

Collaborative Strategies for Distributed Teams: Innovation through Interlaced Collaborative Writing

Joy Robinson
University of Alabama in
Huntsville
joy.robinson@uah.edu

Lisa Dusenberry
Armstrong State University
lisa.dusenberry@armstrong.edu

Halcyon M. Lawrence
Georgia Institute of
Technology
hlawrence7@gatech.edu

Abstract - *This paper discusses a case history of a successful, highly-productive team that collaborates on a regular basis, solely through virtual means. In the article, we will discuss the importance of psychological safety as a key foundation in collaborative work and the affordances that result from building and maintaining this foundation, including the co-creation of knowledge and an increase in team productivity. We provide a postmortem of our collaborative writing process, which has resulted in a series of successful articles, presentations, and posters. In this case history, we will discuss our collaborative processes, highlighting significant decisions, choices, and failures; we will supplement the case with anecdotal evidence. Finally, we will provide a set of concrete strategies/guidelines to benefit others interested in distributed collaboration. Ultimately, we present this case as a model for collaborative writing and have termed this innovative process “interlaced collaborative writing.”*

Index Terms - *Co-construction of knowledge, collaboration, distributed teams, psychological safety*

INTRODUCTION

This case provides strategies for teams that produce collaborative work from the early processes of brainstorming and idea generation to the co-production of research projects and writing of papers. In the case of the production, quite often collaborators may still have a traditional approach to developing a written or visual deliverable (a traditional approach is characterized by teams creating a composite document where each individual contributes discrete parts). In an era of synchronous virtual tools, we can now benefit from an approach we term “interlaced collaborative writing.” This approach to writing collaboration reinforces and maintains the psychological safety required for co-construction of knowledge. Interlaced collaborative writing (ICW) supports interdisciplinary research and allows for pooled expertise and cohesive deliverables.

We see ICW as a unique distributed writing practice that involves both division of labor and intense periods of synchronous production from all group members—a gestalt process that yields a product better than the sum of each individual’s contribution. To examine our collaboration, we propose two research questions:

- What strategies help distributed teams to promote psychological safety to support co-production of deliverables?
- What strategies help distributed teams use tools to support co-production of deliverables?

To address these questions, first we situate the case in the literature on collaboration. Second, we discuss how this case was studied. Third, we present the case itself. Finally, we offer strategies that teams across disciplines might adopt to co-produce cohesive deliverables and participate in successful distributed collaborations.

LITERATURE REVIEW

This section discusses distributed teams and then summarizes the importance of three major theories that influence the work of collaboration and distributed teams: psychological safety, co-construction of knowledge, and distributed cognition. These three theories are drawn from different disciplines including technical communication, business, and education. To review the literature, we searched using the aforementioned terms, stem words, and synonyms for “teams” and “collaborations” combined with “writing”, “cooperative”, “layered”, “distributed”, “virtual”, “collective”, and “reactive.” At the end of the literature review, we define and describe the practice of ICW, a product of our collaboration.

I. Distributed teams

More companies than ever “operate in an increasingly distributed manner” [1, p. 206]. Technology tools permit individuals an opportunity to connect, share, collaborate, and organize [2] and as a result, remote workers and distributed teams have become a staple in today’s global

economy [3]. These distributed work teams—also referred to as computer-supported cooperative work (CSCW) teams and virtual teams—“support the extension of activities around the world as well as outsourcing” [4, p. 302]. Using information communication technologies (ICTs), distributed teams collaborate virtually, permitting companies to leverage talent despite their discipline or distance [5]. Distributed teams provide faster time-to-market, lower costs, and “rapid solutions to complex organizational problems” [6, p. 2653]. For example, using Cisco’s communication tools, GE was able to save 40% on travel as well as improve the company’s competitiveness [7]. While a recent survey indicated that 46% of organizations are taking advantage of distributed teams’ affordances [8], a series of issues have repeatedly hampered team success, including time, differences in leadership, cultural norms, team relationships, and distribution of work.

II. Psychological safety

A synthesis of research [9] indicated that along with team empowerment, cohesion, commitment, and identity, psychological safety was a key predictor of distributed team success. Effectiveness in teams is seen as related to structural features (e.g., well-structured tasks, team composition, and access to appropriate tools) [10] or predicated on interpersonal or cognitive factors (e.g., beliefs, biases, conflict mitigation) [11]. A study that examined both structural features and interpersonal factors as antecedents to effectiveness, found that high psychological safety allowed teams to push through issues of conflict, improving their performance [12]. To be effective, members need a “safety net” to protect them from the inherent risks associated with collaborative work, including the emotional risks that could result in “losing face.” This safety net should not simply be conflated with trust, a long studied requirement for virtual team effectiveness [13]. Instead team psychological safety is described as “a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves” [11 p. 354]. In laying a foundation of psychological safety, a team can move toward a working relationship that is not wrought with distractions related to face-saving maneuvers, allowing the collaborators to focus on the work [14]. For example, Google’s recent research demonstrates the importance of psychological safety [15]. Its examination of data from 51,000 employees across 180 teams over three years found that psychologically-safe environments were critical to establishing norms that allowed teams to be successful. The factors that build psychological safety likely differ from group to group and little research has been able to articulate the factors that must be present to build psychological safety. However, there are some studies that reference maintaining psychological safety. For example, that same Google study references just how

talking about one’s feelings and being “sensitive to how their colleagues feel and to notice when someone seems upset” will go a long way toward establishing the openness required for a foundation of psychological safety [15, p. 12].

III. Co-construction of knowledge

The existing paradigm suggests that the primary way we co-construct knowledge is through oral discussion which occurs when we exchange information in real-time through conversation. However, with advancements in technology tools, writing can now occur synchronously, providing an unprecedented opportunity to construct knowledge through document creation. Synchronous writing transforms the act of writing-to-know into a collective and not just individual process. Hence, it is not only through discussion but also through writing that collaborative groups are able to co-construct knowledge.

Co-construction of knowledge (CCK) develops from discussions of social construction of knowledge in global online debate and computer mediated communication [16]. Adapting a definition from a five stage model of interaction analysis [16], CCK is a process whereby group members share and compare their information to discover and discuss points of dissonance. Then, they work together to negotiate the shared meaning they draw from their dissent and shared ideas. These negotiated meanings are then tested and modified by group members for adoption/application. Most of the research on CCK focuses on asynchronous groups, but a 2015 case study explored how simultaneous writing is related to CCK [17]. The results showed that simultaneous collaborative writing led to increased episodes of CCK. Teams participating in parallel collaborative writing—each contributor working on her own section or task—did not go beyond the sharing stage of CCK, thus never reaching the co-construction/negotiation phase. Conversely, teams who participated in interwoven collaborative writing—“two or more collaborators writ[ing] simultaneously on the shared document and in the same paragraph”—spent more time in the negotiation, modification, and application stages of CCK [17, p. 31E].

IV. Distributed cognition

While CCK is often discussed in collocated learning contexts, an overlooked but similarly related concept is distributed cognition. Research on socio-cultural communication draws from distributed cognition theory to describe and explain how communication processes are coordinated. [18] sees this coordination as happening: 1) across the members of a social group, 2) coordinated between internal and external (material or environmental) structures, and 3) distributed through time in such a way that the products of earlier events can transform the nature of later events. The relevance of distributed cognition as an approach to understanding collaborative practices is

that it allows researchers to move beyond traditional methods that use the individual as the subject of analysis to investigate the wider distribution of structures (e.g., processes, tools) that shape knowledge production. Given the stated issues related to distributed teams, they could benefit from processes which could help them to improve their ability to produce; one such process is ICW.

V. Interlaced collaborative writing (ICW)

A lack of nomenclature is an impediment to discussing collaborative writing [19] and as a result, many different variations for writing in a group have emerged under the umbrella of collaborative writing. Collaborative writing is "an iterative and social process that involves a team focused on a common objective that negotiates, coordinates, and communicates during the creation of a common document" [19, p. 75]. Unfortunately, this definition was more of an ideal than a practice, until the emergence of tools which enabled the "iterative" and "social" processes mentioned in the definition. Coordination along the lines of paragraph or sentence level writing/editing was impractical. We offer a term to fulfill the promise of collaborative writing—"interlaced collaborative writing;" this practice foregrounds CCK and goes beyond just joint writing to include all the aforementioned development activities. ICW is a distributed practice, predicated on psychological safety that promotes iterative CCK by allowing for both parallel and synchronous discussion and production of texts with intense periods of simultaneous production. ICW is an agile process that reflects the wicked, messy nature of 21st century collaboration.

HOW THIS CASE WAS STUDIED

This case is a team postmortem including anecdotes from projects completed by a team of humanities scholars. The section addresses the two research questions as well as how the case was analyzed and a description of our collaborative process.

I. Research questions

Our first research question considers the strategies derived from our ICW projects that help distributed teams promote psychological safety, supporting co-production of deliverables. To examine our collaboration, we have selected three major deliverables to discuss that represent major changes in the development of our co-production. Through direct observations and postmortem discussions, we have delineated the strategies that can be used as models to assist other teams. These observations and discussions also inform the answers to our second research question: "What strategies help distributed teams use tools to support co-production of deliverables?" By establishing the major barriers to co-production (e.g., lack of psychological safety and poor selection/usage of tools

and discussing the unique elements of our collaborative process through three deliverables, our case history will show the benefits of ICW for co-production.

For distributed teams, cohesive collaborative development is often plagued by an over-dependence on specialized tools, too much parallel production, and too much emphasis on the individual contribution to the whole. These issues lead to disconnection from the product teams produce and keep them from benefiting from negotiating meaning and knowledge during all parts of their process. To solve these problems, teams can implement ICW.

II. Collaborative method

This case history encompasses the multidisciplinary work of four humanities scholars, who collaborate virtually as a peer-based research team. The collaboration produced many deliverables including a two-year grant-funded research study, two national poster symposia, a series of conference presentations, two peer-reviewed articles, and plans for several future collaborations. The collaboration has also influenced the individual work of the researchers and branched out to several projects unrelated to team deliverables. Our peer-based collaboration developed over a period of three years. Below we describe some elements of our collaborative process that we will develop later in the discussion of our deliverables.

The group maintains three-hour standing meetings twice per week. The timeslots are used by the working group when needed, and otherwise the times are used for an individual's work after checking in with the team. In some instances when deadlines loom, we extend or lengthen these meetings. More than a timeslot, these three-hour meetings create a space, as we have a stable link to a dedicated Google Hangout. We use the voice feature of the Hangout for check-ins and continuous conversations as we research, discuss, and write together, keeping cameras off unless a member needs to share her screen.

For each project, we begin with a shared document folder as a framework to give everyone a common platform. Next, comes a period where the authors take time to contribute to a literature folder colloquially named "papers." We divvy up the articles and allot time for reading and taking notes in a parallel process. Then, we synchronously come together to share, discuss, and negotiate ideas and take notes before attempting a draft document. Most documents are started with a communal outline developed from our discussions, then we generate text for each section, sometimes through parallel methods with each person adding to sections of interest, but always returning to synchronous meetings to review, rearrange, and test/apply ideas from discussion to move us along.

With respect to synchronous writing, using a Google Doc allows each member to add and edit the writing in

progress. Members switch in and out of roles that play to their strengths based on their knowledge of the topic, research they have done, and personal preferences. At any given time, some members might be discussing research sources, project limitations, or structural frameworks, while others might be writing notes from that conversation, developing the writing in a section, or editing text as another member creates it.

ABOUT THIS CASE

This section introduces two problems for distributed team collaboration and provides ten strategies developed from the analysis of our case. It will discuss the difficulty teams have in promoting psychological safety, how distributed work is constrained and shaped by technology tools, and then present a brief description of the project and the process for developing the solution.

I. Maintaining psychological safety

Psychological safety is an understudied phenomenon and only recently has been connected to successful team norms [12], [20]. Research suggests that leaders play a significant role in maintaining psychological safety, particularly through their ability to promote inclusiveness and to facilitate collaboration across professional boundaries [21]. However, there has been little research that points to how psychological safety is established in groups or the roles of other team members and team practices in its maintenance. Teams often concentrate only on norming processes, such as dividing up work tasks, handling data, or dealing with new tools, without building the requisite level of psychological safety for effective group work. Members of the team need to feel as if they will not be penalized or demoralized if they hold unpopular opinions or ideas. Distributed teams must make numerous decisions about how they will work together and these norming processes must be facilitated virtually. Lack of psychological safety is a major obstacle to success in distributed teams because they are missing many of the affordances that colocated teams have to build socioemotional connections.

Collaboration requires more than a simple time investment; it requires an emotional openness that must be shared between members. Psychological safety, for example, helps address one of the most pressing reasons collaborations self-destruct—conflict. Conflict results from poorly executed collaborative practices: inadequate consideration for shared goals and poor accommodations for geographical, time zone, and access differences.

Different expectations from collaborators can strain the dynamics of the group, causing tension over individual contributions and how those contributions are valued. Parallel collaboration or work that has taken place in a vacuum without regard for other members, makes the collaborative process counterintuitive and isolating, rather

than one that facilitates CCK and co-ownership of a piece that represents more than a sum of the individuals' work. While colocated teams address these issues in face-to-face meetings and develop methods supporting their psychological needs through sharing and nonverbal communication, distributed teams have to go further to build this link for team members. As a result, distributed teams need strategies to help them support a psychologically-safe virtual space.

II. How distributed work is shaped by tools

One of the other major constraints to collaboration is the lack of adequate tools. Earlier non-virtual acts of collaboration were cumbersome and often involved shuttling materials among workers for their contribution. The advent of technology tools changed the landscape of collaboration in significant ways: speed and accuracy, for example. While the technology has changed, distributed teams struggle with how collaborative processes relate to these new tools.

While teams are often comfortable using technology to support collaborative meetings or communication, they often lack strategies to help them co-produce their actual deliverables. One of the common products that collaborative teams work on is the production of communication texts (we use communication texts and written texts in a broad sense—a team might be producing a brochure, a manual, technical notes, or written scholarship among other deliverables). Tool selection and usage plays a large role in the success of team's co-production processes.

There are three contending views about the role of technology in collaborative processes; first is the mechanistic view, which suggests that collaborative processes are oriented to suit the tools. For example, prior to groupware (tools which facilitate collaborative work), collaborative writing may have taken place in a Word document, using features like merging, versioning, and tracking changes. At the other end of the spectrum is a concept which sees groupware “as context”. This view supports the idea that technology and systems should not regulate the actual collaborative or meeting process, but rather, should stimulate interaction among participants. Tools that facilitate this collaborative process like Google Docs and Microsoft's OneDrive allow multiple collaborators to write synchronously, for example.

Finally, a more moderate, post-mechanistic view [22] suggests that ideally, technology tools should be able to capture the emergence of the group's process and then create appropriate forms for supporting it [22]. This technology has been in development since the early 2000's and is called “intelligent” groupware, characterized by technology which uses machine learning to customize specific tools depending on users' practices. While there has been a proliferation of writing technologies in the last decade that allow for “groupware

as context” practices, collaborative writing in workplace settings often continues to take on mechanistic processes such as turn writing, lead writing, and writing together, side-by-side [23]. The implication is that collaborative writers may not be fully exploring the affordances of collaborative tools, but more importantly, post-mechanistic processes facilitated by intelligent groupware could be hampered by mechanistic writing practices.

Often, workplace collaborative writing has either “grown up” around the tools or traditional writing practices have persisted using the collaborative capabilities of tools only to mediate issues of space and time instead of altering the writing process. For distributed teams, technology tool selection and usage in co-production of texts is complicated and often sabotages collaborative co-production. For example, teams are regularly faced with having to make choices about technology as new groupware emerges, as new members are added, or as new projects are initiated. There are multiple factors that a team must consider as they make decisions about the tools they use in collaborative writing; these include individual/group needs and processes, the text to be produced, and publication requirements, for example.

Teams that adopt new tools without a thorough understanding of these factors, run the risk of bringing ill-suited technology into their work process where they either spend an inordinate amount of time working around the tool before they abandon it altogether or adjust their natural collaborative processes to suit the tool they’ve adopted. Media Synchronicity Theory (MST) for example, purports that the manner in which individuals use media influences how effectively information is transmitted and how well or poorly a shared understanding is developed during the communication process [24]. Additionally, Lam [25] found that there was an increase in communication openness (as well as communication richness and discussion quality) when synchronous communication media was used by collaborative groups.

Therefore, in the same way that we think carefully about who we invite into our peer review process, or with whom we share our work for feedback, tool selection should be an equally thoughtful process as it ultimately shapes how we communicate and what we produce.

III. A brief description of the project

To address the problems of collaborative co-production of deliverables in long-term, stable distributed teams, we sought a way to theorize how our working style leveraged technology and distributed cognition to create products that are not identifiable as the work of individuals and would be impossible without collective and shared thinking at all points in the process. By studying our process and the deliverables we have developed over time, our case history shows the strategies

we gained from co-producing texts via ICW. ICW can work for both academic and workplace audiences; it combines the best parts of collaborative work without falling prey to the common experience of collaboration as a composite of individual works. Distributed teams that focus on ICW will find all members have a deep understanding of the project and a sense of ownership of the whole; this means less chance of group members duplicating the others’ works and increased quality of knowledge production.

Since most of our processes were emergent rather than deliberative, it is through this case study that we have had the opportunity to deconstruct the process in an effort to make the tacit explicit. To address the two research questions, we developed ten strategies for ICW, which are discussed in the results section.

IV. Process for developing ICW strategies

Our ten strategies were developed through several projects and process trials. As part of this case history, we discuss three deliverables essential for building our collaboration strategies: a grant proposal, a digital poster, and a physical poster. While it is typically helpful to talk about work in phases of development, we feel that our work functions better in short examples organized by deliverable. Therefore, the discussion that follows will provide examples written to highlight and give insight into the strategies we developed for ICW.

Artifact: Grant proposal and supporting documents The grant proposal was one of the first projects that the team tackled. The project secured funding for a research study on the use of digital tools in the academy. Most of the team members were in the same workplace, and we had additional team members working on the project for this deliverable only. This process allowed us to pilot our use of Google Hangouts and standing online meeting times. The Hangout supported our psychological safety by allowing us to chat personally before and during our collaborative writing. The stable link and the standing meeting times minimized technology snafus, endless discussions about availability, and routinized our collaboration; these two elements also minimized the need for defined group roles because no one person acted as facilitator of the meeting nor was tasked with issuing an invite to the others. Both of these elements helped us maintain a positive and productive team climate for collaboration.

The necessity of equal access to and use of synchronous tools represented the major lesson we learned about collaboration from this deliverable. During this first project, members were often assigned a specific task, which illustrated the importance of the strategic use of and access to tools. For example, Robinson was one of the sole users of the survey tool and thus the point person for any changes that had to be made. This effectively forced her into the role of gatekeeper (the language, the

metrics, and the design), resulting in disproportionate work for Robinson and creating a need for the other members to consult or defer to her about changes. Also, since only one individual was working with the tool on a regular basis, it became easier for members to be less engaged with the process and to feel less ownership of the deliverables. As a result, we adopted new strategies for future deliverables.

Artifact: Digital poster presentation The digital poster was produced for a conference and had several collaborative elements: a proposal, analysis of collected data, development of a digital poster, and a panel presentation at the conference. Learning from the earlier stage of our collaboration, we began using Google Docs to provide simultaneous access to working documents. We also fully adopted a Google Hangout to provide a verbal backchannel to support our collaborative writing in the Google Doc. Instead of assigning parts to individuals, we wrote the document together, with members informally cycling through processes of writing, editing, verbally discussing ideas, and taking notes. In drafting and revising the proposal for the poster, we realized that the process was flexible enough to allow for both intense sessions of writing together and individual sessions of revising, commenting, and drafting asynchronously. This strategic use of tools and ability to adopt flexible synchronous and asynchronous processes helped maintain our team climate [24].

While the Hangout provided a verbal backchannel, having to discuss every small change to the document would make co-production untenable. With this in mind, we developed a section at the end of each document called “You’ve been cut...” (YbC). YbC allows team members to do revision (both synchronously or asynchronously) without having to rationalize every single change through a comment process. This permitted each member to continue to feel valued throughout co-development, as the YbC indicated simply that the contribution was important, but that the words themselves might be better served elsewhere. This process allows for both expediency and “saving face” while maintaining emotional ties/openness, and the verbal channel allows for immediate discussion of anything complex, controversial, or confusing.

Artifact: Physical poster presentation For this physical poster, we elected to use a visualization tool that was not groupware. This decision had a “chilling” effect on our normally dynamic collaborative meetings and reintroduced the problem of gatekeeping. As one member becomes the gatekeeper, that person has to spend a great deal of time updating others and being informed by others to make changes. However, we managed to create workarounds to compensate for the lack of ability to edit synchronously by emphasizing other ICW strategies. For example, we adjusted by spending more time level-setting, even though this slowed our production process.

Since the tool could not be used by members at the same time, one member shared her screen and the rest had to direct changes verbally. Individual members would also periodically share their own screens to demonstrate visualizations for the gatekeeper to emulate in the main document. This limited control over tools, created issues in developing and negotiating meaning due to interrupted the workflow and discussion.

It was also during this process that we realized how important working with our cameras off was to ICW. Sharing screens and turning cameras on increased the sense of surveillance members felt, but because some of our working sessions were so long, we all had other duties/issues that might interrupt our full attention at some point. After producing this poster, we were able to articulate why eliminating policing was a necessary strategy. Doing things like turning off cameras allowed us to acknowledge the need for interruption and gave tacit permission to drop in and out of the collaborative sessions as necessary. Additionally, this project allowed us to pinpoint some issues with collaborative work (i.e., tools, distributed tasks, process issues) and interrogate how our process helped us to mitigate these issues.

We also began to use task tracking software to automate reminders as our projects became more complex, and we began to work on multiple projects at once. It was during the development of this physical poster that we realized maintaining a flat structure rather than a hierarchical one was essential to our continued psychological safety; adopting tools that support maintenance tasks and automate reminders avoided putting pressure on one designated person who had to act as taskmaster with the rest.

V. The results of our collaboration

Over the course of our three-year collaboration, we have had many successful engagements, evidenced by the co-production of the following deliverables: a published article, a grant proposal with survey and interview documents, a digital poster, a collaborative midterm research report, a physical poster, a series of ancillary conference presentations, and a deep and broad plan for future collaboration. Our ICW has had an impact not only on the deliverables from our initial grant-funded research, but also for other collaborative projects as our work together led us to new, innovative ideas.

Strategies for Interlaced Collaborative Writing (ICW) The specific strategies that characterized our process are explained below.

- 1) Get personal. Share contact information including emails, phone numbers, and chat. During check-ins, allow for time for members to talk about their day or to solicit advice from the group.
- 2) Foster synchronous production. Utilize a rich medium that permits synchronous

communication and simultaneous work/writing (e.g., Google Hangouts or Skype, and Google Docs).

- 3) Choose tools with deliberation. Acknowledge individuals' work processes and use tools that facilitate multiple working styles of the team. For example, some members may need tools that allow them to start in the middle of the document rather than write from introduction to conclusion.
- 4) Hold synchronous working meetings. While some work can be accomplished individually using parallel writing techniques, every main stage of document production should include synchronous meetings for level-setting and CCK.
- 5) Create stability. Set standing meeting times to work together. If there is no pending work for that day, meet anyway to check in with each other. Additionally, use a permanent link/location for virtual meetings, as it reinforces the flat group structure since each group member takes responsibility to join at the set time. Finally, lay out a plan for the work but make allowances for life to interfere.
- 6) Practice emotionally-safe editing. Build emotional safety into editing and revising what others have produced while maintaining efficiency. For example, create a section in the document where teams can place edited text without deleting it (a "you've been cut..." section).
- 7) Be flexible and sensitive about roles. Interlaced collaborative writing works well with flat team structures allowing members to swap roles (e.g., idea producers, text producers, and editors) and distribute responsibilities.
- 8) Include level-setting activities. Find ways to perform level-setting and account for individual work that happens outside of writing sessions. For example, have individual members leave comments about work they do alone or allow time at the start of meetings to have members discuss what they have done.
- 9) Develop standards and conventions. Make decisions about file naming conventions and ensure that all group members have full access to all documents. When this is not possible, make sure that all members understand why the standard is not being observed. For example, create a shared location for all documents, articles, and resources and articulate file naming conventions.
- 10) Reduce member policing. Use tools to support accountability but not police it. For example, turn off the webcam and select a third party reminder program for deadlines.

LIMITATIONS, SUGGESTIONS FOR FUTURE RESEARCH, AND CONCLUSIONS

I. Limitations

We have identified three primary limitations to this study. First, these ICW strategies work for our team, which is entirely female, so further study should be done to test how gender dynamics interplay with ICW. Second, since this case study is also done with a peer-based collaboration, our ICW strategies are potentially limited to teams where there is no defined leader. Third, there is no empirical research to judge the success of these strategies beyond this case.

II. The future

Future threads of research into distributed collaboration should include focus on understanding how psychological safety is enacted in various collaborative situations, in particular in distributed or collocated teams. There should be more concrete guidelines to assist teams on building psychologically safe environments effectively. Additionally, collaborative research should take this opportunity to experiment more with intelligent groupware that allows teams to both work together synchronously and track changes, tasks, and roles more completely. Finally, more work should be done to investigate empirically how distributed teams collaborate in an effort to understand how the quality of psychological safety and tools affect teams' work and their deliverables.

III. Conclusions

Overall, our collaboration has been fruitful resulting in a number of unexpected areas of productivity, many of which would not have been possible working individually. This working relationship is successful because we built and reinforced a foundation of psychological safety. Our distributed collaboration helps us focus on choosing tools deliberately. These tools permit us to work remotely on novel projects that reflect our scholarly interests. Interlaced collaborative writing, which is in direct support of our academic work, is an innovative approach to any kind of co-production.

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ABOUT THE AUTHORS

Joy Robinson is an Assistant Professor of Technical Writing at the University of Alabama in Huntsville. She examines the intersection of games and virtual teaming and has additional interests in digital media and literacy, technical communication pedagogy, and user experience.

Lisa Dusenberry is an Assistant Professor of Professional Communication at Armstrong State University. Her research examines both technical communication and children's media, especially reader-player participation.

Halcyon M. Lawrence is a Marion L. Brittain Post-Doctoral Fellow at Georgia Tech. Lawrence researches speech intelligibility and works on the design of speech interactions for emerging speech technologies.