Action Research

Fifth Edition

Ernest T. Stringer
Curtin University of Technology

Alfredo Ortiz Aragón
University of the Incarnate Word

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CHAPTER 9

Action Research and Digital Media

Michael Kent, Crystal Abidin, Inci Yilmazli Trout,
Michelle Vasquez, and Alicja Sieczynska

Using Digital Media in Action Research

In the previous edition of this book, we noted that talking about the Internet as a separate part of research, or indeed everyday life, seemed almost redundant as it had become an increasingly integrated part of people's experience. Seven years later, this is even more the case and is reflected in the shift in language from "the Internet" to "digital media," "social media," "the cloud," and so on. What has notably changed over this time is the diversity of digital platforms with different uses and features that can be applied for research and collaboration. There is also an increased range of platforms available that are popular in different regions, language groups, and demographics. While the list presented below is not exhaustive, it does provide an overview of some of the current digital tools and platforms that can be utilized in an action research context. As was the case with the last edition, writing about digital media is like taking a photo of a stream: while it may be possible to capture the moment, it is subject to constant change.

Digital technologies in today's world have become integral to our lives, even as they change the nature of our daily interactions within our environments and communities. We use digital platforms to obtain information, share our stories, and communicate with each other on a daily basis. The prevalence of social media is an example of how rapidly the digital culture has evolved. In addition to their use by citizens, these platforms are rapidly becoming a part of academic and professional settings, where scholars and professional practitioners use digital tools for a variety of purposes, including collaboration, conducting research, generating knowledge, disseminating research, and accessing community contexts. They may use social media platforms like Facebook, Twitter, and Instagram to create research communities, to share and exchange information, and to communicate with and support each other in their scholarly and professional practices.

Digital tools now can be used in every aspect of the research process including planning, collaboration, data generation and analysis, and disseminating research findings outside of academia. In this chapter, our aim is to reveal the potential uses of digital technologies in research and professional settings. The chapter is loosely divided into five sections and these digital platforms into
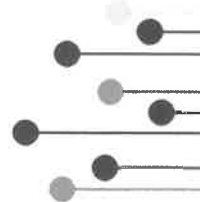
four overlapping groups: social media and networking sites; group messaging and videoconferencing; tools for research; and tools for collaboration. The chapter concludes by providing an updated list of resources available online that focus on action research.

Social Media and Social Networking Sites

Social media is a digital technology that enables user-generated content creation by sharing information, engaging in interests, and connecting ideas. Since the creation of social networking, researchers have studied user behavior to gain a deeper understanding of social interaction and how it plays an active role in research. Action research has widely adopted this method to study community-based participatory research initiatives. When planning methods for your research that utilize social media, it is important to be aware of privacy and confidentiality regulations by contacting your Institutional Review Board (IRB).

As reported by the Pew Research Center (2019), 72% of adults in the United States use at least one social media platform. Social media tools allow users to target audiences based on demographics such as age, race, gender, income, education, and community. Facebook continues to be the front-runner when it comes to popular mobile social networking apps with 169.76 million unique visitors from the United States in September 2019 (Statista, n.d.). Social media is significant because it brings together community actors on a local, national, and global scale. The interactions and ideas among online users can allow researchers to analyze and interpret data, and create strategies to take action in support of community initiatives. The following sections review some of the most popular social media and networking sites, suggesting ways in which they can be used to enhance action research projects.

Facebook

The U.S.-based platform Facebook is presently the most used social networking service globally and is the most popular app on iOS devices (Hutchinson, n.d.). The service is free, and users can create a profile for themselves and then add or follow the profiles of other users. Each profile can be personalized by posting a short introduction, posting status updates, posting and highlighting images and videos, joining groups and following pages, and posting links and other multimedia content for others to see. Users can also create or join groups or pages to interact with other users around a common topic.

Lit Corner 9.1: Social Media and Political Activism

A research study by Selander and Jarvenpaa (2016) focused on social media influences and political activism. The project explored new models to support digital activism for social movement organizations (SMOs). With the rise of social activism online, digital supporters can swiftly organize actions or any issue of interest. Yet, due to rapid developments, keeping digital users engaged for an extended time is necessary to support social change. The Swedish affiliate of Amnesty International, an SMO focused on human rights, participated with Selander and Jarvenpaa to investigate both professional groups (active members) and digital supporters (social media subscribers) of SMOs.

They utilized a series of methods (interviews, observations, analyzing social media data, etc.) to better understand the behavior of supporters. Researchers also observed the Facebook community activity based on likes, dislikes, and conversations.

The research study offered both theoretical and practical implications. The theoretical implications suggest boundary-crossing dynamics may lead to challenges as there appeared to be different views between active professional groups (members) and digital contributors, signaling the need for researchers to be aware of group dynamics in a study. Practical implications suggest that the design of the research is critical to deterring a specific group of members from taking precedence over others, with a consequent risk of fragmentation of the project. Facilitators must be able to recognize these occurrences when engaging participants. Additional implications suggest a combination of digital and traditional research methods is needed to effectively collect data.

The Action Research for Teachers Facebook group (https://www.facebook.com/groups/actionresearchforteachers/), for example, hosts more than 20,000 members and the Action Research Advocacy for Learning (https://www.facebook.com/www.aral.com.ph/) has nearly 1,500 members. The Action Research Tutorials group (https://www.facebook.com/groups/actionresearchtutorials/) provides important action research resources to over 350 people.

Instagram

Instagram is a social media service designed for people to upload and share photos, images, or videos using a range of special filters and receive likes and comments on what they post. Users can also follow other people's profiles and be followed by others. Instagram Stories also allows users to post photos and videos that vanish after 24 hours and do not appear in the user's profile grid or in the main Instagram feed. The app also features direct messaging and video calling. Unlike Facebook, which relies on both text and pictures, or Twitter, which prioritizes text, Instagram's primary purpose is to enable users to share images or videos with their

Lit Corner 9.2: Facebook and Being Marked "Safe"

Given its extensive uptake and scale, in 2017 Facebook launched its Crisis Response hub to allow users to indicate to family and friends worldwide of their well-being during calamities or major accidents (Statt, 2017). Features include being able to mark one's profile as "safe" with the Safety Check, soliciting and responding to calls for community help, and fundraising. During the Australian bushfire emergency in January 2020, Facebook created a disaster map for national and international relief operations to coordinate their efforts (Facebook, 2020), and users created over 19,000 fundraisers on Facebook across 75 countries to raise more than $50 million toward the Australia Wildlife Relief Efforts (Simo, 2020). Action research projects that have included Facebook include those by Winoto, Cancerine, and Anwar (2019) and Knox (2017).

audience. Action research accounts on Instagram include the Action Research Collective (https://www.instagram.com/arc_clemson/), actionresearchplus (https://www.instagram.com/actionresearchplus/), and Marine Action Research (https://www.instagram.com/marineactionresearch/). Arihasta and Basthomi (2019) have integrated Instagram into an action research project.

Tumblr

Tumblr is a microblogging service that allows users to post their artwork, writing, photos, audio, and video, and follow and comment on other posts and reblog posts. Messaging and chat are also available and unless specified all posts are public. Tumblr provides a real-time list of all the new content on all the blogs users follow. A list of action research resources can be found on Tumblr at https://www.tumblr.com/tagged/action-research.

Twitter

Twitter is a social media service that lets users publicly share short posts, or tweets, that are limited to 280 characters of text. In addition to text users can include links, images, videos, location data, keywords, and polls in their tweets. Users label these by placing a hashtag before a keyword or phrase. Once posted, this keyword becomes a link that brings up other tweets posted by users containing that keyword. By default, tweets are publicly available (even without a Twitter account) and can be linked to, shared, and embedded in websites. Other Twitter users can tweet responses to another user's tweet, as well as liking it or retweeting it. Retweeting means it will be published in their feed, although still attributed to the original user. Twitter also has direct messaging, which allows users to have private conversations, and a live streaming app called Periscope.

Discussions around action research on Twitter can be found at the #actionresearch hashtag. Action research studies that have used Twitter include Stephansen and Couldry (2014) and Kunnath and Jackson (2019).

Digital Tools for Communication and Collaboration in Action Research

As technology continues to transform the way we conduct research, it is essential to understand how the digital tools being used advance action research processes by gaining stakeholder buy-in and establishing trusting relationships between participants. Researchers may use social media and digital tools such as social media, digital storytelling, crowdsourcing, and PhotoVoice for a variety of purposes in their research projects. There is a growing appeal to use digital technologies in research studies across schools, businesses, community agencies, and health services to facilitate discussions with otherwise hard-to-reach populations. Advancements in digital technology will continue to emerge over the coming years, with digital platforms and tools creating environments where research processes can be more participatory and engaging (Kamrowska-Zaluska & Obracht-Prondzyńska, 2018).

Digital technologies can enhance research practices in multiple ways, including logistical support or project management. Researchers from different locations or time zones can connect and collaborate using digital tools to communicate with each other and their research teams. Because community participation is essential in action research, digital media can assist in creating an environment that increases participation by engaging colleagues, clients, students, and community members as co-researchers. When tools are used purposefully and ethically, meaningful engagements can enable participants to acquire deeper knowledge. As digital technology becomes more prevalent within action research, issues of power and ethics should therefore continually be considered as they directly affect a project's processes and possible outcomes (Gubrium, Harper, & Otañez, 2015). This section therefore explores a variety of digital tools that enable research participants to communicate, collaborate, collect, and analyze data, and report on research outcomes.

There is considerable overlap between the functions of the platforms described in this chapter, with many of the networking sites allowing for one-on-one and group discussions or acting as social media platforms in their own right. The following applications are particularly suited to communication, providing useful tools for exchanging messages or engaging in face-to-face conversations.

Slack

Slack is a commonly used cloud-based team collaboration app that archives messages and group conversations, hosts documents, and integrates with the Google Docs application. The app allows for real-time communication between collaborators without requiring e-mail addresses or phone numbers. Although this app is frequently used in business settings, it can be incorporated efficiently into academic research settings as well. Gofine and Clark (2017) share their experiences of introducing Slack into academic research practices in the medical field. In their study, a team of 51 researchers used Slack in their research process to archive research content and direct communications. Through the process, the users of Slack agreed that using the app improved communications within the research team and made it easy to integrate with their workflow.

Facebook Messenger

Facebook Messenger is a messaging app that is linked to Facebook that allows users to instant message; share photos, videos, and audio recordings; and create a group chat with Facebook friends or phone contacts. Users can also use Messenger to voice chat and video call. In 2019 there were more than 1.3 billion monthly users on the platform and it is the second most popular app on iOS devices (Hutchinson, n.d.). As such it is likely to be a platform that action researchers and research participants are familiar with, which may enable action research communications or aid in project management.

KakaoTalk

KakaoTalk (https://www.kakaocorp.com/service/KakaoTalk?lang=en) is a free messaging service for mobile phones that was launched in South Korea in 2010 by the tech developer company Kakao Corp. It can be downloaded onto Apple, Android, Blackberry, and Windows devices. Users can send instant text and voice messages, and share photographs, videos, locations, and links in dyad or group chats. A digital wallet feature known as KakaoPay allows users to transfer money without the use of cash and cards. At present, there is no limit to the number of users who can be added to group chat. A popular feature of KakaoTalk is the use of Stickers, where users can download (paid) packs of small graphics and animations to be used in messaging chats. New packs are available for download regularly, and KakaoTalk's in-house character stickers have become popular cartoons internationally.

Line

Line was founded in 2011 by developers based in Japan and is similar to KakaoTalk. It can be used on smartphones, tablets, and computers and can be downloaded on Android, Chrome, Microsoft, and iOS systems. Users must register via a phone number, e-mail address, or user ID (Unuth, n.d.), and may start dyad or group chats to exchange text and voice messages, videos, and conduct voice and video calls. Its mobile payment feature is LINE Pay, and users can send money online and offline. Other features include the news stream LINE Today, video-on-demand service LINE TV, and digital comics through LINE Webtoon and LINE Manga.

WeChat

WeChat is a Chinese "super app" that combines messaging functions, social networking features, and payment services, and is the most essential app for communities and companies who wish to operate in China (Chao, 2017; Sehl, 2019). The app is available on mobile phone or Web browser. Users are able to send each other texts, voice snippets, or audio and video calls. Voice messaging is popular among elderly and less literate populations who may struggle with writing and is more convenient than voice call as it allows users to replay and save messages. The nonsynchronous aspect is convenient for users who are busy. Social networking features include the ability to post status updates known as "moments" that may include images with captions or text posts, and the ability to join groups and subscribe to pages for updates (Kharpal, 2019). Users can also activate additional features to play games, book appointments, call for vehicle services, and use payment services (Liao, 2018). A feature that was popularized by WeChat is the use of QR codes to add other users as contacts. This involves opening a mobile phone's camera feature, scanning a unique barcode, and having the app automatically add the users to one's collection of contacts. More traditional ways of adding contacts include using one's phone number, one's in-app ID, or turning on the geolocation feature to search for and add contacts who are in the vicinity. Recent studies utilizing WeChat in an action research context include Huang (2019) and Luo and Gui (2019).

WhatsApp

WhatsApp is a messaging, voice, and video calling app that, like Signal and Telegram, uses end-to-end encryption so that only the sender and the recipient can view messages. The app allows for both one-to-one and group communication. Users can download and install the app with no charge, set up their accounts, customize their profiles, determine their privacy levels, and add new contacts or form a group (Dove, 2019). There have been a number of studies utilizing

WhatsApp in conjunction with action research, including Annamalai (2018) and Wessels and Wood (2019).

Microsoft 365

Microsoft (MS) Teams is an example of a cloud-based real-time collaboration and communication software developed by the Microsoft Corporation. MS Teams integration with Office 365 products and other third-party applications (e.g., social media, Google) enables instant file sharing, document editing, video meetings, and instant messaging, potentially making the research process more efficient. Rather than using multiple applications to organize the research, MS Teams, for example, provides an opportunity for a highly collaborative environment for direct communication and collaboration to keep the organizational aspect of the process in one place (Microsoft Teams, n.d.).

G Suite

G Suite is a collection of cloud-based productivity and collaborative tools developed by Google Cloud to streamline Web apps such as Gmail, Calendar, Docs, Forms (used frequently for short surveys), and Sheets, along with other applications used to manage information and data. The suite provides a range of support through various phases of the research process that includes planning, observations, and data collection. G Suite is appropriate to store public and internal data, yet some institutions may require sensitive information to reside on a restricted platform. In accordance with the G Suite Learning Center, the suite offers shareable file storage, task assignment, instant feedback, form creation, spreadsheet data analysis, and messaging capabilities (Google, n.d.).

Codigital

Codigital is a crowdsourcing app that allows a large group of people to solicit and share information on a digital platform collectively. They may generate, prioritize, and refine ideas in real time, gain increased levels of understanding, and support analytics for strategic planning, communication, and crowdsourcing. It is possible to engage a whole group or conference audience in research processes using an on-stage screen.

Videoconferencing: Zoom and Skype

While a number of the message apps allow for video messages and communication, there are also dedicated video communications and conference platforms that can be a valuable aid to research and collaboration. There are a number of videoconferencing platforms on the market. Two of the leaders in the field are Skype and Zoom. Skype allows for multiple people to join in the same video

Lit Corner 9.3: Using Codigital to Focus on a Patient-Centered Research Agenda for People Living With Cerebral Palsy

Gross et al. (2018) conducted a participatory action research (PAR) study to educate the community on cerebral palsy and develop a collaborative process among stakeholders to engage in active health care initiatives in support of people with cerebral palsy. The PAR methods combined a series of webinars, online community contributions, and in-person workshops. A 5-day webinar series explored various cerebral palsy topics by inviting persons with cerebral palsy, caregivers, researchers, clinicians, and advocates. Afterward, participants were asked to contribute ideas using the Codigital app. Daily emails prompted participants to record, edit, and vote on each other's ideas. Within 20 days, over 392 ideas were generated and 26,798 votes were cast. To better understand the ideas, participants attended an in-person workshop geared to discuss in more detail the top ideas submitted. Researchers developed a strategic plan with targeted objectives for cerebral palsy research to enhance patient care, community education, and resources.

conference. Zoom is also a platform for hosting online meetings. It can accommodate up to 500 participants in a single shared meeting and allow participants to share the screen of the host of the meeting and as such is useful for remote group presentations. Both platforms are free to use, although with more options available in paid plans. Both are available online and through mobile phone apps.

YouTube

YouTube is a video sharing platform where people can watch and share video content online through the Web and through dedicated YouTube apps on mobile devices. Users can create their own channel and subscribe to the channels of other people or organizations. Users can rate, comment on, and share videos or add them to playlists. Many people use YouTube for video blogging, or vlogging. YouTube can also be used to livestream, which is video that is simultaneously broadcast and recorded in real time. YouTube is accessible to anyone to watch videos without an account, but for those who want to upload and share videos they will need to sign up for a Google account. Raj, Ann, Subramaniam, and Yunus (2019) worked with 60 11-year-old students in the Malaysian education system whose native languages included Mandarin, Malay, and Temiar. They used six YouTube videos to teach English listening, speaking, reading, and writing to explore the effectiveness of this platform for strengthening social expression. The study found that visualization through YouTube did improve learning and increase participants' interest in further learning the language.

TikTok

TikTok is short-video platform that builds upon the features of another short-video app, Musical.ly. TikTok allows users to create short videos that focus on background music and sound as a template for generating content. Some of the more popular genres include lip-sync videos, skits, and makeup videos that are usually between 3 and 15 seconds long. Users can also create short looping videos of up to 60 seconds. TikTok has been downloaded over 1.2 billion times and is touted as the fastest-growing social media app globally (Turner, 2019). It is most popular among young audiences, with the largest user group being 18- to 24-year-olds (TikTok, 2019). Users younger than 18 are asked to seek parental consent before use (Jessy, 2019), and this age-gating has been enforced through the mass deletion of accounts (Lee, 2019). Young people on TikTok have been using the platform to generate videos and solicit awareness and support for a variety of political issues, including climate change (Bogle, 2019), Uighur detention camps in Xinjiang (Harwell & Romm, 2019), and antiracism in Australia (Wilson, n.d.). However, the app had reportedly banned pro-LGBT (lesbian, gay, bisexual, and transgender) content (Hern, 2019) and raised concerns from users regarding platform censorship and freedom of speech.

Digital Research Tools

Digital Storytelling

Digital storytelling (DST) is a collaborative and participatory research tool being used to advance research processes. Digital storytelling enables participants to retell their stories and make visible the meanings they attribute to specific events in their lives. Digital stories often are presented in compelling and emotionally engaging formats that enable diverse peoples to share their life stories with others. They may use any combination of text, photographic images, video, audio, and social media elements like Twitter or interactive elements like maps to present their stories. Any of the media described above may be used for digital storytelling processes to gather and analyze data, formulate scripts, and disseminate reports or information. The nature of this process has the potential to be transformative, having a positive impact on the lives of people who tell their stories (Lenette et al., 2019).

According to de Jager, Fogarty, Tewson, Lenette, and Boydell (2017, p. 2551), "storytelling is a universal and powerful way of making meaning." DST is an appropriate research method to use with marginalized groups because it "lends itself in philosophy and execution to a participatory action research model, which favours a flat hierarchy between participants, researchers and other stakeholders"

Lit Corner 9.4: Digital Storytelling to Promote Healthy Sexual Behavior Among LGBTQ Indigenous Youth

Video recordings and digital storytelling processes were used in a community-based participatory action research study conducted by scholars and activists focusing on HIV prevention and promoting healthy strategies among Indigenous youth (Flicker et al., 2017). In this study, 18 youth leaders with an active interest in HIV prevention, treatment, or community support were asked to interpret their experiences through video recordings. To prepare for their story, youth leaders attended an intensive retreat where facilitators walked them through the process of scriptwriting, recording, designing, and video editing. Upon completion of the videos, youth leaders created digital stories and conducted screening in their local communities to showcase their stories. After the screening, participants and project staff facilitated Q&A sessions with community members. By using digital storytelling overlapping themes emerged, including connections between HIV and associated risk factors. This led to new ways of thinking about targeted strategies to promote healthy initiatives and HIV prevention among Indigenous youth.

(Cunsolo Willox Harper et al., 2013, in de Jager et al., 2017, p.2551). The DST method is used frequently for the purposes of developing community as the process involves participants narrating their stories supported by visuals and music of their choice in the form of a digital story. Public exhibits and viewing of digital stories have been described as transformative for people engaged in the process (de Jager et al., 2017; Loe, 2013). Storytelling is now widely used in universities for educational purposes, as well as in public health, health care, social services, international development, and many other settings. When used with digital media participants may take advantage of applications such as iMovie, Windows Movie Maker, Final Cut Express, and WeVideo.

PhotoVoice

PhotoVoice is a visual-based approach used in many action research processes, including community-based participatory action research (CBPAR) studies (Ha & Whittaker, 2016, p. 1). This method aligns with the principles of action research and CBPAR as it emphasizes empowerment, collaboration, and co-learning between participants (co-researchers) and researchers, and capacity building in communities through action (Catalani & Minkler, 2010).

This process "(i) allows participants to record and reflect how they perceive and experience issues that matter the most for them through photographs, (ii) promotes critical dialogue and knowledge through collective discussion of

Lit Corner 9.5: Using Digital Storytelling With Marginalized Groups

Digital storytelling is well suited for working with marginalized groups, enabling them to develop significant insights into their experiences and the issues they face. Lenette et al. (2019) collaborated with refugee women in Australia who were able to document their experiences of resettlement through the Woman at Risk program. The researchers worked closely with four women throughout the four-phase research process: First, they conducted in-depth interviews with the women to explore ideas for the story creation process. The interviews also served as a space for establishing relationships and trust between the participants and the researchers. The second phase following the interviews was a workshop on digital storytelling. In this workshop, participants brought a personal object that had a special meaning for them to share their stories. The focus of the workshop was on participants' memories, the importance of storytelling, and how memories and personal objects are related. The next phase involved the researcher and the participants working together to develop a script and to select photos to be used in the digital stories and audio-recorded scripts. In the final step, each participant viewed their digital stories and the researcher conducted an interview with each participant following the viewing.

The process of creating digital stories provided an opportunity for the participants to share their stories with a focus of their choosing without being given any prior guiding questions or concepts. The digital storytelling process is considered a transformative approach and in the study conducted by Lenette et al. (2019), this aspect of the process became visible. One of the participants was struggling with complex mental health issues and under medication prior to the project. She had very few expectations of benefiting from this study. However, after the completion of the project, she described her engagement in the process as "better than the pills." She was motivated to take control of her life. Through narrating her experiences, she was able to reflect on and make meaning out of her experiences and life, which resulted in her decision to be more active and purposeful in pursuing her new life.

photographs, and (iii) has the potential to reach and influence policy makers" (Wang & Burris, 1997).

The main steps involved in a PhotoVoice project are as follows:

- Participant recruitment in a selected community

- Deciding on a topic/issue affecting their group or community

- Informing participants about the PhotoVoice process and providing them with cameras (if needed)

- Participants documenting their experiences using PhotoVoice

Lit Corner 9.6: Using PhotoVoice to Explore the Communication Skills of Children With Autism Spectrum Disorder in Vietnam

Ha and Whittaker (2016) conducted a research study involving children with autism spectrum disorder (ASD) in Vietnam. Through the research study nine children with ASD from ages 10 to 17 years captured over 2,100 images from their daily life experiences. Due to communication challenges among nonverbal children with ASD, photos resulted in different analytic weights and became the central source of data. Two approaches were used to find common themes. The first approach, content analysis, involved coding images based on focus, location, and distance. The second approach, participatory action research, allowed researchers to interpret the meaning of each photo by interviewing children, parents, and caregivers. PhotoVoice has been demonstrated to be a useful method when gathering data among nonverbal and verbal children. As a result, the study contributed new information on ASD to support public education and knowledge in the community.

- Using focus group processes to share, review, discuss, and analyze photographs produced

- Developing a story related to the photographs

- Providing a presentation to audiences that may include community members, policy makers, service professionals, or other stakeholding groups

Online Games

Digital games have become a new tool used in classroom settings, as they are shown to develop cognitive skills, problem-solving skills (Ruggiero & Green, 2018), and collaborative learning (Sung & Hwang, 2018). In the game-based learning approach, an online game becomes the teaching/learning platform for the acquisition of knowledge and skills. Many applications are available at sites that include ABCYa.com, FunBrain.com, PBSKids.org, Poptropica.com, Kids .NationalGeographic.com, GameClassroom.com, and Arcademics.com. For more information, type "online educational games" into your search engine.

Second Life is another online reality platform that uses a gaming feel. Second Life is a virtual three-dimensional world created by its users who make their own avatars or representations in the world and are able to interact with other avatars,

Lit Corner 9.7: Using a Game-Based Learning Approach to Educate Syrian Refugees in Turkey

Sirin and Rogers-Sirin (2015) used an online game-based learning approach to address the needs of Syrian refugees in Turkey. Through this intervention, called Project Hope, an online and game-based learning environment was created with a specific curriculum that included four online games addressing Turkish language skills, cognitive skills development, 21st-century skills (computational thinking and coding), and mental health (Sirin et al., 2018). The intervention included three sessions a day in 2-hour segments for 5 days a week over a 4-week period. The results of this study were promising as the children participants showed evidence of language learning, *increased understanding of coding, and a decrease in hopelessness, indicating that using an online, game-based learning approach was effective. This study is an example of how digital technologies can be leveraged to address critical issues in an effective, cost-efficient way. In the case of refugee children who are in a different country where a different language is spoken, an online game platform provided a space for children to be able to connect with and engage in the learning process in a universal language, that is, the game. The contents of the game were purposefully selected so that children could continue their education in a playful approach.*

places, and objects. Second Life users can create, buy, and sell virtual items and land. To use Second Life, users need to set up an account with a first and last name and a password. It can take a bit of practice to get used to navigating the new avatar in the Second Life world. Action research projects that have utilized Second Life include Chen (2019) and Pereira et al. (2019).

Data Analysis Software

There are free and paid online programs and software for data analysis, such as NVivo, Dedoose, and MaxQDA. Some of these tools allow for collaboration between researchers in analyzing the data. In an action research process, participants also collaborate in data analysis. Using digital tools in collaborations helps with the logistics issues that may emerge. These tools allow participants to collaborate online from wherever they are.

NVivo is a software package that facilitates the analysis of qualitative data from research activities such as interviews, focus groups, and surveys with open questions. It can also be used in the analysis of social media and publications. As well as text, it can be used for analyzing images and audio and video files. It was first released in 1997, with the most recent version available from 2018.

SPSS originally stood for Statistical Package for the Social Sciences and as this suggests it is a tool for statistically analyzing data and statistics. While originally aimed at the social sciences, the tool has now been more widely adopted by researchers in a variety of different fields.

Google Vision API is a tool developed by Google for image analysis. It can automatically label images, find objects or faces in images, and read images of text and handwriting. It is particularly useful when having to analyze a large number of images.

Writing, Documenting, and Disseminating

One of the greatest effects of the development of digital media is the extent to which it enables even projects with minimal resources to publicize widely or make contact with large audiences. The applications described above provide opportunities for participants to extend the network of people associated with their project or to publicize the outcomes they have achieved.

Traditional ways of disseminating research processes or findings include publications in academic journals and texts, which have a limited audience. There is a shift among researchers toward using innovative ways to share academic research with the broader public. Particularly in research settings where research participants are members of a local community, it is important to share the research process and the findings with the broader public as well as professional practitioners and policymakers. Action researchers can therefore make use of the various applications and techniques described above to reach wider public audiences. Latz (2017), for instance, describes a PhotoVoice process used by participants to hold a public exhibit of photographs produced during the last stages of their project. This created a space for exposure of community perspective on the issues being addressed to the larger public audiences, including research participants, community groups, community leaders, professional practitioners, and policymakers.

While a range of social media may be used for disseminating information, the initial writing process that captures the essence of a project may be facilitated by digital media. The writing process usually starts during the data collection stage, when the action researchers begin to document their observations, reflections, and field notes. Digital tools like WIX (blogging website), Google Docs, or Microsoft Word 365 can be used as online research journals where all the entries can be easily shared and accessible to all participants. Moreover, digital media such as Tableau Public or Adobe enable advanced ways for incorporating various artifacts such as graphics and video alongside text to enrich the presentation of written results and open the scope of participants (Bauer, Himpsl-Gutermann, Sankofi,

Lit Corner 9.8: The "Education in Our Barrios" Project Integrates Digital Tools and Social Media Platforms Into Critical Participatory Action Research Projects

The focus of this digital and participatory action research project was to examine public education reform in New York City Latino neighborhoods. Researchers invited young people from an East Harlem neighborhood to the project as co-researchers and collectively worked with them to conduct and produce digital interviews, analyze the data, carry out archival research, participate in community education events, organize publicity events, and use social media to engage with people in their neighborhood. By using social media, they deepened their engagement with people in the neighborhood and encouraged more public engagement among many people across New York City.

The researchers created a website using it as an information clearinghouse and an interactive space for discussion. They placed, edited, and produced interview excerpts on the website so that viewers could make comments (http://barrioedproj.org). Additionally, they collected images of the neighborhood via Flickr and Instagram, created informational maps, and collected music produced by groups from the neighborhood to share on the website they launched. Multiple digital tools were used as research instruments in the process. One of these tools is VoJo.com, *which is a multilingual voice journalism tool that allows participants to share stories via voice messages, texts (SMS), and images (MMS). The researchers used CowBird (http://cowbird.com) to edit and produce the VoJo entries.*

Being part of the research process created a space for community members to be exposed to archival information in relation to their neighborhood. Through this exposure, members of the community were able to learn the rich history of their neighborhood. At the same time, it made it visible that some participants' histories were denied and it communicated how this denial impacted their educational career. Participants were able to recognize the effects of gentrification and education reform on their lives. As the pressing issues of the neighborhood became visible, the researchers made the decision to share their data through a newsletter that would be posted on their digital platforms and hold a public forum for sharing the newsletter. Additionally, they changed their focus from social media efforts to organizing and expanding their digital content and work toward relationship building with various community stakeholders.

(Adapted from Mayorga, 2014)

Szucsich, & Petz, 2017). The expanding capacities of growing technologies and software allow for facilitation of the writing process from data storage, real-time writing collaboration, and editing to presenting the results, thus making them broadly available.

Evernote

Evernote is an application that helps store and organize digital data. It divides this into "notebooks" that consist of multiple notes related to a particular topic. These notes can consist of a variety of different digital files including text, images, audio and video files, as well as Web links. These can then be presented in a number of different ways to best suit the style and requirements of the user. In 2019, there were 225 million users on Evernote, 35 million of whom were in the Asia-Pacific region, making it the largest user group (Smith, 2019).

Blogger

Blogger is a webpage publishing platform that was first launched in 1999 and remains popular today. Users are able to sign up for an account free of charge and write online diary entries, which can be timestamped and are usually presented in reverse chronological order. Blogs can be hosted and used by single users or by multiple users wishing to establish a network of community. Alongside text, users are able to post still images, embed moving images, and audio clips. Blogger is a service, now owned by Google, that hosts these sites. Another popular platform for creating this type of website is WordPress. Blogger requires a Google account to log in and create a blog. Action research projects that have included Blogger and blogs more broadly include Saeed and Yang (2008) and Philip and Nicholls (2009).

Storing Data

Using digital tools to collect data in participatory research processes reshapes the way the data are stored as well. Online data storage (cloud) and online video tools such as Vimeo and YouTube are the most used platforms for the purposes of storing data. From a researcher perspective, having access to the data through a cloud platform provides the opportunity for co-researchers to review the data on their own time and location. This accessibility allows researchers to focus on specific tasks including collaborative data analysis when they meet in person.

Another benefit of storing data online through YouTube or other sites is having the option to share the research with the public or the community of focus. This practice has the potential to engage with a broader community in the research process as the viewers of the content can make comments and potentially create a more diverse community participating in the process. The "Education in Our Barrios Project" (Mayorga, 2014) is an example of this approach, which is described in Lit Corner 9.8.

Dropbox is a file hosting service that allows the same files to be synchronized across a number of computers to help individuals keep track of their data across a number of different machines and also to share files between different people.

Challenges: Ethics and Engagement

The use of digital technologies in research settings has the potential to increase participation and engagement by co-researchers when processes are implemented purposefully. The examples presented above show how digital technologies can be effectively used for action research processes, but they are not without limitations. In this section, we briefly discuss the challenging elements associated with the processes presented and issues to consider when using digital media.

Privacy and Confidentiality

In terms of publicity, Mannay (2015) discussed the concerns that open access publication and data sharing bring out. The idea behind open access practices is to make all research processes and outcomes available to any interested reader so that the knowledge gained is transferred to a wide range of audiences. However, it creates challenges when working with visuals so that images or videos created by researchers and participants are stored and published online and might be reused or reproduced through digital tools by other researchers to tell a different story. In this case, the original artifacts are taken out of context and the owners or producers of these artifacts lose control over their data. Privacy and confidentiality are therefore primary concerns when using digital media, as illustrated in the following excerpt from a report on the "Education in Our Barrios" project described in Lit Corner 9.8:

> One strength that using VoJo brought to the process was that it allowed for more privacy for those who wanted to remain anonymous compared to video interviewees who openly shared their views. This is an important aspect to consider in the research process as it is an alternative way of engaging participants in the research while honoring their request for anonymity. If video is the only method used for interviews, individuals who would want to be anonymous may end up not participating. Digital technology, like VoJo, enables a wider population of participants because of the anonymous texts and images feature. (Mayorga, 2014)

Access

The other significant issue associated with the use of digital technologies is that of access. Using digital media requires access to computers or other devices required to make use of available resources. Depending on the nature of a project, participants may require equipment or research tools such as audio or video recorders, software, and so on. If a project is likely to be ongoing, tools acquired during the research process through the

researchers should remain available for continued use after the initial phase of the research process ends.

Another issue to consider in using digital technologies is the demographics of the community members participating in the research as their use of digital technologies may vary. Their familiarity with and use of digital tools can affect their willingness to participate in the research, which is why researchers should consider providing training or information sessions to participants on how to use digital tools so that they can engage in the process actively.

Ownership

In participatory research settings, the production of digital artifacts by participants, researchers, or both and the dissemination of these artifacts with the larger community raise certain questions (Mitchell, de Lange, & Moletsane, 2017). One of these questions is related to the ownership of the artifacts produced. Do these artifacts belong to the participants or the researchers? Who gets to decide about the music or footage to be used in the video? These are the emerging questions that need to be considered in advance when using digital technologies in a research setting.

Action Research Resources

As noted above, there are a number of platform-specific action research forums and repositories, particularly in different social media platforms. The following websites are a small sample of those that provide resources for people involved in action research activities and projects. Web resources continue to evolve and new valuable collections will appear, while others will disappear or be no longer maintained. While these may be a good starting point, we recommend you conduct your own searches and maintain your own list.

The Center for Collaborative Action Research—Action Research resources: http://cadres.pepperdine.edu/ccar/resources.html

Action Research Network of America: https://arnawebsite.org/

Action Research Resources: http://www.aral.com.au/resources/arphome.html

ActionResearch.net—among other resources this provides an interesting repository of PhD and master's dissertations in the field: https://www.actionresearch.net/

Collaborative Action Research Network: https://www.carn.org.uk/

Action Research Plus: https://actionresearchplus.com/

Action Research at Edith Cowen University: https://ecu.au.libguides.com/research-methodologies-creative-arts-humanities/action-research

Action Research at Iowa State University: https://instr.iastate.libguides.com/c.php?g=49332&p=318066

Action Research at the University of Gothenburg: https://cecar.gu.se/

See Table 9.1 for additional resources.

Reflection and Learning Activities

1. With a group of colleagues, discuss the ways in which you use the Internet and social media on a daily basis.

2. How and why are digital media particularly relevant to action research?

3. How might you incorporate these and other platforms from this chapter in your professional practices or research?

4. Discuss ways social media might be used to enhance action research processes. Focus on ways participants might use social media to communicate and collaborate.

5. What are some of the problems you might encounter when using social media platforms in action research? How might you overcome them?

6. In what circumstances would you use the research and collaboration tools suggested in this chapter? Do you have any other sets of tools that you find useful?

Table 9.1 Additional Examples and Tools

Source	Description	Site
Digital stories	Wapikoni offers video-on-demand service to directly stream independent films created in and by Indigenous communities. The map-centric workshop database allows visitors to view films.	http://www.wapikoni.ca/home
North York Community House (NYCH)	Development project based out of Toronto, Ontario. The project integrates its members through digital storytelling processes. The platforms used in this project are their main website and YouTube channel. One unique aspect of NYCH is that it offers emotional support to participants following the upload of participant videos by discussing issues or emotions they may have experienced.	https://www.nych.ca/
Story Center	Story Center curates and facilitates digital storytelling workshops by working with organizations in various fields. They use their website and a YouTube channel as their online platforms.	https://www.storycenter.org/stories

Table 9.1 Additional Examples and Tools (Continued)

Source	Description	Site
InsightShare Global Participatory Video Hub Network	A networking site that supports communities by helping them curate, create, and organize participatory videos as a tool for self-expression, advocacy, heritage documentation, and horizontal communication.	Insightshare.org/hubs Insightshare.org/resources/photostory/all.html
Vimeo	A video-sharing website.	https://vimeo.com/
Zoom	Videoconferencing software that allows cloud meetings.	https://zoom.us/
Tableau Public	Free data visualization tool that turns text data into visualization.	https://public.tableau.com/s/
MindMup	Free online mind mapping application for creating and sharing mind maps.	https://www.mindmup.com/
Zotero	Free reference management software allowing for collaboration and integration with other applications (e.g, Chrome, GoogleDrive).	https://www.zotero.org/
Mendeley	Free online reference manager and academic social network.	https://www.mendeley.com/?interaction_required=true
ResearchGate	Social network for researchers to share, disseminate, and find research.	https://www.researchgate.net/
Draft	Draft is a tool for drafting and collaborative writing.	https://draftin.com/

(Continued)

Table 9.1 Additional Examples and Tools (Continued)

Source	Description	Site
CowBird	A public library of human experience where users upload the videos of the stories they want to share. The website shifted the focus of their services from gathering stories to storing the videos they already have as a historical archive.	http://cowbird.com/
RebelMouse	RebelMouse serves as a website and a publishing platform.	https://www.rebelmouse.com/#intro
Codigital	A cloud-based idea management solution that helps corporate and member organizations in brainstorming, collaboration, conferences, and gathering requirements.	https://www.codigital.com/
Storium	An online creative writing game that can be used in classrooms as a teaching and research tool.	https://storium.com/
Signal	An open source encrypted messaging service.	https://signal.org/
Anvil	A video annotation tool that may be of use for particular action research projects where video analysis is required.	https://www.anvil-software.org/#
LaTeX	A typesetting system that can be useful for the final preparation of documents for publication.	https://www.latex-project.org/

CHAPTER REVIEW

- **Digital tools** now can be used in every aspect of the research process including **planning, collaboration, data generation and analysis, and disseminating research findings.**

- **Social media is a digital technology** that enables user-generated content creation by **sharing information, engaging in interests, and connecting ideas.**

- A variety of **digital tools** that enable research participants to **communicate, collaborate, collect and analyze data, and report on research outcomes.**

- Many **apps** now provide the means for even large groups of people to actively participate in all facets of a research project, from establishing the research objectives and outcomes, through data gathering and analysis, to reporting and disseminating information about research outcomes.

- **Videoconferencing and livestreaming** services enable researchers to **disseminate information, generate collective knowledge, and formulate collective action.**

- **Digital research tools** enhance collaborative processes of data gathering, data analysis, writing, disseminating information, and storing data.

- Other digital media that enhance action research include applications that facilitate **online games** and others that assist in **sharing information and gaining publicity.**

- **Privacy and confidentiality** are challenges that need to be addressed when using digital media.

- Another challenge to be addressed relates to the ability of stakeholders to participate.

- **Ownership of the processes** and products of research is another issue to be addressed.