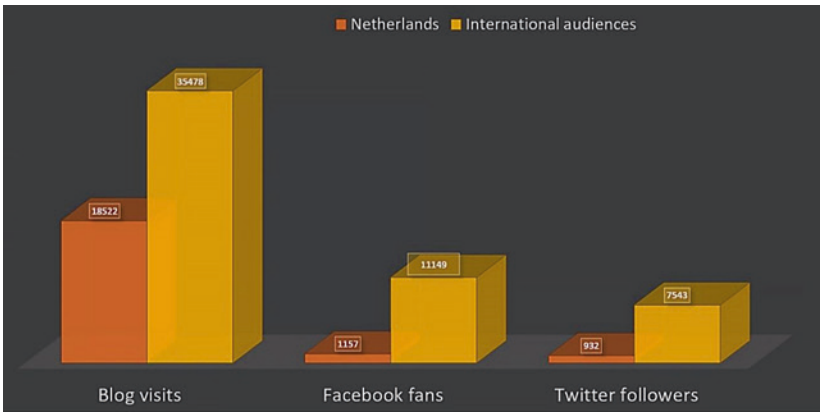

Fig. 7.2 Van Gogh Museum blog, Facebook and Twitter: domestic and international audiences

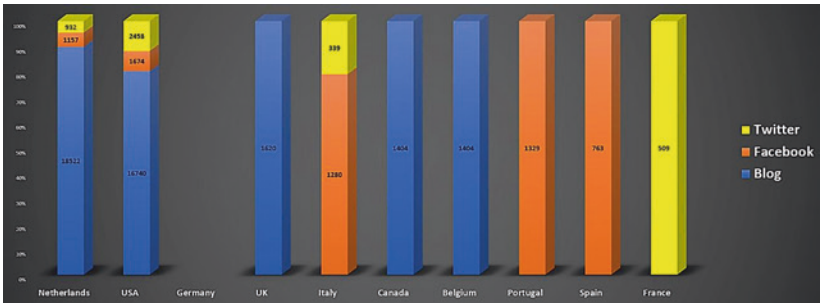

Fig. 7.3 Van Gogh Museum blog, Facebook, Twitter: top countries audiences

research drew on quantitative data collection through the museum blog and social networks, including the collection of statistical data on the geographical distribution of virtual museum audiences.[29]

The analysis of social network use among the top represented countries indicated different preferences in the social media tools they employed to connect to the museum. Figure 7.3 illustrates that only Dutch and American audiences actively used all social media spaces (blog, Facebook, and Twitter) to follow the museum online. People

[29] Grincheva, "How far can we reach?"

from other countries mainly connected to the museum through a preferred social media channel. For example, Twitter attracted more of a French population, Facebook appealed more to Spanish and Portuguese online users. Virtual visitors from the UK, Belgium, and Canada enjoyed following the museum blog the most. Interestingly, while Germany was among the top five in the geographic distribution of the museum site visits, it was an underrepresented country on the social web (see Fig. 7.3).

Even though this quantitative research clearly demonstrated significant cross-cultural differences in the use of the museum social media, it left many questions unanswered. For instance, researchers could explore the motivations behind the usage of specific social networks by people from different countries in their engagement with the museum activities. However, this is difficult to investigate, relying only on the quantitative methods. Indeed, quantitative data points to a social strength and power of museums as social institutions that are capable of attracting local and international audiences. Nevertheless, this data fails to evaluate the qualities of online visitors experiences as well as their motivations, interests, and values. To address these limitations in demographic and statistical methods, one has to employ a behavioral approach in audience research.

What Virtual Visitors Do in Online Museums: Exploring Audience Behavior

Behavioral studies are based on observing visitor actions within a museum area in order to comprehend what visitors do and how they interact with each other and with museum objects while they explore a museum. Behavior research is usually linked to the educational agenda of museums, striving to provide an effective learning environment for its visitors.[30] Data that helps to analyze visitor behavior inside a museum includes the total time of museum visits, choice of exhibition areas, and focus of attention on certain objects or displays. As visitors proceed through the exhibition halls of a museum, personal tastes, cultural preferences and other psychological and social factors make certain exhibitions, objects or museum spaces popular while others remain unnoticed or purposefully ignored.

Tracking visitor movement through exhibit and gallery spaces is one of the oldest methods of studying visitor behavior, dating to the early 1900s. One of the earliest forms of visitor behavioral research is “mapping.” Mapping involves tracking the differences between visitor behaviors in

[30] “Museum Definition,” ICOM.

particular exhibition spaces. As a result, maps can indicate the most and least interesting places in exhibitions according to the time spent at these sites, as well as the number of people who followed similar tracks.[31]

The use of surveillance technology is very important for mapping and other behavior studies methodologies. Museums rely on the use of monitoring and recording devices that can help observe people's behavior and collect evidence on visitor activities. One of the methods for studying visitors that is frequently used in museums now is audio recording people's conversations or video recording their behavior.[32] Through observation of body movements and analysis of verbal behavior, museums analyze visitor responses to installation designs to assess exhibitions' learning outcomes.

Online, the behavior-focused approach is quite popular among museum scholars and managers. Online mapping is frequently used to track visitor paths on websites and gather statistics: for example, the number of unique visits to a particular page, the time spent on the page, and the particular browsing path to the page. The data indicates the interest of the visitors in the museum content and the most and least popular web pages, galleries, or blog postings. Evaluating the effectiveness of online communication through an analysis of website statistics can highlight most requested or popular pages, the average time spent on site, as well as the main sequence of pages browsed.[33] These patterns of use indicate which parts of websites are most visited and which are seldom selected by different online audiences. This information tells museum managers and curators how the content that they display online is relevant to visitors' interests and needs and how quickly and easily online visitors can find it.

More importantly, the online environment provides a plethora of evidence, which not only demonstrates various patterns of online content consumption, but also illuminates the degree of audience engagement

[31]Arthur Melton, *Problems of Installation in Museums of Art* (Washington, DC: American Association of Museums, 1935), 114.

[32]Arthur Lucast, Paulette McManus, and Gillian Thomas, "Investigating Learning from Informal Sources: Listening to Conversations and Observing Play in Science Museums." *International Journal of Science Education* 8, no. 4 (1986): 341–352; Kevin Crowley and Maureen Callanan, "Describing and Supporting Collaborative Scientific Thinking in Parent-Child Interactions," *Journal of Museum Education* 23, no. 1 (1998): 12–17; and Dirk vom Lehn, Charles Heath and John Hindmarsh, "Video-Based Field Studies in Museums and Galleries," *Visitor Studies Today* 5, no. 3 (2002): 15–23.

[33]Patricia Gillard and Anne Cranne-Francis, "Evaluation for Effective Web Communication: An Australian Example," *Curator: The Museum Journal* 45, no. 1 (2002): 35–49, 38.

with museum spaces through different types of activities. There are four important types of online behavior, among which ***involvement***, is an initial stage of audience engagement based on visits to the museum site or social media spaces. Other, more advanced levels of involvement include ***participation***, defined as taking an active part in online museum activities by commenting, "liking," sharing, or submitting content. A higher degree of engagement is ***interaction***, meaning establishing relationships with other online participants and creating a sort of online community around a museum. Finally, the highest level of audience engagement is ***influence*** which refers to promotional activities that online visitors voluntarily involve themselves in on behalf of a museum by sharing and circulating museum content within their own social media spaces[34] (see Fig. 7.4).

Behavioral analysis of audiences' levels of engagement usually employs a mixture of computation tools applied by researchers to identify various stages of virtual visitors' engagement and to measure this engagement on each of the levels. This methodological framework was developed by combining two engagement measurement systems: the metric of engagement, proposed by Brian Haven, a Forrester researcher in social computing, and the hierarchy of social participation developed by Nina Simon, a famous museum consultant and author of the book *The Participatory Museum*.[35] This framework is based on **audience segmentation**, a process of dividing audiences into categories based upon their online communication preferences and behaviors within social media spaces.[36]

While various social media platforms, for example Facebook, offer their own benchmarks and metrics for categorizing users' online activities, in a museum setting it is usually done by a researcher through behavioral observation. In certain cases purposefully created online museum "participatory" portals provide research platforms, which allow museums to measure different levels of online audience engagement. A really good example of such a platform is World Beach Project (WBP) map, created by the Victoria and Albert Museum in 2007.[37] This social media

[34] Grincheva, "How Far Can We Reach?"; Natalia Grincheva, "'The World Beach Project' Going Viral: Measuring Online Influence (Case Study of the Victoria & Albert Online Museum Project)," *Journal of Creative Communications* 10, no. 1 (2015): 39–55.

[35] Grincheva, "How far can we reach?"

[36] Graham Black, *The Engaging Museum: Developing Museums for Visitor Involvement* (Abingdon: Routledge, 2005).

[37] "The World Beach Project," Victoria and Albert Museum, accessed May 10, 2017, http://www.vam.ac.uk/content/articles/w/world-beach-project/.

Degree of engagement	Type of behavior	Characteristics	Quantitative Indicators	Qualitative Indicators
Low	**Involvement**	The initial level of engagement that audiences have with an online museum. It refers to the general level of interest the audiences express in the content, activities, and collections of online museums.	Site visits Time spent per page Number of pages viewed Frequency of site visits Social media connections	N/A
Medium	**Participation**	Online actions the audiences take to establish a relationship or a connection with the project. This participation metric is based on measuring events in which people contribute their own creative content, make comments and participate in surveys, rate and tag museums' content online, and request additional information about exhibitions or projects.	Number of posts Number of comments Number of online submissions (text, video, audio, image) Number of ratings	Quality and content of submissions, posts and comments
Upper Medium	**Interaction**	It illustrates how individuals within the online project are connected to each other and if these connections are strong enough to sustain a live online community. The interaction component is usually measured through qualitative and quantitative data that indicate whether individuals exchange information, content and opinions in collaborative or interactive activities around the project.	Number of partnerships established among the participantsNumber of collaborative contributions and submissions Number of messages exchanged between each other Number of comments left to each other's posts.	Quality and content of messages and collaborative contributions
High	**Influence**	It is the potential of online participants to promote the museum and the online project to wider audiences. The influence metric is based on identifying the 'influencers' among the audiences and measuring the scope of their influence in terms of how big and diverse their personal networks are and what actions they take in order to promote the museum.	Number of active 'influencers' Frequency of their promotional actions on behalfof the museumNumber of their followers and fans	Quality and content of their promotional messages

Fig. 7.4 Levels of online audience engagement

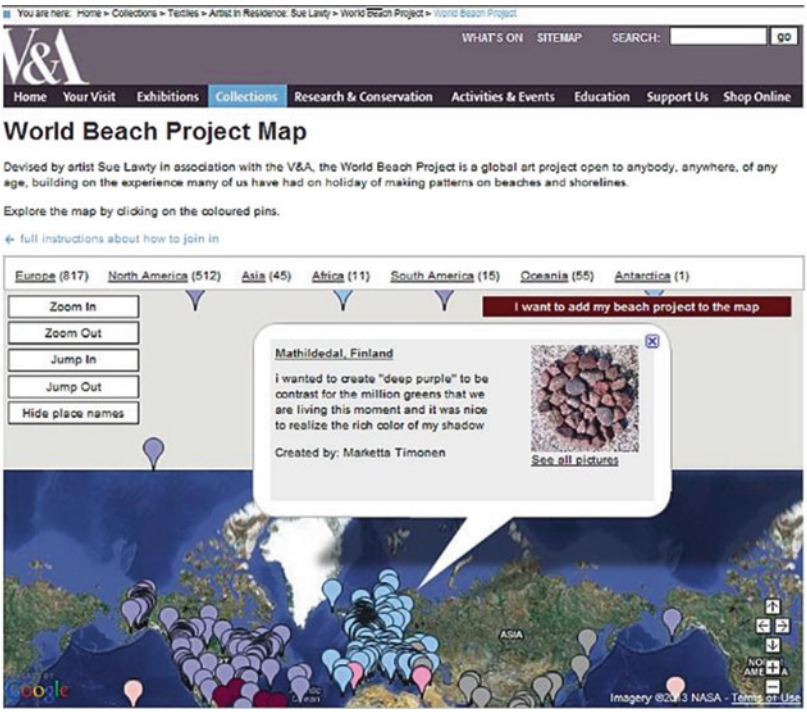

Fig. 7.5 World Beach Project map, Victoria & Albert Museum

platform collected stories and photographs of individual art pieces based on stone patterns, created by people on a beach, and displayed them on the digital global map (see Fig. 7.5). The database of the platform provided a great data resource to measure ***participation*** and ***interaction*** levels of participants' engagement with the project.

In terms of ***participation***, the online portal-map featured photographs and stories of user art creations and allowed monitoring and data collection of online submissions, as well as tracking the geographical origins of contributions on the map. The portal instantly calculated total participants' submissions and displayed exact geo-locations where participants created their submissions. Furthermore, the platform collected participants' stories which provided a database to indicate and assess the level of online audience ***interaction*** through **data mining** techniques.

Data mining is a digital research method, based on sorting through a large amount of data to identify patterns and establish relationships between

different types of data.[38] In this project, a keyword search was conducted on the project database, which aimed to identify participants' stories submitted to the portal-map and illustrate social engagement with the project.[39] Using such key search words as "community," "group," "family," "friends," "together," and "joint activity" on the portal database allowed researchers to collect and analyze examples to demonstrate that the WBP provided interactive social experiences not only in a virtual but also in a physical reality.

Stories shared by participants in the project's online platform illuminated that many families, schools, communities, and artists actively participated in joint outdoor activities for artistic practices, environmental projects and many other relevant events on local, national, and even international levels. For example, the John Muir Award, organized by the St Mary's Cathedral community from Glasgow was dedicated to discovering, exploring and conserving wild nature, and the International Community School project at Bawdsey beach (UK) in 2009 connected children from different countries in a cross-cultural practice of stone art creation.[40]

More advanced levels of audience engagement with the project, such as ***influence***, were identified and explored beyond the WBP map. A focused behavioral analysis of social media spaces through which the project was promoted, such as Facebook, Twitter and YouTube allowed researchers to identify online posts circulated by the project participants among their broader circles of family and friends. Online posts in which participants shared links to their own online contributions, requested additional information about the WBP initiative, or forwarded the project information to their friends, constituted data for the *influence* metrics and indicated a high level of audience engagement with this project.

The highest expression of *influence* in the project manifested in the launching of an independent, dedicated fan page on Facebook where fans shared their online creations and celebrated their experiences with the project. The group was created by Becky Rendell, a Welsh artist, who shared that the group was created as a quick favor to help promote the project… "I felt it was important to have something on Facebook as a point of contact for WBP, it's such a vital communication tool that I felt we could attract more participants by making a group."[41]

[38] Jiawei Han, Jian Pei, and Micheline Kamber, *Data Mining: Concepts and Techniques* (New York: Elsevier, 2011).

[39] Grincheva, "'The World Beach Project' Going Viral."

[40] "The World Beach Project," Victoria and Albert Museum.

[41] Becky Rendell, E-mail Message to Author, November 15, 2010.

The group had members from the USA, UK Australia, Canada, Italy, Germany, Czech Republic, Switzerland, France, and other countries which indicates the international nature of the self-generated online community.

It is important to clarify that the online interview with Rendell to explore her motivations behind creating the fan community constitutes a different type of audience research that goes beyond the limits of behavioral observations. Observing online audiences is certainly a more advanced method in comparison to merely counting. However, even though it provides more insights into online user activities, it is still very limited as it cannot explain why certain online museum spaces attract traffic while others fail to grab visitors' attention. In addressing these limitations, digital ethnography stands out as a comprehensive method for a more nuanced and detailed audience analysis.

How and Why Virtual Visitors Communicate with Museums: Understanding Online Audiences

If behaviorist analyses are concerned with how various factors and designs stimulate visitor response, ethnographic methods in museum studies aim to understand how and why online environments and artifacts become relevant and important to the public. **Ethnography** is a method of studying culture and society that originated in the late nineteenth century and was first employed to study aboriginal communities in colonized territories.[42] It entails observations of people and their way of life in their own local context. This methodology tells stories about a group of people based on detailed descriptions and interviews with community members. **Museum ethnographic research** is based on the visitors' observations, listening to their conversations, and conducting in-depth interviews with museum audiences that explore specific questions of interest. These methods help to expose and explore nuances of interactions between a visitor's social sphere and the world of museum objects.

Ethnographic methods employed to research computer-mediated communication derive their power from the open exploratory settings of the Internet that are equipped with the tools for observational research on virtual communities.[43] **Digital ethnography** is a branch of

[42] David Fetterman, *Ethnography: Step-by-Step* (London: Sage, 2010).

[43] David McConnell, *Implementing Computer Supported Cooperative Learning* (London: Psychology Press, 2000), 72.

ethnographic studies that aims to explore the culture of online communities. It is immersive, descriptive and as multilateral as the traditional ethnographic approach. Digital ethnography requires a researcher to become immersed in virtual culture and the life of online participants in order to observe their interactions and communications.[44]

Though the online community is, in itself, a device of data recording and an archive of evidence of visitor behavior, the ethnographer retains a dedicated role within this system. An online ethnographer serves as an interpreter who makes sense of the signals and signs of an online community. The method of digital ethnography requires the researcher to analyze a large amount of qualitative data, such as audience online expressions through text messages, comments, or through audio and visual material that they share within museum spaces. Usually, such an analysis of audiences' digital "traces" presupposes a content analysis.

Content analysis is a qualitative research technique based on interpreting and coding textual, visual, or audio material through a systematic evaluation.[45] It aims to interpret raw qualitative data to produce meaningful knowledge about a specific social or cultural phenomenon. In the digital realm, content analysis is very frequently employed to explore online audience perceptions, preferences, concerns, and motivations. In cases when researchers need to deal with a large amount and scope of online data, for example, thousands or millions of user comments on social media spaces, scholars can employ automated software for a more systematic content analysis. Examples of this software include NVivo and HyperResearch. These digital automated tools are designed to help qualitative research by storing, coding, categorizing, and searching large amounts of qualitative raw data that allows researchers to quickly sort coded data and draw correlations, patterns, and links among various materials.

A good example of an ethnographic research project, which applied content analysis to a large amount of qualitative data investigated the 2010 YouTube Play project created by the Guggenheim Museum in cooperation with Google.[46] The main goal of YouTube Play was to

[44] Steven Jones. *Cybersociety 2.0: Revisiting Computer-Mediated Communication and Community* (London: Sage, 1998).

[45] Kimberly A. Neuendorf, *The Content Analysis Guidebook* (Thousand Oaks, CA: Sage, 2016).

[46] Natalia Grincheva, "Cultural Diplomacy of a Different Kind: A Case Study of the Global Guggenheim" (PhD dissertation, Concordia University, 2015).

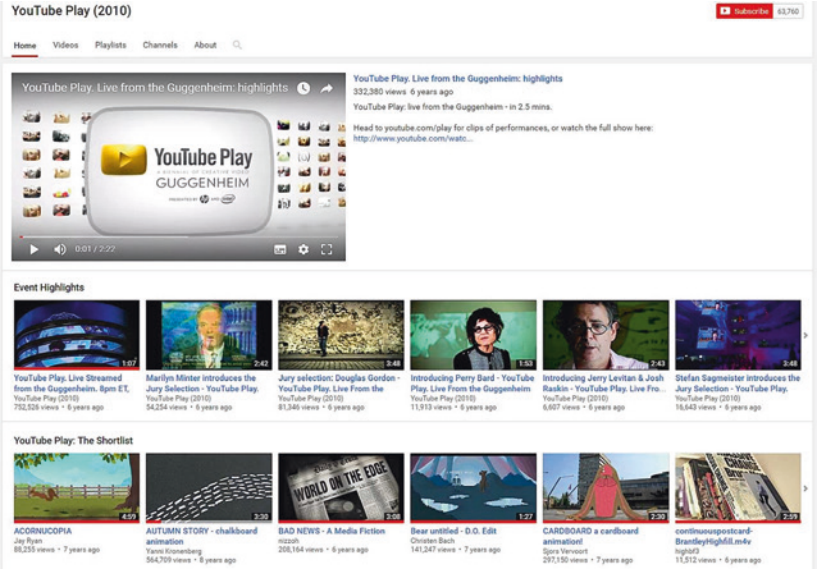

Fig. 7.6 YouTube play platform, Guggenheim Museum

showcase the best creative video from around the world. Posted on YouTube, 14 invitations in different languages invited creative video artists to participate in the contest and to compete for a prestigious award to be presented in the Guggenheim Museum in New York. Less than two months after the official call for contribution was announced, the museum received 23,358 online videos from 91 countries, 125 of which were shortlisted and featured in the YouTube Play channel[47] (see Fig. 7.6).

The channel garnered more than 10 million online viewers the day of the live event in the Guggenheim museum celebrating 25 winners of the contest. This amount of views exceeded the total number of online visits the Guggenheim website usually receives annually. Over a year after completion of the project, the YouTube Play site attracted over 23 million viewers and to date it remains a popular YouTube channel with around

[47]Nora Semel and Francesca Merlino, "YouTube: Play at Guggenheim Museum," *Museum Next* 2011, accessed May 10, 2017, https://www.museumnext.com/insight/youtube-play-at-guggenheim-museum/.

65,000 subscribers and constantly updated feedback on the videos constituting the channel archive.[48]

In this project digital ethnographic research helped to identify which components of the project design, in terms of its *content*, *form* and *targeted audiences*, made it so appealing to the global YouTube community. The research was based on the content analysis of audience comments from the 176 video clips on the YouTube Play channel, which represented 21,215 posts. First, the posts were collected through a YouTube CommentThread toolkit that enabled the storage of original YouTube posts and collection of key information on who submitted the comment, when, and to what specific stream or to what exact video. The sample of the audiences' comments was selected by collecting not more than 500 comments for each of the videos. In cases where a single video generated less than 500 comments, all of them were included in the final sample. In cases where the total number of comments exceeded 500, the comments were selected by collecting 500 available comments posted by audiences around or closer to October 2010 (when the contest was taking place).

Next, content analysis was employed to code collected comments, using a single comment as a unit of analysis. First, it included identification of the language in which each of the comments was posted. The linguistic analysis of the YouTube Play comments helped to answer a question regarding the *targeted audiences*. First, it exposed that online followers of the project communicated in 26 different languages, including non-European languages, such as Hebrew or Arabic, for example, as well as Japanese, Malay or Russian, pointing to a strong global appeal of the project.

Furthermore, a more focused analysis of comments collected from 14 video invites posted by the museum on YouTube in 14 languages confirmed that such as strategic multilingual promotion ensured a high visibility of the project among various online linguistic communities, eliminating language barriers in the digital realm. Specifically, the linguistic analysis revealed that 14 languages chosen for the project promotion were the most frequently used by online audiences among other non-English languages. The linguistic analysis of comments also attested to a high level of diversity of the YouTube Play audiences indicating the YouTube Play campaign's successful targeting of a global public, including non-English speakers.

[48] Ibid.

The content analysis of the project also included a thematic analysis of messages with the most favorable feedback or sentiment. Sentiment analysis or **opinion mining** is a method that aims to extract audience opinions from natural language text using computational tools. It helps to identify positive and negative opinions expressed through social media messages in relation to targets of these sentiments.[49] Messages with positive sentiment about the project were coded and distributed in broad categories according to important questions about the *content* and *form* design components of the project. In terms of the *content*, the analysis focused on positive messages and comments discussing the channel clips as representatives of various video genres. A comparative analysis of the amount of positive feedback (exact number of messages with a favorable view) submitted to clips representing different video genres revealed audience favorites. The largest amount of positive comments posted on video clips representing so-called "remix" or "mash-up" videos confirmed that the Guggenheim made a strategically correct choice by prioritizing this genre among contest submissions.

"Mash-up" is based on taking samples from pre-existing video or audio materials to combine them into new forms according to personal taste practices of "cut/copy and paste."[50] The massive audience for remix YouTube clips, which can go viral on the Internet, enthusiastically praised the museum's idea of making this type of video as a part of contemporary museum collection. Hundreds of users' positive comments, some of which called the "mash-up" video a "YouTube Orchestra," "YouTube Art," "Future of art" or "The Bible of Sampling!", explained why the *content* of the Guggenheim museum online project was so enjoyable to the global public.[51]

As for the *form*, the analysis focused on messages with favorable feedback about the design and organizational component of the project. Specifically, this analysis illuminated that the interactive or "participatory" nature of the project predetermined its success among online audiences. One of the most prevalent arguments in favor of this project was

[49] Liu, Bing. *Sentiment Analysis: Mining Opinions, Sentiments, and Emotions* (Cambridge: Cambridge University Press, 2015).

[50] Betsy Rymes, "Recontextualizing YouTube: From Macro–Micro to Mass-Mediated Communicative Repertoires," *Anthropology & Education Quarterly* 43, no. 2 (2012): 214–227.

[51] Grincheva, "Cultural Diplomacy of a Different Kind."

the contest's objective to invite ordinary people to share their artistic talents: "What I like about the YouTube Play," a passionate fan of the project shared, "is the images of ordinary people, youtubers, not highly paid professional actors and actresses. Regular people, real life. It feels much realer than movies or tv." Many similar comments demonstrated that YouTube audiences strongly supported the museum in giving a chance to ordinary people and amateur creators: "I reckon, it should extend… There are a ton of talented artists on the internet that don't get the recognition they deserve." The contest gave the opportunity to YouTube audiences to share their talent and celebrate a living "culture of today."[52]

In this project, digital ethnographic research, which included sentiment mining, and linguistic and content analyses combined with quantitative methods, helped to identify important components of the project design which made YouTube Play a global and viral phenomenon. Such deep ethnographic research usually not only documents specific outcomes of museum online programs but, more importantly, informs strategic institutional choices about developing new activities for online audiences. A rich world of social media comments provides a diverse spectrum of the online visitors' thoughts and points of view, which expose museum staff to what they can improve, what they can take on board for future initiatives, what they have to leave in the past in order to create a more meaningful engagement with online audiences.

Conclusion

This chapter explored three important dimensions of visitor studies methods in online museum communities, including *quantitative*, *behavioral* and *qualitative* methodologies. It demonstrated that each of these methods is important for understanding virtual visitors and provides vital details answering such questions as *who* interact with online museums as well as *how* and *why*. Quantitative research, with its statistical approaches, constitutes the foundational methodological basis for drawing a social-demographic profile of audiences and highlighting how many people are engaged and what segments of the population they come from. It provides invaluable information for museums who employ this data to diversify their audiences and enhance their social inclusion strategies.

[52] Ibid.

These quantitative methods in many cases inform behavioral research which intends to bring audience studies to the next level by offering observations on what virtual museum "goers" actually do online and how they involve themselves in museum online activities. This method helps to track visitor paths in online museum environments and measure levels of social engagement in specific campaigns. By looking at how people interact with each other and with the museum in social media communities, behavioral research complements quantitative analysis and offers a new criteria of audience segmentation based on types of user behavior rather than mere social-demographic factors.

Finally, qualitative research, such as digital ethnography, provides important methodological tools to understand museum audiences and collect feedback on museum programming. This method is the most time-consuming, however, it offers a high degree of accuracy in explaining virtual visitor behavior, preferences, and motivations behind their online actions. All these methods work the best when they are integrated or combined with one another. In some cases, it is not possible to apply them separately, as this chapter demonstrated through numerous examples. Quantitative and behavioral data provide details about online audiences and aid decision making processes.

Museum visitor research is a rapidly developing field, which employs digital and mobile media to provide new avenues for cultural and museum experiences. For example, innovative developments in the museum world include museum virtual reality (VR) tours, museum augmented realities, and activities that are predominantly designed for human-object interactions in between on site and online spaces and communities. These new museum activities across physical and virtual worlds urge a development of new methods that need to combine path mapping and public tracking through sensors and security cameras installed in gallery spaces with data collected through Internet, media platforms, and mobile devices. New research will need to look at how "big data" and **cultural analytics** can be applied to advance museum audience research[53] through the integration of new data sources. Researchers can explore information streams and the circulation of people, objects, and ideas across digital and physical realities.

[53]Lev Manovich, "Cultural Data," In *Museum and Archive on the Move: Changing Cultural Institutions in the Digital Era*, ed. Oliver Grau (Berlin: De Gruyter, 2017).

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