Foreword
by Robert Gibson

A TAKE ON MIXED METHODS

Traditionally, Mixed Methods (MM) Research design, also called Compatibility Thesis and Multimethodology, is defined as a procedure for collecting, analyzing, and blending both quantitative and qualitative research methods into a single study in order to understand a research problem. The term Mixed Methods, however, is a relatively recent naming convention that is primarily associated with research in the social sciences. It has gained particular prominence since the 1980s. Mixed-Method Research is increasingly becoming more clearly defined, associated with empirical research practice, and often recognized as the third major research paradigm which provides better triangulation of data results because both qualitative and quantitative research methods are engaged. Quantitative Research is considered postpositivist in nature – being singular in reality, objective, and deductive. Data collection methodologies can include performance tests, personality measures, closed-ended questionnaires, and content analysis. Qualitative research, on the other hand, relies primarily on the views of participants; asks broad, general questions; collects data consisting largely of words (or text) from participants; describes and analyzes these words for themes; and conducts the inquiry in a subjective, biased manner. It is constructivist in nature – based on multiple realities and inductive in its approach. Data collection strategies typically include interviews, open-ended questions, direct observations, content and data analysis, direct participation, and focus groups.

The utilization of technology in both qualitative research and more recently Mixed Method data collection has a relatively long history – dating back to the mid-20th century. Gibbs, Friese, and Mangabiera (2002) indicated that researchers transitioned from hand written notes to analog tape recorders in early field studies more than 50 years ago. This was especially useful in the disciplines of anthropology, psychology, and other social sciences where transcription was critical. This transition inadvertently led to several positive research effects, including contribution to new ways of thinking about data and the analytical ideas of the researcher, and improved data analysis that would only be possible if accurate records of the event were captured at the moment of data collection. Rather than spending valuable time transcribing aural communication into notes, the researcher was instead able focus on the questions and responses of the study participants and/or the research event.

Advances in technology in the latter half of the last century have provided more opportunities for researchers to effectively collect both qualitative and Mixed-Method research feedback from multiple data points. As the ubiquity and capability of technology increased and the cost simultaneously decreased, so too did opportunities for researchers to engage a variety of media in their research efforts. For example, Kanstrup (2002) successfully utilized still analog photography and observational data in collecting data...
regarding teachers’ work practices. Koch and Zumbach (2002) utilized analog video and field notes when studying small group interaction communication patterns. While these media were non-digital format technologies at the time, they provided additional data collection opportunities that expanded the field and improved the accuracy of research.

More recently, advances in digital media technologies have provided additional capabilities to support Mixed-Method and qualitative data collection. That is, textual, visual, aural, spatial, and temporal information. New means of processing digital video data have led to a rapid growth of video analysis. Digital tools for supporting and partially automating content analyses have become increasingly common. The archived interactions in Internet chats and forums, for example, have provided new options for qualitative research with a broader research audience.

Granted, many of these technologies were developed for purposes other than research and data collection, so there is much to learn about their efficacy. However, examples abound regarding the use of both established and emerging technologies in a variety of research scenarios:

- Secrist, Koeyer, Bell, and Fogel (2002) effectively utilized digital video software to study mother-infant relationships. After capturing the video footage, the researchers were then able to sequence the digital data chronologically in order to study developmental changes over a period of time.
- Kimbler, Moore, Schladen, Sowers, and Synder (2013) presented a variety of emerging technology tools that are commonly used in qualitative data collection, including a blend of mobile device recording and transcription applications; learner interaction software to study virtual patients; and Web conferencing technologies to collect verbal and non-verbal interview data.
- Young and Jaganath (2012) successfully utilized social networking technologies in HIV prevention research among African American and Latino participants.
- Morse conducted facial analysis using video cameras on patients in emergency rooms to link behavioral indices of the transition between enduring and suffering in patient care experiences (Spiers, 2004).
- Rutledge successfully used digital video to study interpretive phenomenology in modern dance (Spiers, 2004).
- Wu, Rossos, Quan, Reeves, Lo, Wong, Cheung, and Morra (2011) were able to demonstrate effective use of smartphones in a Mixed Method research study involving healthcare clinicians. These researchers found that use of smartphones improved the quality of communication and reduced the quantity of extraneous contact when dealing with patient care. Their study found that the technology improved interpersonal relationships and professionalism, while balancing efficiency and reducing interruptions.
- Dimond, Fiesler, DiSalvo, Pelc, and Bruckman (n.d.) found that while telephone conversations yielded four times as many words on average when compared to instant message and Email data collection, there was no significant difference in the number of unique qualitative codes expressed between any of the technologies. This indicates that any of these technologies was equally effective in qualitative and Mixed Method research.

I have had the opportunity to conduct Mixed Method Research when exploring the efficacy of lecture capture in the context of rehabilitation and mental health counseling education. In those studies, a faculty co-investigator and I were able to review qualitative evidence using captured sessions from actual clients in a Master’s degree program. We were then able to triangulate the effectiveness of the technology by
reviewing the number and duration of recorded sessions conducted by each student. In this study, we were afforded access to recorded sessions, which were captured during actual client-student interactions. We were able to determine the quality of the interviews and the client-interaction by replaying a sample set of sessions and by reviewing the interactive notations made by the students regarding the session. In this type of study, quantitative data alone does not provide a clear indication of how effective the technology was in promoting improved client interactions. However, when combined with a qualitative analysis of the sessions and of the student notations, we found that the technology not only provided the researchers a more accurate representation of the session quality, but allowed us to review multiple sessions from multiple students long after the sessions had concluded. The quality of the student notations also provided evidence as to the efficacy of using this technology in the context of counseling education.

The future trends for enhancing Mixed Method and qualitative research methodologies using technology are quite optimistic. Increasingly, mobile devices and online technologies are providing a variety of rich technology opportunities for capturing and recording research data and phenomenology. Advances in mobile software applications (Apps) provide a variety of data collection opportunities including digital video, voice annotation, text input, and even certain kinesthetic and haptic (sense of touch) input options. Other research opportunities can leverage built-in device spatial and location recognition, virtual and augmented reality, instantaneous data transmission and analysis, image recognition, and facial and expression analysis. Software tools on devices can provide instant access to social networks and data sets, providing real-time data reporting and knowledge base access. A subject’s mood or activities can be combined into time stamped diary information and instantly uploaded to databases to provide an overview of the respondent’s behavior and well-being.

The advantages of using technology in Mixed-Method and qualitative research include:

- Ease of use,
- Better file transferability,
- Improved data quality,
- Accurate speech to text and transcription accuracy,
- Reduced cost,
- Immediacy and social cues,
- Codification of non-verbal behaviors,
- Data analysis,
- Content richness.

The future use of technology in Mixed Method and qualitative research is intriguing. Increasingly, researchers are engaging a variety of mobile, Internet-enabled technologies in their research. The plethora of mobile applications (Apps) provides a variety of data collection strategies, including:

- Managing files,
- Managing research references,
- Accessing databases,
- File backups,
• Journaling and note taking,
• Conducting live webinars,
• Video and audio capture.

Advantages of using technology—especially Internet-capable technology in Mixed Method and qualitative research—include the following:

• Mobile and compact size supports data collection in a variety of research locations.
• Devices often include a variety of applications combined into a single, small form factor platform.
• Data can be synchronized across a variety of devices.
• Supports multi-modal data (auditory, visual, kinesthetic, etc.)
• Data can be uploaded and stored in the cloud, allowing for access from nearly any location.
• Data can be managed remotely – including encryption and deletion.

However, there are disadvantages in relying on digital, Internet-based technologies for research purposes as well. While many research environments support ubiquitous, fast Internet access and data transmission, not every environment has the requisite support and infrastructure:

• Unless the technology supports offline utilization, the researcher is dependent upon Internet connectivity, which can be limited in many locations.
• Confidentiality and ethical concerns can emerge when using institutionally owned technologies and devices.
• Some academics do not perceive emerging technologies as a valid research and data collection tool.
• Technology can introduce research collection bias.
• Technology can introduce the Hawthorne Effect, which affects respondents’ feedback patterns. Rather than responding to research prompts, the respondents may offer feedback that placates the researcher simply based on the presence of the technology.

Furthermore, Biber and Johnson (2013) indicated that disciplinary concerns reside when interfacing Mixed Methods Research with newly emergent technologies for data analysis and collection.

Despite these concerns, there are significant advantages in using both established and emerging technology in Mixed Method and qualitative research. Not only do technologies provide increased richness in data but also the researcher can leverage these technologies to expedite the collection and analysis of data, compare data sets, and provide additional dimensions of data collection. For example, researchers at Emporia State University are planning to conduct a study of the efficacy of Google Glass in library information search and data retrieval processes using Mixed Methods and qualitative research. Researchers plan to construct a Mixed Method Research study that investigates the use of this technology to locate information in the context of an academic library. Qualitatively, they plan to explore the
type and quality of information I am able to access and locate using Glass. Quantitatively, they plan to investigate the number of journals and academic resources that are available to a prospective patron who may be utilizing the technology within the library. They will also be able to determine the time required to locate resources when using these technologies vs. asking a reference librarian. The technology will allow researchers to record my interactions and data collection methods during a series of visits to the library, and then later review those sessions to determine how effective wearable technologies are in information retrieval. This type of Mixed Methods research may have a profound effect on how libraries support information retrieval using wearable technologies in the future.

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Robert Gibson is the Director of Learning Technologies at Emporia State University. In this role, he and his team provide a variety of learning technology support for faculty, staff, and students, including the Learning Management System; video production; Web/video conferencing; lecture capture; instructional design services; training and development; classroom support services; research support; and other related services. He has served in this capacity since 2008. Robert has worked in higher education since 1988. He began his career at the University of Wyoming working with early distance education systems that utilized analog phone lines to send graphics and data from Laramie, Wyoming to students located 45 miles away in Cheyenne, Wyoming. After completing his first Master's degree, he accepted a position at Wichita State University where he served as the instructional designer for a television-based distance education system in the early 1990s. In 1995—the dawn of Web browsers—Rob and a Nursing Informatics faculty member designed and developed what is thought to be the first online course in Kansas – well before course management systems. He later worked for Friends University in Wichita, KS before accepting a position at CU Online located at the University of Colorado-Denver and Health Sciences Center. He has published numerous peer-reviewed articles and book chapters, and presents nationally at a variety of conferences. He actively promotes instructional technology through a variety of social media outlets. Robert holds a BS in Business Administration; a BFA and BA in Graphic Design; a MS in Instructional Technology and Design; an MBA in Information Technology and Project Management; and an EdD in Instructional Technology and Distance Education. An early champion of online course delivery, Rob elected to pursue his doctoral degree in the late 1990s when online and hybrid programs were still an exception rather than a norm. His dissertation research investigated the effectiveness of various faculty development programs regarding online learning. Rob has been an early and consistent champion of emerging technologies that have the potential to shape education. His research interests include gesture-based computing, augmented reality, usability analysis, online learning, psychometrics, instructional systems design, learning theory, and competency-based learning. Rob serves on several product advisory boards and has been the recipient of outstanding course development awards. He is also holds multiple certifications from Quality Matters and Google, and is currently pursuing the CPLP and PMP certifications.

REFERENCES


