



Empirical Research in Technical and Professional Communication: A 5-Year Examination of Research Methods and a Call for Research Sustainability

Journal of Technical Writing and
Communication

0(0) 1–28

© The Author(s) 2018

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/0047281618764611

journals.sagepub.com/home/jtw



Lisa Meloncon¹ and Kirk St.Amant^{2,3}

Abstract

This article presents an examination of research methods used in empirical research over a 5-year period in technical and professional communication. This examination reveals that the most common methods used are surveys, interviews, usability tests, observations, and focus groups. In addition, the field does incorporate research categories of case studies, experiments, and ethnographers. This examination, however, reveals serious shortcomings that need to be addressed for the field to have a sustainable research profile.

Keywords

empirical research, sustainability, research method

¹Technical Communication, University of South Florida, Tampa, FL, USA

²Louisiana Tech University, Ruston, LA, USA

³University of Limerick, Ireland

Corresponding Author:

Lisa Meloncon, University of South Florida, 4204 Fowler Avenue, CPR 311, Tampa, FL 33620, USA.

Email: meloncon@tek-ritr.com

We never calculate the cost of our methods; we believe they are free
(Serres, 1995, p. 147)

Scholars in technical and professional communication (TPC) have produced a growing body of work that is calling attention to research. This work has been viewed as a way to define TPC (Rude, 2009, 2015; St.Amant & Meloncon, 2016a); to understand the relationship between the academic field and practitioners (Albers, 2016; Blakeslee & Spilka, 2004; St.Amant & Meloncon, 2016b); to provide a fieldwide examination of our own research practices from differing perspectives (Blakeslee, 2009; Boettger & Lam, 2013; Carliner, Coppola, Grady, & Hayhoe, 2011; Selber, 2004); and to offer insights into how we teach research (Cook & Rickly, 2017; Spilka, 2009). This emphasis on the importance of research can also be seen in a number of special journal issues (e.g., Albers, 2016; Haas, 2013; McNely, Spinuzzi, & Teston, 2015) and books (Conklin & Hayhoe, 2011; Meloncon & Scott, 2017). Within all of this reflection, however, no one has focused on one central, but all-important, issue, sustainability of research as it is connected to the field's use of empirical research methods.

In this article, we examine the empirical research published in TPC journals from 2011 to 2015. As the field has grown in the number of degree programs offered and faculty who claim TPC as a specialty (Meloncon, 2012a), the way the field approaches research has become increasingly diverse. Following Rickly (2007), we believe that “not enough attention is paid to the actual practice of conducting empirical research” (p. 379) and how those practices support sustainability of research in the field. To gain a better understanding of TPC's empirical research practices and sustainability, we begin by providing an exigency on why research on research is needed and then describe our own research process. The next section presents the results and discussion of the review of empirical articles in the field through a lens of sustainability. The final section argues for sustainable empirical research in TPC.

While TPC may not ever agree on a definition of the field, Scott and Meloncon (2017) argued that one way to define a field is by how it does its work, and in following this suggestion, TPC can address Serres' concern in the opening epigraph that research methods do carry a cost for the researcher, the participants, and more so, for the field. A fieldwide examination of empirical research helps TPC create sustainable research trajectories.

Historical Warrants: Why Research on Empirical Research Is Needed?

When Rude (2009) mapped the research questions of TPC, she made clear that she wanted members of the field to engage her work because her findings “are broad and no doubt disputable” (p. 176) and that the purpose of her entry was

to launch a “discussion, not presenting a finished study” (p. 176). We take Rude at her word because advancing empirical research in the field is at odds with Rude’s stance where she argued for a continuation and reliance on textual studies versus a focus on observing actions. St.Amant and Meloncon (2016b) provided insights into what practitioners, or working professionals, thought about research in the field. In a series of interviews, they asked practitioners what topics needed to be researched and also what methods should be used. Practitioners felt empirical research methods offered the field the most potential in finding answers to complex questions faced in the workplace (St.Amant & Meloncon, 2016c, n.p.). This divergence from textual studies, however, is important, particularly because we do agree with Rude (2009) that “the identity of any academic field is based in part on the research it conducts” (p.175), but not with the reliance on textual studies alone. Thus, we began to wonder if TPC was doing enough empirical research to warrant that type of research becoming an important part of its identity. If so, that led to additional questions about what types of empirical research are TPC doing and what methods are being used.

Taking one-step back, we follow MacNealy’s (1999) definition of empirical research. She defines it as “research that carefully describes and/or measures observable phenomena in a systematic way that has been planned in advance of the observation” (p. X). For this project, we selected this definition because it has been noted in both the peer-reviewed research literature of the field (e.g., Koerber & McMichael, 2008) and in the texts used to teach research methods in technical communication (e.g., Conklin & Hayhoe, 2011). In addition, it also aligns with our own experiences as researchers (both in higher education and in working as a technical communicator) and because it is broad enough to incorporate a number of different research study designs and methods.

Why Sustainability?

As Johnson (2004) explains, sustainability “suggests growth/life, but it also invokes the inevitable problem of limits” (p. 102), and this metaphor also promotes “multi-directional, active reflection” (p. 102). Sustainability, as both historical and forward thinking, provides TPC a reflective mechanism to question whether existing research methods and practices are actually developing solutions to the questions and problems that the field values.

This metaexamination of the field’s own research practices is a form of deep reflection that is necessary for sustainability, which is the conceptual lens we use to try and make sense of empirical research in the field. Sustainability also becomes a theoretical orientation to argue for sustainable research practices. In TPC, sustainability scholarship has typically been in the form of case studies around environmental discourse (e.g., Coppola & Karis, 2000; Killingsworth,

2005; Spoel, 2008) or as a way to consider programmatic and administrative work (Ericsson, 2009; Johnson, 2004; Johnson, Simmons, & Sullivan, 2017; Meloncon, 2012b; Meloncon & Schreiber, in press). The use of sustainability when thinking of research in TPC is particularly useful because it encourages reflection about the field's own approach to research and research methods.

For research to be sustainable, it needs to continuously grow, but to do so within a set of limits of what the field finds acceptable for quality and kinds of research. While related fields, such as composition, have lamented the lack of empirical and data driven research (Haswell, 2005), TPC does not have such a problem. Instead, TPC's problems seem to focus on the constant need for innovation to the extreme that the field's empirical scholarship is near to impossible to replicate or even more concerning, aggregate to advance knowledge of the field. (This point is explicated in detail in later sections.) Through such a process, one uses research to arrive at a truth of what something is (via multiple tests over time), versus present an initial instance of something (the findings of one study) as an absolute statement on how humans act. Sustainable research is that which can be replicated and confirmed, refuted, or modified through such iterative testing, and it must be considered trustworthy through its transparency of conducting and describing the actual research process.

However, without a fuller understanding of what we have come to value, implicitly deduced by what has been published in the field's journals, it becomes difficult to train the next generation of students and more importantly, it becomes difficult to show what it is that we do that is unique to the field of TPC. We want to add to this growing attention to a meta-awareness of our own research practices by closely examining the types of methods used. We define method as the *approach used to gather research data*. Method then is not methodology, which we take to mean the ideological or disciplinary approach to the broad practice of the work of research. Method then is also not practice, which we take to mean the actual work and implementation of methods and methodology in the process of performing research.

Disciplines and fields are defined by paradigms, which are established through research methods that are used to investigate topics. The result is that different fields can study the same topics with the same methods and still be different fields. The paradigms that guide the interpretation of those methods and the results are unique to the field. Thus, using methods as the way to look at the field's research is a logical location to gain insights into the values and dispositions of that field. Methods are not shaped by theories, but theories are shaped by method. In other words, methods are then a more accurate marker of disciplines and fields than the theories they may use.

We believe that by examining empirical research methods, we can provide TPC one way to understand the research of the field better and thereby move the field toward a sustainable model of research. In the next section, we expand

on this definition of method through a description of how we gathered our data set.

How the Data Set Was Gathered and Categorized

To gather a representative data set, we examined 5 years of publications (2011–2015) in five major journals in the field:

- *IEEE, Transactions of Professional Communication (IEEE)*
- *Journal of Business and Technical Communication (JBTC)*
- *Journal of Technical Writing and Communication (JTWC)*
- *Technical Communication (TC)*
- *Technical Communication Quarterly (TCQ)*

In selecting these specific journals, we relied on past research practices as exemplified by academic researchers including Smith (2000) and Boettger and Lam (2013). These researchers selected this set of journals because of their longevity and recognition as core/central sources of scholarship in the field, and we believe that because of their longevity and their place within the field, they are representative of the scholarship of the field. We acknowledge that TPC research is published in a myriad of other places, but we confined our review to the journals most relevant to the field because we needed logical parameters to set boundaries for the study. Otherwise, we would still be searching and coding journal articles. To be clear, this kind of research is labor intensive. There is no magic way—even with the technologies available to us—to extricate article data from journals without investing time to ensure the data are in the correct format for coding and analysis and that the bibliographic information is complete and accurate. There is also no magic way to code the data outside of reading it and then coding it. This is, of course, also a time-consuming process. If we had no other projects or responsibilities, we could have done the most recent years (including 2017); however, this type of scholarship when done thoughtfully and carefully takes time and attention. Thus the 5-year time span was in part done out of practicality. It was also chosen because 5 years include enough data for patterns to emerge while also providing a sense of rigor to the method and findings.

We included only research-based articles (i.e., no commentaries, book reviews, etc.), which made a corpus of 404 articles. Of those, we also removed 83 studies that were specifically classroom or pedagogy based because the majority of those studies have limited applicability outside of the classroom. For example, a recent study by St.Amant and Meloncon (2016b) reveals practitioners in the field found classroom-based research of limited value as it fails to study behavior outside of the classroom context.

This left a study size of 321 articles, and of these, *119 used empirical research methods*. The analysis and discussion that follows is confined to these 119 articles. The primary question addressed were as follows:

- What method(s) were used for the research?
- What types of empirical research is the field conducting?
- What does the field seemingly value as empirical research?
- What picture of the field's identity emerges from this research?

To determine the research method (defined here as the approach to gathering research data), we initially focused our review on the titles and abstracts of the published literature. Our reasoning was due to limited time and the need for specific answers, researchers of all types (practitioners and academics alike) would perform only a limited scan of this initial, contextualizing material. Thus, if an article did not make clear in its abstract or title that it was an empirical study, it is possible that it is not included. This process mirrors what many researchers across many fields do at the start of an overall literature review: begin with a focus on titles and abstracts to narrow the works to later review as part of a research-based literature review. It also mirrors the process of most working professionals trying to locate specific information to solve a problem.

Once we had an initial list of empirical articles, we did read each article because of the unevenness of information contained in the abstracts. Some study abstracts included pertinent information in regard to the empirical methods, while others only suggested they were empirical and without reading the full article, readers would be unable to know what method was used. When we read each article, we focused on

- Type of research method(s)
- Length of study (if applicable)
- Number and kind of participants

With this number of articles and with our limited research question, it was not necessary to invoke a complicated analysis or coding schema. In addition, we had previous research to help guide our own investigation. We did consider using the categories formulated by Carliner et al. (2011) but realized quickly that their categories were not completely useful for this project because

- Key research terms were not defined (e.g., case study)
- Research methods were identified according to a “quantitative/qualitative” binary
- Ambiguous classification of methods (e.g., combining methods such as interview, focus group, and textual analysis under “case study” with no explanation for such a grouping)

Because we needed something of a different approach, we took a step backward and decided to start by looking at the article’s overall approach to research. Starting at the big picture of the study’s design allowed us to see that in terms of the objectives of this study, Carliner et al.’s classification didn’t account for the differences between singular methods and approaches that often require multiple methods. This problem of categories being too broad or too general was even noted by Carliner et al. (2011) as a limitation of their research.

Ethnography, case study, and experiment are research categories because they are overarching rubrics that involve the use of multiple methods of data collection to address a research question or problem. Thus, in reading the articles, they were coded if they were an empirical type of category (e.g., ethnography, case study, etc.) and then coded based specifically on the type of method(s) the study used (e.g., survey or interview). In reading the articles, there was little ambiguity about what method was used in conducting the research (although the location and detail of information, of course, varies tremendously). We had no set list, and let the articles and their described methods guide how we coded them. We coded up to three methods because the majority of studies only used one, and only a handful used more than two.

Each author read and classified methods separately, discussed differences, and came to a consensus. Our entire process from originally selecting empirical studies, to confirming that they were empirical, and then determining the types of methods used was a form of “collaborative coding” that “provides a means through which levels of expertise may emerge through the process of discussion in relation to data” (Smagorinsky, 2008, p. 402). The categories and methods found in Table 1 can be replicated in the future (and builds on previous research) or at the very

Table 1. Research Methods and Approaches Used to Classify Empirical Research Articles.

Research methods	
Type	Specific method
Quantitative	Survey*
Mixed	Usability tests*
Qualitative	Interview*
Qualitative	Focus group
Qualitative	Participant observation
Mixed qualitative	Combination of empirical and textual methods
Research categories	Experiment*
	Case study*
	Ethnography*

Note. Asterisks (*) aligns with categories used by Carliner et al., 2011.

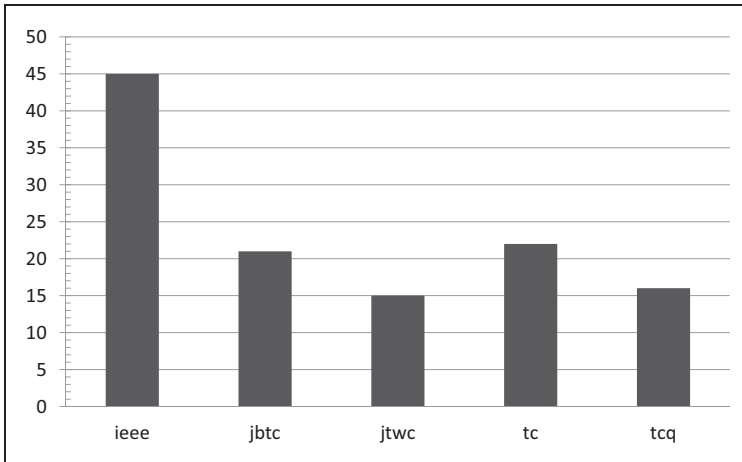


Figure 1. Total number of empirical articles in each journal from 2011 to 2015 ($n = 119$).
Note. IEEE = *IEEE, Transactions of Professional Communication*; JBTC = *Journal of Business and Technical Communication*; JTWC = *Journal of Technical Writing and Communication*; TC = *Technical Communication*; TCQ = *Technical Communication Quarterly*.

least, the information in Table 1 can be further refined that can afford TPC a consistent practice for analysis of the type and kind of research in the field.

Results and Discussion of Empirical Research in TPC

In this section, we provide an overview of the field's empirical research methods by focusing on the following data points:

- number and journal breakdown
- description of research categories
- summary of types of research methods used
- types and number of research participants

These data points provide TPC a starting place to understand how it is conducting empirical research and then help the field to answer how we can make TPC's research sustainable.

Number and Journal Breakdown

The empirical research article data set analyzed represented 37% of the non-pedagogy-related articles and 31% of the entire article corpus over the 5-year period. Figure 1 shows the distribution of articles across the 5-year period and across the journals.

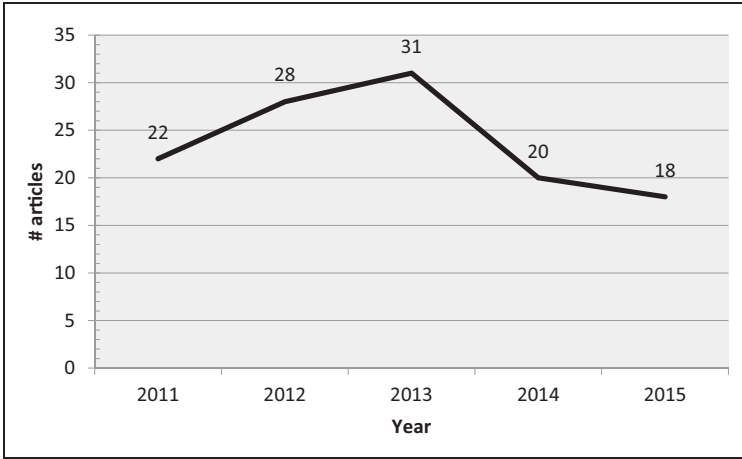


Figure 2. Total number of empirical articles over time from 2011 to 2015 (n = 119).

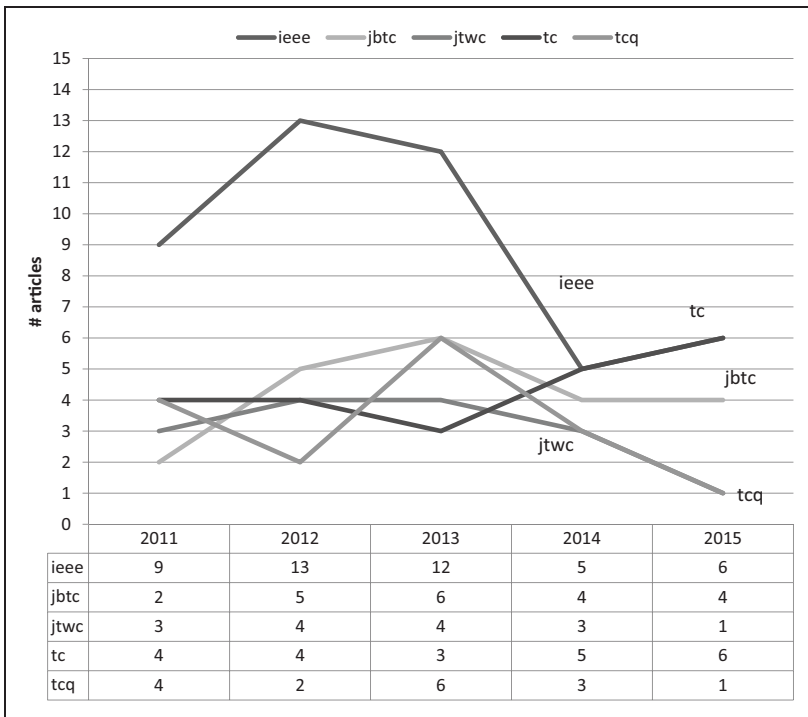


Figure 3. Empirical articles per year in each journal with data table.

Note. IEEE = IEEE, Transactions of Professional Communication; JBTC = Journal of Business and Technical Communication; JTWC = Journal of Technical Writing and Communication; TC = Technical Communication; TCQ = Technical Communication Quarterly.

The largest percentage of articles, 38%, comes from one journal, IEEE Professional Communication Society (PCS). During the study period, IEEE PCS updated its submission requirements and required that research articles be empirical, though the editor's view of empirical seems to be looser than the definition provided earlier. JBTC and TC had similar totals over the study period, while JTWC and TCQ had the lowest totals.

Looking at the data from a slightly different perspective, Figure 2 shows the total number of articles over time.

Empirical articles were published at an increasing rate in the years 2011–2013 but then dropped in 2014 and 2015. Figure 3 shows the breakdown over time per journal.

Because one third of TPC's research output is empirical research, it definitely warrants reflection to be able to determine the best ways to sustain the current level and potentially increase the quality and quantity of studies produced. Seeing the basic numbers and where this research is published gives TPC a meta-awareness that it has previously had, which is the first step to sustainability.

Description of Research Categories

Table 2 provides information on the number and distribution of research categories articles in the data set.

IEEE PCS published all but two of the experiments, while case studies were published in all five journals with IEEE and TCQ publishing the most.

As Charney (2014) suggested, "savvy research seeks out conflicts to address" (p. 106), and one of the "conflicts" we immediately noticed was the contradictory way research categories were described and used. One of the reasons we made the decision to classify empirical research articles by method and then by the broader research categories (case study, experiment, ethnography) was that author descriptions provided little agreement on what the research categories actually meant when put into practice. In all three types of research categories,

Table 2. Number of Research Category Articles Per Journal.

Category	Journal					Total
	IEEE	JBTC	JTWC	TC	TCQ	
Case study	7	4	1	2	6	20
Ethnography	1	1	1	0	0	3
Experiment	17	2	0	0	0	19
	25	7	2	2	6	42

Note. IEEE = IEEE, *Transactions of Professional Communication*; JBTC = *Journal of Business and Technical Communication*; JTWC = *Journal of Technical Writing and Communication*; TC = *Technical Communication*; TCQ = *Technical Communication Quarterly*.

the field seems to be uncertain what case study, ethnography, and experiment actually means (related examples to follow).

Researcher Yin (2003) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (pp. 13–14). We seek to modify this definition by adding two parameters

- Time: A distinct starting and ending point of the event
- Materials: The items on which the research focuses her or his analysis when examining the events

This notion of containment is important, for it allows others to study the same event, as bound in time, but via different methods, perspectives, and theoretical lenses (e.g., a feminist case study of the challenger incident, a qualitative case study of risk documentation of the challenger incident, etc.). They also allow for review and confirmation by letting others review and analyze the same material for the same time frame contest, confirm, or contribute to results. In addition, we want to make clear the case study can use multiple methods to obtain “multiple sources of evidence.” All of these sources, however, must occur within a given time frame—the starting and ending points of the case. For example, Bellwoar (2012) provides one of the stronger examples of a case study in the data set. In her study, she “investigates a contemporary phenomenon within a real-life context” that also includes a time frame and clear explanation of the materials of analysis. TPC’s use of the case study would be more sustainable as a process and method if more researchers followed Bellwoar’s example.

However, where Bellwoar’s (2012) description falls short is in when she invokes “ethnographic methodologies” without defining what she means because her study is clearly a case study and not an ethnography. For the purposes of this entry, ethnography is defined as a type of case study that must include observations of events, persons, and actions made by the researcher directly. While Bellwoar (2012) interviewed her subject, she did not actually observe her. The researcher is thus embedded in the case and observing it unfold as it happens versus reviewing the artifacts and memories of others after the fact. As another example, Jones (2014) performed an in-depth study of the change in food label laws in Hong Kong. In his description of the research, he also claims his work is an ethnography. However, a key component of an ethnography is observation. As he described it in print, Jones’ study included no observations. Finally, while Spinuzzi’s (2012) ethnography of coworking sites fits the definition, he himself admits the limitations of his own method and justifies altering the method based on his research question. Even though this can be a problematic practice, it does illustrate an example of a

Table 3. Time Frame for Empirical Research Categories. (Converted All Time Frames to Week for Comparison. 1 Month Equals 4 Weeks.)

Time frame	No. of studies
1 week	1
2 weeks	1
4 weeks	1
12 weeks	1
16 weeks	1
20 weeks	1
24 weeks	4
52 weeks	3
60 weeks	1
84 weeks	1
104 weeks	4
180 weeks	1
260 weeks	1

detailed method and methodological explanation and description that helps to place the data and findings in a more informed context.

For case studies and ethnographies, the time frame is important because the amount of time spent with research participants or at the research site impacts the representation of the data and more importantly, the validity or trustworthiness of the findings. This is why we added time frame to the definition of a case study and why this information was recorded about the case studies and ethnographies in the data set. Table 3 includes the time frames for the 21 studies that reported them.

Two studies in the data set did not record the time frame at all, and as seen in Table 3, time frames ranged from 1 week to 5 years with half being completed in 6 months or less. The time spent on site is important for understanding the data gathering and the conclusions drawn. Even though the majority of case studies and ethnographies reported time frames, there was a tremendous amount of unevenness in how much detail was included in describing the time frame. This unevenness raises a number of concerns about the precision of the description of the studies and impacts the sustainability and use of existing research, as well as raises questions about sustainability moving forward.

For example, one article in the data set declared it was a 5-year study (Burluson, 2014), but it appears it was not consecutively done. In other words, this seems to not be a longitudinal study where specific characteristics were tracked over a period of time or where regular data were gathered at specific

intervals. In this case, it just took that long to finish collecting sufficient data. Referring to the time frame as a 5-year study is a bit disingenuous and can potentially distort how the data are viewed. This example is representative of concerns about methods, data collection, and interpretation and the need for greater precision when writing up research findings. Also, we need to discuss the significance of time in relation to the method used. For example, is 1 week truly sufficient to gather enough information about an organization's culture and practices to generate substantial and believable findings? We would answer this question no, but we also understand that there are numerous factors, most important of which is the research question, that could potentially lead to sufficient data in 1 week's time. Understanding that qualitative studies are generally unique, there are still basic questions and premises that TPC needs to engage with and discuss for the field's research to be sustainable.

Experiments are another category of research. An experiment is a situation in which subjects are asked to perform a task or a set of tasks identified by the researcher in advance to observe behavior and determine if the same behavior manifests itself when multiple individuals perform the same task or set of tasks. Establishing such relationships, moreover, also involves the use of control groups to determine what variables/factors seem to prompt certain kinds of behavior in preset and controlled situations. For example, Westerman and Smith (2015, p. 465) conducted "an experimental survey containing feedback messages delivered with differing levels of face threat," and participants read one of eight messages and then rated it on a scale. However, in many cases, TPC researchers need to be more precise in their use of such terminology as many "experiments" were actually quasi-experiments or other types of research. Marett, Marett, and Litchfield (2015), for example, acknowledges that their study is indeed a quasi-experiment, and they provide a full description of the research study design and practice, which helps to contextualize the results and instill a sense of rigor and validity into the results.

It is essential for all readers to question what authors mean when they use different terms because what this research found is that there is little consensus about what certain terms mean when doing research. This raises the question about who is right? Which authors do we see as being right in their use of the terms? How does the field decide on an accepted understanding of what, for example, a "case study" actually means when our published research is rife with the term used in a number of ways? But this disagreement raises additional questions about why and how terms are being used and what can these differences tell us about the field and how researchers are being trained? One of the findings of this study is that authors need to take the time to define their terminology (and editors and peer reviewers should insist upon it). Without clear definitions, it becomes difficult to assess the results presented, and it becomes ever more difficult for the field to conduct sustainable research because of the difficulty in standing by the results presented. In other words, sustainable

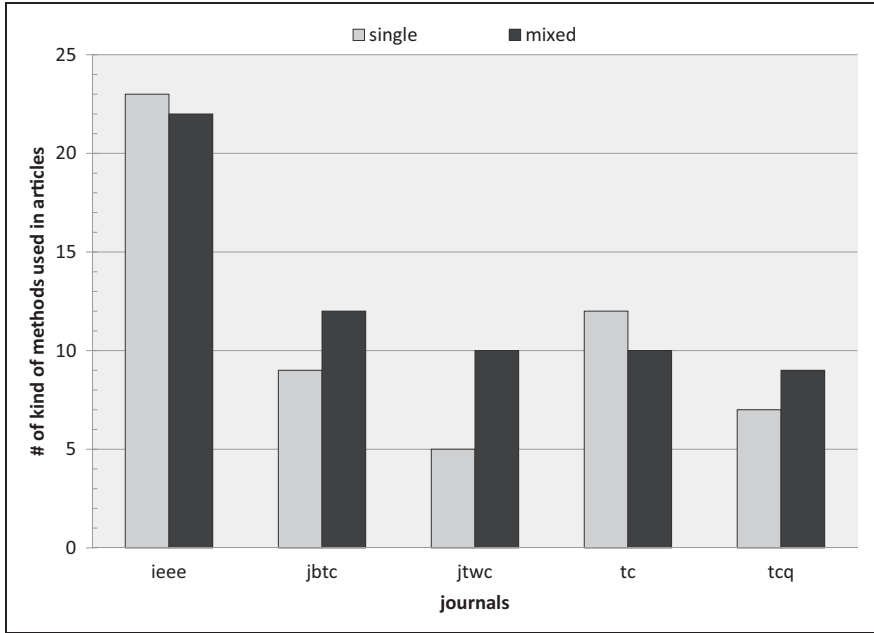


Figure 4. Comparison of single method to mixed methods in each journal.

Note. IEEE = IEEE, *Transactions of Professional Communication*; JBTC = *Journal of Business and Technical Communication*; JTWC = *Journal of Technical Writing and Communication*; TC = *Technical Communication*; TCQ = *Technical Communication Quarterly*.

research must define terms clearly and specifically so that the results presented can be compared across studies and more importantly so that readers can know exactly what is meant by the data presented.

Summary of Types of Research Methods Used

Moving from categories of research methods to specific methods themselves, Figure 4 compares single method research studies to mixed method research studies for each journal.

The articles published slightly favor the use of mixed methods with 53% of the total data set using mixed methods (defined here as using more than one method).

Of the studies that used more than one method, 39% used two methods, and 11% used more three or more methods. The majority of the mixed method studies used a combination of empirical method(s) (as seen in Figure 5) and also some form of textual/rhetorical analysis. The two practitioner-based journals, IEEE and TC, show a slight preference for single method studies.

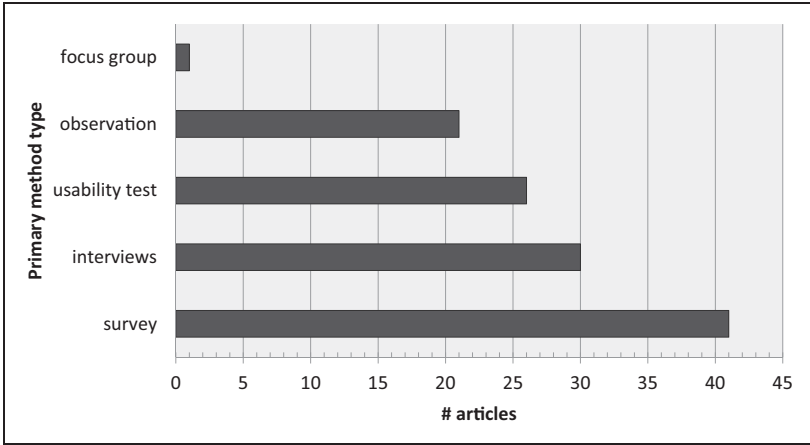


Figure 5. Number of empirical research articles and primary method type.

Highlighting the types of methods used in research studies, Figure 5 shows the preference for method in single method studies.

The five methods in Figure 5 represent all the primary empirical methods used in the data set. Surveys were by far the most used method. Is an over reliance on the survey method good for the field and how do we improve the quality of surveys being administered?

Surveys are typically a quantitative method designed to solicit information from large participant pools. However, this is not how the majority of survey research is done in TPC. For example, Lanier used a survey at a single business location to get feedback on the use of content management system, which resulted in 26 responses. Having read a large number of research studies and having conducted research ourselves, we understand why a survey instrument was used in this case, which was likely because of ease of distribution and data gathering.

However, we would question whether the survey was the appropriate method to use based on what the actual research was trying to find out. The fact that it seems many decisions about methods are based more convenience than on the best methods is troublesome. For Lanier’s study, individual interviews would have generated better data on “the perceptions of the employees” use of the content management system. As Hall (2015) argues, the survey is “the most dangerous research tool” because of its ease of use and the feeling of rightness no matter how bad they are designed. For Hall—and for the authors—the survey is misunderstood, which leads to its misuse. While we acknowledge the usefulness of surveys, TPC researchers need to remember that surveys are also designed for a particular purpose in the overall research process—to gain initial data to identify trends that can be further explored via other, more focused

methods. To use them as the only form of data collection and then make generalizable claims based on them is a misuse of the methods.

Of all of the approaches to empirical research, interviews seem to be the method that have the most agreement, as well as the least problematic use. Most studies used a form of the semistructured interview (preset questions with an understanding that based on the participants answers additional questions may be asked that are not asked of all participants). The area that does need to improve in regard to interviews is in the details about how the number of participants were chosen. In some cases, it was clear from the study (Ruppel, Gong, & Tworoger, 2013) that the number of participants was based on access at the location where the study was taken place, but these details need to be included in the study itself. Specifics as to why and how decisions were made about interview participants affects how the results of the interview are read within the context of the study. As in the case of the other methods discussed, how the decisions on the method relate the research question and subsequently the findings or analysis is important. Leaving out the information on how the number of interview participants was decided, especially when there is a broad range (discussed in detail later) is problematic and undercuts the sustainability of research.

The most troublesome of all of the methods was usability testing. When we were coding the data, we had a lengthy discussion about whether usability testing was a method or a category that could invoke a number of methods. The rationale for coding it only as a research method was largely based on the data in the studies themselves. In most cases, the way the usability test was described was so vague that there would have been no way to code it as a category with multiple methods. In other words, TPC researchers seem to make assumptions that when they use the phrase “usability testing” that all readers and other researchers will know exactly what they are talking about. But the usability studies in this data set clearly show that TPC researchers approach usability testing in varied and diverse ways. For example, Simmons and Zoeteway (2012) briefly discuss multiple iterations of website redesign that included some 60 participants, but the details of the testing and different iterations are noticeably absent. Because Simmons and Zoeteway’s purpose in the article was more on theory building, it does, in some ways, make sense they would not spend a great deal on the details of the usability testing. However, a sustainability approach to research in the field would demand that these details be included because they were instrumental (whether it was made explicit in the published article) in the researchers’ conception of the theory being put forth. Another example that helps to illustrate the issues with usability testing as an empirical method. Stephens, DeLorme, and Hagen (2015) conducted a usability test on a sea-level rise viewer, which is a data visualization tool. Users were asked to perform a series of tasks about the tool’s usability and were then sent an evaluation instrument for the online interface. While this process is

not the typical way a usability test is performed, it did provide the research and development team with important information. However, from the stand point of sustainable research, the authors did not fully explain how the evaluative instrument was created and why it was determined to perform the test the way they did. These are important factors for sustainable research because the tie between method, data, and research question needs to be made more clear and explicit. A final example from Elling, Lentz, and Jong (2012) illustrates one of the best examples of usability testing in the data set. The authors provide detailed information on the multistage user test of a website, as well as the rationale for their methods choices. There is a clear connection between the research question, the methods chosen, and the data collected. This is the key to sustainable research for TPC.

Observation studies is the method that includes any form of participant observation whether it is done as part of an ethnography, case study, or as a singular method (such as part of a usability test). One of the best examples of employing and describing the method of observation is Siebenhandl, Schreder, Smuc, Mayr, and Nagl (2013), who taped actual participants in situ at railway stations to determine barriers to ticket vending machines. On the other end of the spectrum is McCarthy, Grabill, Hart-Davidson, and McLeod's (2011) study that used participant observation at meetings of a website redesign. The authors are not specific in discussing why and how the meeting observations fit into the overall study design and what data were actually gleaned from those observations in parts of their analysis. One can make inferences and assumptions based on reading the entire article, but the description of the observation method would have enhanced the validity of the findings. As with the other methods under discussion, sustainable research requires the addition of information that fully explains and describes the methods in use and more importantly, how those methods match the question under examination.

Focus groups were the least used empirical method, but even in the limited number, the description of them in the published studies raises concerns. For example, Suchan (2014) describes his focus groups were totally informal where he "jotted notes." This lackadaisical ease of which he describes a key component of research practice is troublesome, particularly when he had 10 participants at three different sites participant in the focus group. For research to be sustainable, TPC needs to codify effective research practices for how to deploy the focus group method. In what was written in the published article, it seems that Suchan (2014) included a focus group because it seemed like the right thing to do rather than for a specific research driven practice. Willerton and Hereford (2011) are more specific in the reasons and rationale for conducting focus groups in their study of nursing education materials, but they, too, leave out important information such as the number of participants and the details in how data were collected (which can possibly be inferred from their analysis later in the piece). In both cases, however, sustainable research practices are not used because of

the imprecision and lack of what should be basic information about focus groups (i.e., at minimum, number of participants, rationale for the focus group, process and practice of how information was obtained during the focus group).

Another troublesome factor about all of the methods is the vagueness or incompleteness of descriptions of the research studies. As we read through the methods sections of each of the articles, we were struck by the fact that the majority of them could not be replicated based on the information contained in the article. While we understand and appreciate space constraints for journal articles and also understand and appreciate the fact that many qualitative studies are not necessarily meant to be replicated, Smagorinsky makes a strong argument, and it is one in which we totally agree and endorse: “I simply need to know how data become results in order to trust the author’s claims” (p. 394). This means that authors, editors, and peer reviewers need to insist on more precise and descriptive explanations of the research study design that includes the methodologies, the methods, and the practices of research. Without a clear section that discusses these aspects of research, it is difficult to ascertain whether the analysis and results can actually come from the data that were generated. This imprecision also raises the question about trust and reliability for both quantitative and qualitative studies. Even with the over reliance on surveys, most of the survey studies could not be replicated because of lack of detail about the research study design and the absence of the instrument used to collect data. Moreover, qualitative research hinges on how trustworthy the data and results appear to be, but without knowing “how data became results,” it is difficult to trust the results and ultimately, the findings and implications.

Further much of the concern with how the “data become results” also hinges on the vagueness of the prose on how the method and data collection actually works with the research question being asked. Again, the survey is the best example of this because over and over again, it was clear that the survey was not the best method for gathering the type and kind of data the researcher needed to answer the question being asked. Without better descriptions that justify and explain the methods chosen and the relationship of those methods to the question being asked, research in TPC cannot be sustained.

Types and Number of Research Participants

Research participants drive empirical research, and the most valid, reliable, or trustworthy empirical research involves participants that are actual users, audiences, or participants in the contexts and situations researchers wish to study. Examining participants, therefore, provide glimpses into the variety of research situations that TPC researchers are trying to understand and provide important insights into the sustainability of research. In the majority of articles reviewed

for this study, 75% of the participants represented actual users or the targeted audience.

Interview participants ranged from 1 to 147. Removing the study that included 147 interviews (which is an outlier and highly unusual), the average number of interview participants is 15. Unlike in fields of sociology or anthropology, TPC researchers seem to make decisions of the number of participants up front at the time of the study design and rarely, if ever, consider doing interviews until data saturation is reached. Data saturation is the moment during the study that participants are not providing any new information. Rather than data saturation guiding the research and the number of participants, it seems that TPC researchers are making participant decisions based on other factors, which could not be determined based on the descriptions of the published research (in itself a problematic finding). Research sustainability needs to include details on how participants are chosen, but more importantly, an explanation on why the number of participants was included. The rationale for the number should be more than convenience and should actually match the aims of the research question.

Survey participants ranged from 6 to 1,411, which raises a number of questions about the rationale for using a survey for such a limited number of participants and what that means for choosing appropriate methods for the questions being asked (which was discussed earlier). It is also important that TPC researchers understand the types of conclusions that can be drawn from survey data, which includes care with generalizing results or making big claims from small participant sizes. Take, for example, Kimball's (2013) study on lore of design principles (a mixed method research study that used card sorting and a survey). While the research study was solidly designed, the final number of practitioner participants was only five. For a study claiming to move away from lore, validating the findings of textual research based on only five practitioners leaves room for much criticism because it seems that the participants and questions do not align in a way that make the findings completely reliable, valid, or trustworthy.

We acknowledge and understand that each research study is unique and contains a set of limitations that can probably never be fully defined and described in the published literature, but at the same time, the field needs to consider what is an appropriate number, particularly a minimum number, of participants. It is difficult to claim as valid or reliable the results of research when two vignettes are used as the sole evidence to make a point (Cushman, 2015), and the study never fully describes how many total participants there were. In other words, there are cases where the vignettes could be representative samples of a much larger number of participants, but when this information is not included, readers have a difficult time in assessing the overall results, and it undermines the sustainability of research in the field.

Student Sampling

One of the biggest concerns the data raised was the number of studies that used students or other university-related convenience samples for research questions where students (or other university employees) would not be the primary users or audience. Twenty-five percent ($n = 30$) of the studies fall into this problematic convenience sample, with 23 studies specifically using student participants, three studies are a mix of students and others, and three studies where there was a mention of the convenience sample but no details were included. Only one of the studies using students had research questions specific to student use and that study was a comparison of how students (and thus courses and programs) were using technologies when compared with working professionals.

The situation is further complicated by the confusion between convenience sampling with convenient access. Convenience sampling focuses on subjects that are easy to reach that are also representative of the actual users. The key part of the phrase is sampling. It is still necessary to obtain a sample of users legitimate the research questions being asked. Convenient sampling still focuses on the audience that the research needs. It seems, however, that TPC researchers are selecting participants based on convenient access, which is to select participants based on any individuals who are readily at hand, such as students or university employees. For example, Wright (2013) uses faculty as his interview subject in trying to understand technology transfer, but he does not acknowledge the limitation that university acquisition and use of technology is wholly different than that found in most workplaces nor does he acknowledge that his findings are likely not generalizable outside of a university setting. Thus, Wright selected participants through convenient access and not a convenience sampling. This problem can be found among many of the studies that use students and university employees. Also, take, for example, Rayl (2015) who wanted to look at standardizing data visuals to help practitioners choose more efficient visuals. Even though this is an important area of research, Rayl's study used undergraduate students, which it could be argued are similar to entry-level working Science, Technology, Engineering, and Maths professionals. However, it also could be argued that as entry-level employees, they would not be charged with making these sorts of decisions about documents. Thus, Rayl's research needed to address this concern and limitation, which would also lead to a different set of conclusions and limitations.

We understand the time pressures and work demands of the academic job and also the difficulty in gaining access to study populations (e.g., Friess, 2013). Thus, we are empathetic to the need for convenient access of students and other easily accessible participants. However, practitioners explicitly stated that they felt research results were more reliable and valid when academic researchers "got out of the classroom" (St.Amant & Meloncon, 2016b), which is a valid critique of research. While important insights can be gleaned

from convenient access research studies, researchers need to acknowledge the limitations of their studies, as well as be cautious in making claims about implications of their findings. The data show TPC may be relying too heavily on convenience samples and convenient access because of their accessibility and ease of use. The downside is that qualitative results are difficult to generalize, and when the findings are based on data from convenience samples or convenient access rather than actual users or audiences, it reduces the applicability of the research findings even more. In short, if the field continues to use convenience samples and convenient access of students and other university employees, then TPC is limiting the sustainability and usefulness of its own research.

Sustainable Scholarship

While the reflective examination of 5-year's worth of empirical research helped to answer basic questions such as what methods are used in TPC research and in what journals is empirical research published, more impactful questions such as what does the field value based on its research methods cannot be clearly answered. When we were examining the data, not being able to answer questions about value and impact and durability outside of the field led to questions about how to frame the research. In other words, while we had some general questions we wanted to answer from the exploration of the actual research in the field, it became clear that the data needed to speak for themselves, and in doing so, the questions that came to mind were as follows:

- What specific parts of the research process do TPC researchers need to pay more particular attention to?
- What "is the effect of our favored approaches on our ability as a discipline to define and achieve our goals [?]" (Charney, 1996, p. 587)
- How can we improve the research enterprise in TPC to address some of the shortcomings found in the existing research?

These sorts of questions are key to sustainable scholarship, and sustainable scholarship is necessary to avoid research spiraling into a multitude of singular events where there is no common ground or common features. Sustainability of research ensures a strong and vital future for the field. TPC's empirical research pales in size compared with the field's use of textual and rhetorical methods. But as a third of the field's scholarly output, empirical research and the methods used to produce it is a necessary and important dimension of the field's scholarly identity. Thus, the field needs to pay attention to the practice and process of empirical investigations to ensure that the findings are credible and trustworthy to readers within and outside of the field. For a field that claims it is interdisciplinary and is connected to a variety of practices, little of our empirical

research would hold up to outside scrutiny, and most of that is due to the methods chosen and how those methods are used in practice and described in print. If as a field we cannot agree on or define what we mean by case study, for example, then it becomes impossible to explain those results to someone outside of the field who holds different orientations to research in which they do use a set of accepted definitions around research methods.

Because we have framed the examination and analysis of empirical research in terms of sustainability, it is now time to more definitely explain what that means. We want to put forward an idea of sustainable scholarship. So why is sustainability so important? As a field, we purport to study behavior—or how individuals generate texts or communicate ideas. As such, our research must be iterative—a process by which a premise—or finding is put forth and then tested to see if it is replicable, or true. This is the key to sustainability—the ability to repeat over time and test ideas. And, as a field that studies “writing” and “communication,” our work needs to allow for such testing so that we can fully claim the expertise we say we have.

Hartelius (2009) defined sustainable research as “research that offers sound and significant implications for the discipline from which the scholar originally drew his or her theory and method” (p. 466). While Hartelius was critiquing the subfield of the rhetoric of health and medicine, she insisted that part of any field or discipline’s identity is connected to how they perform research and that research contributes back to larger conversations. Sustainability is particularly important for TPC because the field has historically drawn from different disciplines and theoretical orientations in performing research.

Building from Hartelius’ foundational definition of sustainable scholarship and our examination of actual research in the field, we add a series of characteristics that need to be met for scholarship to be sustainable. Sustainable research should minimally

- state research question(s) or problem(s) clearly and directly;
- connect explicitly to previous research and research questions rather than the standard of focusing on the “gaps”;
- discuss data collected and how it addresses the primary research question(s);
- explicate methods and define terms;
- locate methods in the framework of research study design;
- explain results in terms of data collected (this needs to point to interaction with other fields as well as helping build future research); and
- note directions for future testing of the research (this is different from current practices calling for future research. Instead it encourages researchers to focus on taking research and building on it).

This checklist is only a starting point for building a new way to think of and to do research in TPC. It’s a fundamental shift from our current practices to one

that is centered on sustainability as a practice and as a way to define the field through its research methods and practices. As Charney (1996) so adeptly put it over two decades ago: “Certainly, the research methods we employ have important consequences for the intellectual authority of our field, for the ethical, political, and intellectual value of our work . . .” (p. 568). What we have done is to illustrate that methods can be a way to change the authority of the field, but TPC researchers have to deploy those methods within a sustainable research framework. This is what sustainability truly is: the opportunity to allow others to continually engage and to create new spaces for others to do the same. The central point to remember is that research is the start of a collaborative process that allows others to interact with the field’s research by testing, building upon, and modifying it as they use it.

In advocating for sustainable research, we are also arguing for expanding our use of empirical research methods that move us beyond textual and rhetorical analysis to more sophisticated research approaches based on researching with real users and audiences. A shift in focus away from the study of *texts* produced by humans and to the examination of the *behaviors humans use* to produce and use such texts. In doing so, we would help answer the concern of Blakeslee and Spilka (2004) who explained,

We need as a field to identify and agree on basic research competencies and then to ensure that we train students those competencies in our programs. One potential problem in this regard is that the faculty preparing doctoral students may not themselves be well prepared in empirical methods. (p. 81)

Sustainable scholarship would also help TPC focus on how we teach research study design, but more importantly, it could also help the field work toward building a body of knowledge that takes empirical research as a key part of that endeavor.

Conclusion

Thinking of research through the lens of sustainability—or conducting sustainable research—is a key component to ensuring the vitality of the field itself. Unfortunately, the current state of empirical research in the field seems to position us poorly to address such situations. As our analysis of a 5-year snapshot of published peer-reviewed scholarship in TPC reveals, the vast majority of our scholarship focuses on texts, textual analysis, and on methods that are either nonsustainable in and of themselves or are presented in a way that is difficult to replicate, which makes it near to impossible for this research to serve as a foundation for sustainable inquiry and future generalizable conclusions. The solution, we believe, resides in seeing empirical research practices through the lens of sustainability.

The overarching reason for doing this sort of reflexive exploration—research on research—is because the way scholars perform research reflects their understanding of the structure and organization of good research and thus, good knowledge making. This is what makes this research so valuable to the field. If an approach is explicitly used repeatedly, there is an inherent and implicit—if not explicit—value argument being made.

Having a better understanding of the types of methods used in empirical research helps the field to understand itself and to differentiate the work TPC does from other related fields. If Rude wanted a way to define the field by its research questions, examining the methods of empirical research also affords important insights of into the field's identity. Methods are an important indicator of a researcher's view about research design and practices, as well as an indicator of what they value. Because TPC has not been as reflective as it could be in examining its own practices, we are just now able to see that the methods we choose are indeed not free.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

- Albers, M. (2016). Improving research communication [special issue]. *Technical Communication*, 63(4).
- Bellwoar, H. (2012). Everyday matters: Reception and use as productive design of health-related texts. *Technical Communication Quarterly*, 21, 325–345. doi:10.1080/10572252.2012.702533
- Blakeslee, A. M. (2009). The technical communication research landscape. *Journal of Business and Technical Communication*, 23(2), 129–173.
- Blakeslee, A. M., & Spilka, R. (2004). The state of research in technical communication. *Technical Communication Quarterly*, 13(1), 73–92.
- Boettger, R. K., & Lam, C. (2013). An overview of experimental and quasi-experimental research in technical communication journals (1992–2011). *Professional Communication, IEEE Transactions on*, 56(4), 272–293.
- Burleson, D. (2014). Communication challenges in the hospital setting: A comparative case study of hospitalists' and patients' perceptions. *Journal of Business and Technical Communication*, 28(2), 187–221. doi:10.1177/1050651913513901
- Carliner, S., Coppola, N. W., Grady, H. M., & Hayhoe, G. F. (2011). What does the transactions publish? What do transactions readers want to read? *IEEE Professional Communication*, 54(4), 341–359.

- Charney, D. (1996). Empiricism is not a four-letter word. *College Composition and Communication*, 47(4), 567–593.
- Charney, D. (2014). Editorial: Getting to “how do you know?” rather than “so what?” from “what’s new?” *Technical Communication Quarterly*, 24(1), 105–108.
- Conklin, J., & Hayhoe, G. F. (Eds.). (2011). *Qualitative research in technical communication*. New York, NY: Routledge.
- Cook, K. C., & Rickly, B. (2017). Graduate preparation for research [special issue]. *Journal of Technical Writing and Communication*, 47(2).
- Coppola, N. W., & Karis, B. (Eds.). (2000). *Technical communication, deliberative rhetoric, and environmental discourse: Connections and directions*. Stamford, CT: Ablex.
- Cushman, J. (2015). “Write me a better story”: Writing stories as a diagnostic and repair practice for automotive technicians. *Journal of Technical Writing and Communication*, 45(2), 189–208. doi:10.1177/0047281615569486
- Elling, S., Lentz, L., & Jong, M. D. (2012). Users’ abilities to review web site pages. *Journal of Business and Technical Communication*, 26(2), 171–201.
- Ericsson, P. (2009). Sustainability and digital technology: Program analysis via a “three-legged” framework: A report on the development and sustainability efforts of the digital technology and culture degree. In D. N. DeVoss, H. A. McKee, & R. D. Selfe (Eds.), *Technology ecologies and sustainability* (pp. n.p.). Logan, UT: Computers and Composition Digital Press, An imprint of Utah State University Press.
- Friess, E. (2013). “Bring the newbie into the fold”: Politeness strategies of newcomers and existing group members within workplace meetings. *Technical Communication Quarterly*, 22(4), 304–322.
- Haas, C. (2013). Research methods [special issue]. *Written Communication*.
- Hall, E. (2015). *On surveys*. Retrieved from <https://medium.com/research-things/on-surveys-5a73dda5e9a0>
- Hartelius, E. J. (2009). Review essay: Sustainable scholarship and the rhetoric of medicine. *Quarterly Journal of Speech*, 95(4), 457–470. doi:10.1080/00335630903296234
- Haswell, R. H. (2005). NCTE/CCCC’s recent war on scholarship. *Written Communication*, 22(2), 198–223. doi:10.1177/0741088305275367
- Johnson, M., Simmons, M., & Sullivan, P. (2017). *Lean technical communication: Toward sustainable program innovation*. New York, NY: Routledge.
- Johnson, R. (2004). (Deeply) sustainable programs, sustainable cultures, sustainable selves: Essaying growth in technical communication. In T. Kynell-Hunt & G. J. Savage (Eds.), *Power and legitimacy in technical communication volume II: Strategies for professional status* (pp. 101–119). Amityville, NY: Baywood.
- Jones, R. H. (2014). Unwriting food labels: Discursive challenges in the regulation of package claims. *Journal of Business and Technical Communication*, 28(4), 477–508. doi:10.1177/1050651914536186
- Killingsworth, M. J. (2005). From environmental rhetoric to ecomposition and eco-poetics: Finding a place for professional communication. *Technical Communication Quarterly*, 14(4), 359–373.
- Kimball, M. (2013). Visual design principles: An empirical study of design lore. *Journal of Technical Writing and Communication*, 43(1), 3–41. doi:10.2190/TW.43.1.b

- Koerber, A., & McMichael, L. (2008). Qualitative sampling methods. *Journal of Business and Technical Communication*, 22(4), 454–473. doi:10.1177/1050651908320362
- MacNealy, M. S. (1999). *Strategies for empirical research in writing*. Boston, MA: Allyn & Bacon.
- Marett, K., Marett, E. G., & Litchfield, S. R. (2015). The role of relational familiarity when interpreting family business communication. *IEEE Transactions on Professional Communication*, 58(1), 69–85. doi:10.1109/TPC.2015.2420331
- McCarthy, J. E., Grabill, J., Hart-Davidson, W., & McLeod, M. (2011). Content management in the workplace: Community, context, and a new way to organize writing. *Journal of Business and Technical Communication*, 25(4), 367–395. doi:10.1177/1050651911410943
- McNely, B., Spinuzzi, C., & Teston, C. (2015). Guest editors' introduction: Contemporary research methodologies in technical communication. *Technical Communication Quarterly*, 24(1), 1–13.
- Meloncon, L. (2012a). Current overview of academic certificates in technical and professional communication in the United States. *Technical Communication*, 59(3), 207–222.
- Meloncon, L. (2012b). The rise of academic programs: A call for collaboration. *Intercom*, 59(7), 13–15.
- Meloncon, L., & Schrieber, J. (in press). Advocating for sustainability: A report on and critique of the undergraduate capstone course in technical and professional communication. *Technical Communication Quarterly*.
- Rayl, R. (2015). Implications of desnoyers' taxonomy for standardization of data visualization: A study of students' choice and knowledge. *Technical Communication*, 62(3), 193–208.
- Rickly, R. J. (2007). Messy contexts: Research as a rhetorical situation. In H. McKee & D. N. Devoss (Eds.), *Digital writing research: Technologies, methodologies, and ethical issues* (pp. 377–397). Cresskill, NJ: Hampton Press.
- Rude, C. D. (2009). Mapping the research questions in technical communication. *Journal of Business and Technical Communication*, 23(2), 174–215.
- Rude, C. D. (2015). Building identity and community through research. *Journal of Technical Writing and Communication*, 45(4), 366–380.
- Ruppel, C. P., Gong, B., & Tworoger, L. C. (2013). Using communication choices as a boundary-management strategy: How choices of communication media affect the work–life balance of teleworkers in a global virtual team. *Journal of Business and Technical Communication*, 27(4), 436–471.
- Scott, J. B., & Meloncon, L. (2017). Manifesting methodologies for the rhetoric of health-hand medicine. In L. Meloncon & J. B. Scott (Eds.), *Methodologies for the rhetoric of health and medicine* (pp. 1–23). New York, NY: Routledge.
- Selber, S. A. (2004). The CCCC outstanding dissertation award in technical communication: A retrospective analysis. *Technical Communication Quarterly*, 13(2), 139–155.
- Serres, M. (with Latour, B.). (1995). *Conversations on science, culture, and time* (R. Lapidus, Trans.). Ann Arbor, MI: The University of Michigan Press.
- Siebenhandl, K., Schreder, G., Smuc, M., Mayr, E., & Nagl, M. (2013). A user-centered design approach to self-service ticket vending machines. *Professional Communication, IEEE Transactions on*, 56(2), 138–159.

- Simmons, W. M., & Zoetewey, M. W. (2012). Productive usability: Fostering civic engagement and creating more useful online spaces for public deliberation. *Technical Communication Quarterly*, 21(3), 251–276.
- Smagorinsky, P. (2008). The method section as conceptual epicenter in constructing social science research reports. *Written Communication*, 25(3), 389–411.
- Smith, E. O. (2000). Points of reference in technical communication scholarship. *Technical Communication Quarterly*, 9(4), 427–453.
- Spilka, R. (2009). Practitioner research instruction. *Journal of Business and Technical Communication*, 23(2), 216–237.
- Spinuzzi, C. (2012). Working alone together: Coworking as emergent collaborative activity. *Journal of Business and Technical Communication*, 26(4), 399–441.
- Spuel, P. (2008). Communicating values, valuing community through health-care websites: Midwifery's online ethos and public communication in ontario. *Technical Communication Quarterly*, 17(3), 264.
- St.Amant, K., & Meloncon, L. (2016a). Addressing the incommensurable: A research-based perspective for considering issues of power and legitimacy in the field. *Journal of Technical Writing and Communication*, 46(3), 267–283.
- St.Amant, K., & Meloncon, L. (2016b). Reflections on research: Examining practitioner perspectives on the state of research in technical communication. *Technical Communication*, 63(4), 346–363.
- St.Amant, K., & Meloncon, L. (2016c). Unpublished raw data.
- Stephens, S. H., DeLorme, D. E., & Hagen, S. C. (2015). Evaluating the utility and communicative effectiveness of an interactive sea-level rise viewer through stakeholder engagement. *Journal of Business and Technical Communication*, 29(3), 314–343.
- Suchan, J. (2014). Gauging openness to written communication change: The predictive power of metaphor. *Journal of Business and Technical Communication*, 28(4), 447–476.
- Westerman, C. Y. K., & Smith, S. W. (2015). Opening a performance dialogue with employees: Facework, voice, and silence. *Journal of Business and Technical Communication*, 29(4), 456–489. doi:10.1177/1050651915588147
- Willerton, R., & Hereford, M. (2011). Evaluating applications for an informal approach to information design: Readers respond to three articles about nursing. *Journal of Technical Writing and Communication*, 41(1), 59–82.
- Wright, D. (2013). Communication and cultural change in university technology transfer. *Journal of Technical Writing and Communication*, 43(1), 79–101.
- Yin, R. (2003). *Case study research: Design and methods*. Third edition. Thousand Oaks, CA: Sage.

Author Biographies

Lisa Meloncon is an associate professor of technical and professional communication at the University of South Florida. Lisa's research focuses on programmatic issues in the field, research methodology and methods, and the rhetoric of health and medicine.

Kirk St.Amant is a Professor and the Eunice C. Williamson Endowed Chair in Technical Communication at Louisiana Tech University, USA. He is also an Adjunct Professor of International Health and Medical Communication with the University of Limerick, Ireland. His main research interests are international communication and information design for global audiences with a particular focus on the globalization of online education and health and medical communication for international audiences.