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Communication Design Quarterly

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ABSTRACT
This study examined how three successful entrepreneurs/investors assessed the visual rhetoric of actual pitch decks from novice entrepreneurs. We compare their evaluations to the result of a heuristic for assessing visual rhetoric, Color CRAYONTIP. While the pitch deck is recognized as a key artifact in entrepreneurship, no studies have specifically addressed the visual design of the deck nor the key design skills novice entrepreneurs should implement to effectively persuade potential investors of the idea’s promise. This preliminary and exploratory case study begins a dialogue on this topic by performing a visual analysis of seven novice decks which were deemed successful by experienced angel investors. The analysis revealed five key skills that appear to account for the success of these decks with the reviewers: rhetorical awareness, typography, color, photography, and contrast.

CCS Concepts
Human-centered computing → Visualization

Keywords
entrepreneurship communication; pitch deck; visual rhetoric; teaching; heuristic

INTRODUCTION
3:44: Three minutes and forty-four seconds. According to a study conducted by Tom Eisenmann of the Harvard Business School in collaboration with DocSend—a workflow and business documentation and analytics company (DocSend, nd)—3:44 is all the time that an investor will spend to evaluate an entrepreneur’s pitch deck. While three minutes and forty-four seconds may not seem like much time, literature on visual cognition paints a compelling case that people make rapid decisions based on visual first impressions (Willis & Todorov, 2006; Lindegaard et al, 2011; Clarke, 2011). Those first impressions “color” a person’s attitudes and expectations of what he or she sees or hears afterward, encouraging them to find the positive or the negative qualities in that experience to confirm their initial, visceral—visual—reactions (Seward-Barry, 1997; Rabin and Schrag, 1999; Norman, 2004).

Additionally, research conducted by Mikels, et al. (2011) suggests that when faced with complex decisions, people tend to trust their feelings. Drawing on this work, psychologist Susan Weinschenk (2015) showed that designers can significantly influence complex decision-making by paying attention to design. In short, design matters for the quick decisions that busy investors make as they evaluate proposals they receive.

Given how rapidly investors evaluate opportunities and given the importance of initial visual response to guiding subsequent experiences, the quality of the entrepreneur’s pitch deck assumes incredible importance. Even though entrepreneurs recognize that pitch decks are important in investment decisions (Huang and Pearce, 2015), little work has been done to characterize this genre and no research discusses how best to teach this important genre to aspiring entrepreneurs. This preliminary and exploratory case study seeks to begin a dialogue about this topic, asking what makes a pitch deck visually compelling to potential investors and what those characteristics mean for how we might teach students of entrepreneurship to excel in this important business communication activity.
BACKGROUND

Success in business and entrepreneurship requires effective oral and visual communication. The connection has been long established (c.f. Maes, Weldy, & Icenogle, 1997; Du-Babcock, 2006; Jackson, 2014; Kembach, Eppler, & Bresciani, 2015). Pitches are also frequently recognized as one key piece of communication practice for entrepreneurs, especially in the early stages of business development where entrepreneurs begin with seeking investments from “friends and family,” and then graduate to high net worth individuals, commonly called “Angel Investors,” who pool their resources for investments that range between $150,000 and $2,000,000 (Angel Capital Association, n.d.; Fundivo, n.d.; Prive, 2013). In this paper, we focus on the Angel Investor phase (Phase 3 of 5) because novice entrepreneurs are most likely to find external success here (beyond friends and family) and because their pitch decks will be most critical for success in this stage. Figure 1 depicts the central role that the pitch deck plays in the Angel Investor phase.

As Figure 1 demonstrates, the Angel Investor phase begins with an entrepreneur contacting an Angel Investor group by sending a pitch deck and associated documentation such as a business plan. The manager of the Angel Investor group reviews the pitch deck and other documents, decides if the opportunity is worth considering further, and, if so, has a follow up conversation with the entrepreneur. If the outcome of that conversation is positive, the entrepreneur will be invited for an initial “screening pitch” where the entrepreneur delivers an oral pitch about the business to a small group of Angel Investors. If the small group evaluates the screening pitch positively, the entrepreneur will then be invited to deliver another oral pitch to the entire investor group. This 20–30 minute oral presentation is followed by a rigorous question-and-answer session with the Angel Investors, and the Angel Investors present at this screening will then vote whether to advance the opportunity to the “Due Diligence” phase. Prior to the opportunity advancing, however, the pitch deck and any associated documentation will circulate among the Angel Investor group to allow those investors not present to express their opinions on the opportunity. After both those who were present and those not present have expressed their opinions, the opportunity either advances to Due Diligence or is abandoned.

Elaborating this process demonstrates the key role that the pitch deck plays and why it is so important for students in entrepreneurship to learn how to create effective decks. As Figure 1 indicates, the pitch deck often circulates by itself at least twice in the investment process—apart from the entrepreneurs’ in-person oral delivery—at the initial contact with the Angel Investors and then again prior to Due Diligence. The pitch deck itself, without the persuasive power...
Communication and Entrepreneurship Education

The importance of oral competence in business has long been established and continues to be a topic of discussion in business education and business communication journals. Indeed, in the guidelines presented by AACSB (the accrediting agency for business schools) (AACSB 2017, n.p.), the very first element required within business education curricula is “Written and oral communication (able to communicate effectively orally and in writing).” Communication skills also play a central role in entrepreneurship and a growing body of work exists that investigates how these skills might be integrated into entrepreneurship education. For example, in a comprehensive study published by the World Bank, Valerio, Parton, and Robb (2014) describe four major learning outcomes for “entrepreneurship education and training” (EET):

1) entrepreneurial mindset which addresses topics such as creativity, risk propensity, opportunity recognition and resilience;
2) entrepreneurial status which addresses topics including how entrepreneurship can change an individual’s status especially through building strong networks;
3) entrepreneurial performance which addresses the actual operations of an enterprise including profits and sales, cash management, job creation, and reinvestment into the company;
4) entrepreneurial capabilities which address the both subject matter expertise as well as management, leadership, and vocational activities.

The study suggests that entrepreneurial capabilities must include experiences in “literacy and numeracy” (Valerio, Parton, & Robb 2014, p. 44) that require participants to practice skills such as communication that are required to build and sustain a venture. According to the study, these communication experiences most often appear in mentoring relationships where learners prepare written business plans and receive feedback on their presentation style.

Valerio, Parton, and Robb’s (2014) work builds on a tradition of research into effective entrepreneurial education, which frequently highlights the central role that communication instruction plays for successful entrepreneurship. For example, Rondstadt (1985), and Vesper and McMullan (1988) argue that the ability to prepare and orally present business plans are among the chief interpersonal skills required for entrepreneurs. Building on this work, Hood and Young (1993) conducted a survey of executives in startups to determine the preferred skills and behaviors required for successful entrepreneurship. Of the top four skills identified in their study, two are communication skills: oral presentation skills and written communication skills (the other top two skills were leadership ability and interpersonal skills). Rae (1997) investigated entrepreneurship training in Asia and similarly found that communication, and specifically persuasion, was among the primary skills that entrepreneurs need to possess. These studies represent just a snapshot of thinking in entrepreneurship education which has developed a substantial body of literature over the last 30 years; however, one consistent feature of the research on entrepreneurship education is that communication—and oral communication in particular—represents a central skill that entrepreneurs must possess to succeed.

The Role of Oral Pitches in Entrepreneurship

Having positioned our study in a larger conversation about the centrality of communication in entrepreneurship education, we turn now to the literature that specifically discusses the role of oral pitches in entrepreneurship. Research on pitches has gained traction in the last decade, yet it remains focused on the role that pitches play in the general entrepreneurship process rather than discussing either the pitch deck itself or the best methods for teaching students to design pitch decks. As an example of both trends consider Baehr and Loomis (2015) whose book *Get Backed: Craft Your Story, Build the Perfect Pitch Deck, and Launch the Venture of Your Dreams* gives only the most general advice to entrepreneurs on the visual artifact while spending most of the book discussing the pitch process. In the chapter dedicated to designing the pitch deck itself, the authors focus on five key themes:

1. **Layout:** Use a consistent grid
2. **Typography:** Use one font for body text and one for headings or highlights
3. **Color:** Use only three colors, a major color, a neutral color and a highlight color
4. **Images and photography:** Use different shots appropriately and ensure high resolution; do not use stock photos
5. **Visualized data:** Use visuals that match the type of data with the presentation (portraits for things as they are; maps for where things are; charts for how many things there are; timelines for when things happen; flowcharts for how things happen; See Roam’s (2013) book, *Back of the Napkin*, for the original source).

To supplement the advice from Baehr & Loomis (2015), entrepreneurs could turn to general discussions of delivering effective presentations to deepen their knowledge. For example, Garr Reynolds’ (2007) book *Presentation Zen* has been wildly popular as has Nancy Duarte’s (2008) book *Slide:ology*. Either of these could provide entrepreneurs with a foundation in preparing effective visuals to supplement presentations. Edward Tufte’s (2003) scathing criticism of “PowerPoint Logic” also offers learners some guidelines, but it replays the familiar theme that content is all that matters. Indeed, according to Tufte, presentations fail precisely because they exhibit “a preoccupation with format...
evaluate the potential for an investment opportunity, they consider content types. Clark (2008) concludes that when Angel Investors consider the entrepreneur's experience most heavily. Their study investigation similar concerns attempting to explain Angel Investors' decision processes and determine that Angel Investors consider the entrepreneur's experience most heavily. Their study also does not mention the pitch deck and argues that the most important characteristic of a presentation is how effectively the entrepreneur explains the match between the product and the market it attempts to address. Much like Chen, Yao, and Kotha (2009), Carpenter and Suret (2015) argue that investors are purely logical and that evidence alone accounts for the persuasive power of an entrepreneur’s pitch.

In comparison to the bias toward “rational” investors, some studies do tentatively point to the role of subjective factors related to the pitch. First, Clark (2008) divides “presentational issues,” such as delivery, from the content of the pitch. He finds that the business angels' level of investor interest was significantly related to their evaluations of the quality and content of the entrepreneurs’ presentations: the higher an entrepreneur’s overall presentation score, the greater the likelihood that the business angels would be interested in pursuing that investment opportunity. Presentational factors (relating to the entrepreneurs’ style of delivery, etc.) tended to have the highest influence on the overall score. (p. 257)

In other words, Clark finds that investors very much consider the quality of the delivery in addition to their concern with specific content types. Clark (2008) concludes that when Angel Investors evaluate the potential for an investment opportunity, they consider not only the substance of the business idea but also how the presentation was delivered. Therefore, the “presentational factors” of this consequential interface merit attention from researchers interested in helping novice entrepreneurs learn the skills necessary to effectively persuade investors.

Similarly, Galbraith et al. (2014) argue that because presentation software has become so ubiquitous, a pitch’s “design and sequencing...will significantly influence the audience’s perception of the underlying project’s potential” (p. 228). They also find that when pitches have better design, the investors assign more “entrepreneurial passion” to the presenter which not only helps to maintain listener attention but also positively impacts the listener’s assessment of an investment opportunity. Drawing on the statistically significant relationship between attractive design, passion, and perceptions of entrepreneurs’ abilities, the authors offer some initial thoughts on possible visual components that might lead to persuasive presentations, specifically the size of text and that at least 50% of the slides should have rich visuals. These findings repeat the well-known characteristics outlined in the books cited earlier (e.g., Reynolds, 2007, and Duarte, 2008), but as Galbraith et al. (2014) argue, these topics have only recently begun to receive empirical examination (e.g. Yusuf, 2011; Lucas et al., 2016; Cardon, Mitteness, & Sudek, 2017).
METHOD
This study was reviewed and approved by the University of Texas Institutional Review Board, protocol #2017-02-0069 and participants consented to participation. Any information that could identify participants has been redacted and any personal likenesses have been replaced by artificially generated faces using www.thispersondoesnotexist.com. To perform our analysis, we collected 18 pitch decks from SEAL, a student entrepreneurship training program in Austin, TX. The pitches from SEAL evolved over the course of a six-week incubator program designed to help novice entrepreneurs develop their initial ideas into more fully-formed business models and learn the fundamental skills necessary to succeed in growing ventures. While these 18 decks certainly cannot be generalized for all successful entrepreneurs, we chose the student program because the intention of our study was to explore the most important visual communication concepts to teach novice entrepreneurs. Had we chosen to analyze pitch decks of successful companies, we would have lost the instructional focus for new entrepreneurs because more experienced and successful entrepreneurs frequently pay professional graphic designers to design pitch decks. Comparing the work of young entrepreneurs who design their own decks to the work of professional designers would not be a fair comparison, especially for instructional purposes. In sum, by working with novice pitch decks, we were able to begin exploring the most important, fundamental concepts to teach novices rather than overwhelming them with the entire spectrum of visual design choices available.

After collecting the 18 decks, we formed an independent panel of three successful entrepreneurs/investors to review the decks. The three evaluators represented Angel Investors and one former corporate acquisitions manager. The two Angel Investors were recruited from a large Angel Investor network in the Southeastern United States where one of the authors participated as an observer. The former corporate acquisitions manager had retired and served as an adjunct teaching entrepreneurship at the university where one of the authors worked. Combined, these three evaluators had invested in or started multiple companies. The evaluators received the novice pitch decks as .pdf files and were asked to give their opinions about which pitch decks they viewed as most compelling. They performed this analysis without any rubric or coaching and without the benefit of witnessing the actual delivery of the presentation that had occurred at the end of the SEAL program. Having the panel review the decks without witnessing the live presentation and using their own criteria served two purposes. First, the process enabled us to isolate the decks from the oral delivery of the pitch and to eliminate interference that might have been caused by the “presentational attributes” identified by Clark (2008). Second, investors often rely on their own experiences, intuition, and education to evaluate others’ proposals rather than employing a more rubric-based model common among academics and researchers. Therefore, allowing the evaluators to use their own criteria more closely approximated how actual investors would normally evaluate pitch decks.

The evaluators’ ranking revealed that seven decks consistently ranked highest across the three evaluators’ scores and these seven were chosen for further analysis by the research team. The remaining eleven decks were not considered further since the panel’s low rankings indicated that they would likewise not have considered them any further. Recalling the Angel Investor phase outlined previously, this approach mirrored the way actual pitch decks transact: they are submitted to investors who review them independently from an accompanying oral presentation and then evaluated for further consideration. Some are chosen and others are discarded according to whatever analysis criteria the investors might apply. Since the purpose of this study was to learn what characteristics made the successful pitches more compelling than those that were discarded, we did not ask the panel to comment further on pitch decks that they rated as poor and instead shifted our attention to the more successful decks.

After determining which pitch decks were rated most successful by the panel of investors, two members of the research team then independently looked for visual attributes appearing across the top-rated pitches using Newbold’s (n.d) “Color CRAYTONTIP” Heuristic. The Color CRAYTONTIP model divides 50 visual concepts into 10 major categories contained in the acronym itself (see the Appendix for the full rubric):

• Color
• Contrast
• Repetition
• Alignment
• Y (Why)
• Organization
• Negative Space
• Typography
• Iconography
• Photography.

The two evaluators independently scored each of the seven pitch decks on the 50 concepts from the rubric and then the team compared their rankings on each category to determine which of the categories appeared strongest among the successful pitches according to the aggregate score on the rubric. Using this method, the two investigators independently identified five overlapping categories where the pitches performed well:

• Y (Why or Rhetorical Fit)
• Typography
• Color
• Photography
• Contrast.

FINDINGS
Drawing on the method we previously described, the two heuristic evaluations agreed on five categories that scored most successfully across the seven student pitches: “Y” (Why); Typography; Color; Photography; and Contrast. The figures that follow highlight one slide from each deck as examples of the top five categories of visual communication that emerged from these pitch decks. These categories, in turn, represent the most important concepts to teach entrepreneurship students who are learning to build pitch decks. 
(Note: Any identifying visual imagery such as logos or company names has been intentionally removed or hidden.)

Y (Why or Rhetorical Fit)
In the Color CRAYTONTIP rubric, Y refers to the rhetorical fit of a communication piece to its context. It asks evaluators to consider audience appropriateness, for example, as well as the effective use of complexity (to show more data) or simplicity (to improve elegance). It also addresses the traditional rhetorical concepts of ethos, pathos, logos, and kairos to explain how well a piece meets the rhetorical context. The slide in Figure 2 demonstrates some key components of rhetorical awareness.

Investors expect a pitch deck to reveal a business model. In this slide the business model is presented both in words on the left and in visual form on the right. The slide’s elegant presentation of the business model using muted colors establishes the idea’s credibility because it allows the model to stand apart from the words for easy comprehension. Additionally, the arrows on the three boxes emphasize how the company makes money which represents appropriate attention to the core message the slide intends to convey (the business model) rather than drawing attention to the design itself. Finally, the slide establishes appropriate pathos by presenting “just the facts” and not relying on emotional depictions of cars being towed with their unhappy drivers left behind. This business addresses issues of parking shortage in a major city. The visuals on this slide speak to the process—how the business will earn revenue—and therefore appropriately address the audience’s expectations of a business model slide. Equally important, the simple design focusing on facts (logos) helps an investor quickly comprehend the model and how it will solve the parking problem identified earlier in the deck. This slide, therefore, represents how this the entrepreneur establishes credibility by meeting the expectations of the rhetorical situation.

**Typography**

The conventions related to typography are well established (c.f. Brumberger, 2003; Mackiewicz, 2007; Amare & Manning, 2012) and so it is not surprising that entrepreneurs demonstrate ability with typefaces. The evaluation rubric addresses the personality of the typefaces and using complementary styles (serif and sans serif, for example) as well as evaluating the legibility of individual faces and the readability that occurs through choices such as line length, line spacing and contrast. Figure 3 demonstrates some of these key principles.

The elegance of this slide is striking because it has very little text presented in a metaphorical form fitting to the topic (see “Y” above). While Arial is a somewhat generic font, when projected during a presentation (or reviewed on screen) it is highly legible. Additionally, the entrepreneurs chose to bold the type on the

![Financial Model and Pricing](Image)

**Figure 2: Sample slide 1 showing how one company’s deck demonstrates rhetorical fit**

“clipboard” to increase legibility, and the short sentences can be instantly grasped in spite of the middle point not presenting a parallel grammatical structure to the first and third points. In addition to the parallel structure challenge, the body text and the heading are the same font which might be considered a small weakness since most documents should differentiate among the purposes of text by choosing different faces, but at least the heading is larger and in a different color (blue) than the body text. Finally, the slide demonstrates short line length and sufficient space between bullets, both of which enhance readability by providing white space and chunking. Despite the small challenges that appear in this slide, the combination of a highly readable font that is thought to have a “professional” personality (even if a bit generic) and adequate spacing contributes to the success of this slide. The text is easy to grasp at a glance and quickly presents the problem this business seeks to address (that current, mostly manual, cavity detection technology is inadequate compared to the newer, digital imaging tool being pitched here).

**Color**

Color conventions are largely cultural although many ways for effectively using color evolve from our experience in the natural world (c.f. White, 1990; Jones, 1997; Kostelnick & Hassett, 2003; Williams, 2015). As the first component of the Color CRAYTONTIP rubric, color plays a significant role in establishing a document’s effectiveness. For example, communicators must consider the color wheel to determine complementary, secondary and tertiary colors or that dark, desaturated colors express professionalism while fully saturated and bright colors seem playful. Finally, color must appropriately adapt to cultural and psychological concerns where specific colors express certain types of content (for example red represents STOP and green represents GO in Western countries). Figure 4 demonstrates how one company effectively used color in their slide deck.

For example, the blue text not only represents the business’s concern with water, it also draws attention to the key information on the slide—that this business already has sales. The different color highlights this key information for busy readers who might be quickly scanning the deck. The slide also uses only three colors (if we include the background): black, white, and blue, and the color links the major proposition on the slide. In other words, “market demand” appears in white which connects this term to

![The Problem](Image)

**Figure 3: Sample slide 2 showing how one company’s deck demonstrates effective use of typography**
“300 showers per hotel” or “water efficiency initiatives,” for example. Additionally, the opening question, “Why target hotels?” also appears in white which connects it to the “market demand,” equating hotels, what happens at hotels, and the market demand. The slide also uses the contrast between black and white to enable easy reading on a screen or in a projected presentation. Finally, the slide uses highly saturated colors which according to Lidwell, Holder, and Butler (2010) conveys a sense of professionalism. In sum, while color might often be an afterthought for novice designers, this entrepreneur uses color quite effectively and subtly to emphasize key points while simultaneously enabling evaluators to scan quickly the deck without overlooking vital information.

Photography
As we learn from Kress and van Leeuwen (1996), photographs can communicate far more information than just the apparent content. Photographs can express power relationships, arguments, and direct attention, for example. Photographs, and visuals more generally, are often remembered long after verbal content and drawing on these aspects of photography, the Color CRAYTONTIP rubric asks authors to consider using photographs whenever possible. Photographs should demonstrate consistent style so abstract black and white photos, for example, wouldn’t be paired with full-color, concrete photography. Figure 5 demonstrates how one company effectively employs photography in their slide deck.

In entrepreneurship, a common refrain is “Bet on the jockey not on the horse,” and so potential investors are often as interested in the personalities and experiences of entrepreneurs as they are in the business idea itself. This slide consistently shows tightly cropped head shots of individual faces in black and white, and the focus on faces draws attention to the individuals who comprise this venture essentially saying, “We are the ones responsible for creating this operation. Trust us.” These founders are making this venture essentially saying, “We are the ones responsible for creating this venture.”

Figure 4: Sample slide 3 showing how one company’s deck demonstrates effective use of color

Figure 5: Sample slide 4 showing how one company’s deck demonstrates effective use of photography

Characteristics convey an attention to detail, professionalism, and personal investment by the founders that investors would respond to positively, even if they were not consciously aware of the reasons for that positive response (c.f. Dayan, 2013; Leathers & Eaves, 2015; Jaenichen, 2017).

Contrast
The concept of contrast evolves from Gestalt principles of design which include the five concepts of figure/ground; proximity; similarity; continuity; and closure. These concepts have received significant attention from visual communication scholars (c.f. Kostelnick & Roberts, 1998; Hekkert, 2006; Lidwell, Holden, & Butler, 2010; Campbell, 2013; O’Connor, 2015). The five Gestalt principles rely on contrast—or lack of contrast—to create meaning, so, for example, “figure/ground” is often followed by the word “contrast” to distinguish what is in the foreground and what is in the background. The opposite of “similarity” is “contrast” and so designers build relationships by showing how objects possess either similarities or dissimilarities. The Color CRAYTONTIP rubric adopts these principles by considering contrast in color, in size, and in how objects are highlighted. The slide shown in Figure 6 demonstrates these components of contrast.

This simple graphic effectively contrasts the company being discussed in this presentation with the competition. For example, the company name is presented in green while the competitions’ names appear in black. The company name is also bigger and bolder than the other companies’ names, so the typographical conventions create additional contrast and visual emphasis. Similarly, the table allows a quick comparative view across the columns showing that this company possesses each of the important characteristics while none of the others do, especially “Commercial air bearings” which has only one check mark contrasted with the four that “Company” possesses. Finally, the colors used for the company name and the checkmarks starkly contrast with the muted, blue background enabling viewers to quickly scan the graphic and to see that “Company” checks every box. The image could adopt more contrasting elements such as using smaller, black check marks for the competition (which would also build color consistency within the image) but the contrast between this company and the competition is clearly established by size and by the color of the name complemented by the complete content in the first row of the table. This entrepreneur has used contrast to effectively enable
CONCLUSIONS AND IMPLICATIONS

Reviewing 18 initial pitch decks—then conducting a secondary review of the top seven decks according to established visual communication principles—provided preliminary evidence about why certain pitch decks are more successful than others. Specifically, this initial case suggested that pitch decks that effectively apply theoretical principles associated with rhetorical fit, typography, color, contrast, and photography are more successful when evaluated by experienced investors. This could suggest that training in pitch deck design might benefit most by emphasizing these five design principles.

These preliminary outcomes lead us to suggest a heuristic approach to slide deck design in entrepreneurship pedagogy that includes four parts.

First, we suggest advising entrepreneurship students to focus on the five categories we uncovered—Y (why, or rhetorical fit), typography, color, photography, and contrast—because concentrating on these five categories can help young entrepreneurs ground their design work in a manageable set of concerns rather than attempting to teach the entire set of visual design possibilities. As Clark (2008) and Galbraith et al. (2014) found, presentation attributes were consequential in Angel Investors’ decision-making processes and providing young entrepreneurs with a basic design “toolkit” might help them to create more attractive designs that are more likely to influence investors.

Second, the top five categories appear to support the advice offered in prior literature. For example, Baehr and Loomis (2015) discuss three of the same categories when presenting their arguments about effective pitch design: typography, color, and photography. Similarly, the “style of simplicity” espoused by Reynolds (2007) and Duarte (2008) characterizes the more successful pitch visuals through elegant use of typography, color, photography, and contrast, for example. Most notable here is “Y” because Angel Investors expect to see certain types of content, such as those topics Kawasaki (2015) outlines, and the effective use of these visual concepts allows the design to fade into the background so that excellent content can be emphasized by design subtleties such as those we found with color and contrast. Indeed, when design doesn’t work it often becomes more salient than content which works against a pitch’s persuasiveness.

Third, even though our results offer only a preliminary suggestion for the most essential design elements to teach novice entrepreneurs, the Color CRAYTONTIP rubric seems compelling as a method for invention and evaluation. The rubric contains 50 different questions that entrepreneurs can answer as they plan—or revise—their pitch decks. Thinking about effective design during the invention process and revising pitches using the rubric can help train young entrepreneurs to become more sensitive and sophisticated designers of all the communication pieces required for successfully launching a business, not just pitch visuals. Too often our commentary on visual texts is impressionistic and idiosyncratic and the Color CRAYTONTIP rubric certainly doesn’t eliminate this subjectivity. However, like all good rubrics, it does allow us to ground our opinions in accepted and researched categories.

Finally, the preliminary results provided by this study and the promise that the Color CRAYTONTIP model suggest must be validated through studies that employ methods which address the shortcomings of our study. For example, this preliminary case study only examined seven pitches in detail and those seven were extracted from a small initial sample of 18. Additionally, those 18 pitches were evaluated by professionals without the researchers knowing what criteria the evaluators used. The small sample size and the investors’ potentially idiosyncratic evaluation process make it difficult to know, let alone validate, if the rubric criteria align with what Angel Investors find persuasive.

To overcome the limitations of this initial study and to arrive at what might be most effective to teach, we recommend a multi-stage process. First, researchers need to collect many more successful pitch decks created by novice entrepreneurs designing their own decks which are then delivered in real contexts, such as Angel Investor sessions. While the seven decks examined were “successful” novice decks because they rated the highest among our sample of 18, none of these decks (as of this writing) have received outside investment. This type of outside investment given to many more decks would provide concrete evidence of success with pitches that would confirm the investors’ notions of “successful” pitch decks. With this evidence of success, researchers could then determine if the elements we uncovered in our “successful” sample characterize other pitch decks created by novice entrepreneurs. In addition to collecting more pitch decks and securing evidence of outside funding, the criteria used by investors should be made more explicit. For example, the investors might participate in think-aloud protocols as they score the pitches, verbalizing their evaluation criteria. Those criteria could then be compared to the Color CRAYTONTIP heuristic to confirm the validity of the heuristic’s categories.

Drawing on these three improvements—a larger sample, evidence of external funding, and explicit evaluation criteria—researchers could then build a model of the visual features of the successful pitch decks, and that model could be taught to young entrepreneurs in incubators and entrepreneurship programs. These decks created according the model theorized by the research could subsequently be evaluated by investors and entrepreneurs without visual training to determine the “success” of the theorized decks compared against “control” decks prepared by other novice entrepreneurs who had not received the same instruction. Once a model has been constructed and decks based on the model have been validated through evaluation by actual investors, then the results need to be shared in classes and training programs for novice entrepreneurs.

At its core, the purpose of our study is to help novice entrepreneurs

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**Figure 6: Sample slide 5 showing how one company’s deck demonstrates effective use of contrast**

busy investors literally “to see” how this venture contrasts with its competition, and investors are keenly interested in how one venture differentiates itself from others. The contrast here does that work.
garner more success for their enterprises by successfully communicating their ideas in visual form. Most new entrepreneurs do not receive concrete, evidence-based advice about building their communication pieces and given the profound role that pitch decks play in the process from imagining a business to successfully launching the business, young entrepreneurs deserve better insights than the popular literature can provide. Our study takes some initial steps toward revealing the visual concepts that might be productively taught within entrepreneurship studies, an activity that we believe will help future entrepreneurs succeed more frequently in this important activity of innovating and building new enterprises.

ACKNOWLEDGEMENTS
The authors wish to thank the participants in the SEAL program at UT-Austin for their willingness to participate in this study. We also would like to acknowledge the anonymous reviewers of this article whose kind and thoughtful advice substantially improved the quality of our work.

NOTE
All images published with permission where required.

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**APPENDIX: THE COLOR CRAYONTIP EVALUATION RUBRIC**

*(CHECK ONE: 1=not present at all; 2=only marginally present and not effective; 3=present and somewhat effective; 4=present and very effective; na = not applicable)*

<table>
<thead>
<tr>
<th>Color</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. The Color Wheel</td>
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<tr>
<td>Use the color wheel to create matching color schemes that are monochromatic, analogous, complementary, split complementary, triadic, and/or tetradic.</td>
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<tr>
<td>2. Four or Fewer</td>
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<tr>
<td>In most cases, create your design using a color scheme of four or fewer colors.</td>
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<tr>
<td>3. Emotion-Saturation</td>
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<tr>
<td>Use dark, desaturated colors to express serious and professional. Use bright, desaturated colors to express friendly and professional. Use fully saturated colors to grab attention or to appeal to children.</td>
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<tr>
<td>4. Color Psychology</td>
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<tr>
<td>Know how people and cultures respond to colors; use color to show caution, danger, happy, jealous, scary, acceptable, and other related emotions and experiences.</td>
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</tr>
<tr>
<td>5. White is Nice</td>
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<tr>
<td>Treat white as a color. Use white to communicate clarity, sophistication, cleanliness, professional, and even, in some cases, expensive.</td>
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</table>

**Contrast**

<table>
<thead>
<tr>
<th>Contrast</th>
<th>1</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>1. Color</td>
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<tr>
<td>Use contrasting colors for clarity and visual interest. If it’s a different color, it should be obviously different.</td>
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<tr>
<td>2. Size</td>
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<tr>
<td>Make the most important thing on the document the biggest and boldest. Use clearly different sizes for fonts and icons. If they’re meant to be different sizes, they should be significantly different.</td>
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<tr>
<td>3. Typefaces</td>
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<tr>
<td>Use different font families when using more than one font. Contrast serif body text, for example, with a sans serif or script heading. If they’re different typefaces, they should be very different.</td>
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</table>

**Arrangement**

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<tr>
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</thead>
<tbody>
<tr>
<td>1. Purpose</td>
<td></td>
<td></td>
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<tr>
<td>Give purpose and show relationships to every object on a page. Avoid arbitrary placement of “floating” objects that don’t seem visually connected to anything else.</td>
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<tr>
<td>2. Alignment</td>
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<tr>
<td>Everything on a page should be aligned to something else. Avoid center-alignment for most layouts and text.</td>
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<tr>
<td>3. Proximity</td>
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<tr>
<td>Put related items close in proximity and unrelated items apart from each other. Avoid randomizing placements of objects and text on a page.</td>
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<tr>
<td>4. Stability</td>
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<tr>
<td>Arrange objects to show clear stability (or lack thereof). Objects that are flat and horizontal appear stable and calm. Vertical arrangement can appear more active. Tilted objects can appear in motion.</td>
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</tbody>
</table>
### 5. Position
Position objects strategically. Space implies time. Tilted objects imply instability. Objects in upper-half imply free and happy. Know the position’s purpose.

<table>
<thead>
<tr>
<th>Arrangement Total</th>
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</table>

### 5. Bleeds
To increase aesthetic interest and reduce visual noise, move the edges of some objects and images off the edges of the page.

<table>
<thead>
<tr>
<th>Organization Total</th>
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</table>

### 5. Why (Y)

<table>
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<tr>
<th>“Why” Total</th>
</tr>
</thead>
</table>

1. **Expectation**
Match or intentionally interrupt your audience’s expectation(s). Use branding, document genres, tone, colors, and so forth that align with what your audience expects or hopes to see.

2. **Credible Complexity**
Increase complexity of a design or content to heighten credibility of data. Simplify a document to make it seem more elegant or sophisticated. Make a document busy to make products or services appear inexpensive.

3. **Metaphor**
Apply diverse visual figures of speech—such as metaphor, pun, hyperbole, metonymy, and so forth—to increase comprehensibility, creative interest, and meaningful depth of your communication’s purpose.

4. **Propositional Density**
Simplify visual design elements while increasing communicative propositions (or ideas to be communicated). Divide the number of propositions by the number of visual elements and seek for a number greater than 1.

5. **Rhetorical Four**
Make your document reach its audience through ethos (credibility), pathos (emotion), logos (logic), and kairos (timing).

### 5. Positive Space

<table>
<thead>
<tr>
<th>Negative Space Total</th>
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</table>

1. **Expectation**
Pays attention to the shapes you create between two objects. Recognize that every time you design two objects, a third shape is being designed between the two.

2. **Multi-stability**
Increase interest in some logo designs by making them multi-stable—where negative space appears to become the figure or central visual piece, then recedes to the background like in the face-vase image above.

3. **Empty Noise**
Observe all empty space and identify if it is purposeful and effective. If the white or empty space doesn’t appear designed or intentional, it will create unintentional visual noise and reduce credibility.

4. **Figure-Ground**
Keep visual designs stable by making clear distinctions between figures and backgrounds. Objects in lower regions or that overlap other objects appear in front and are perceived as more important.

5. **Margins**
Be intentional about your margins. Avoid thin or awkward margins between objects and text and the edges of pages that inadvertently create shapes and paths.

### 5. Typography

<table>
<thead>
<tr>
<th>Typography Total</th>
</tr>
</thead>
</table>

1. **Two Fonts**
Most documents should use two different fonts (rarely one or three or more), typically from two different font families. Use one font for headings and titles and the other for body text.

2. **Font Families**
Know your font families and use them appropriately. Most fonts can be labeled as one of the following: serif, sans-serif, script, decorative, or grunge.

3. **Personality**
Apply the appropriate font to the personality of your document. Recognize that subtle nuances in typefaces make big differences in the personality of your document. Avoid default and overused fonts.

4. **Legibility**
Be sure your font is legible for the specific word(s) you are displaying. Some typefaces work well for particular words but not for others. If a word is real common, you can use less legible fonts. For names, use only very legible fonts.
5. Readability
Increase readability by increasing line spacing, using legible fonts, shortening line length, and using heavy enough weight to contrast background.

Typography Total

5. Style Match
When using multiple photos in the same document, make sure that their photographic styles, including lighting, position, and colors are consistent.

Photography Total

Artifact Total

### Iconography

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<thead>
<tr>
<th></th>
<th>1</th>
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</table>

1. **The Four Types**
Use icons to make reading quicker, more recognizable, engaging, and universal. Know the four icon types (similar, example, symbolic, and arbitrary) and apply the appropriate one to your communication purpose.

2. **Brand Recognitions**
Use icons and shapes to enhance immediate recognition. While logos are useful to brands, icons and shapes can also be useful for non-brand-centric designs like wayfinding signs, handouts, and poster campaigns.

3. **Mnemonics**
Use mnemonic devices in icons to make them more clearly linked to a brand name or idea (and thus easier to remember).

4. **Lines and Paths**
Use lines, arrows, and other pathway-creating visual tools to guide a viewer’s eyes and mind in specific, important, and intentional directions. Avoid lines and arrows where importance is already obvious.

5. **Pictographs**
Apply pictorial versions of data in charts and graphs to make information more readable and appealing to large audiences.

Iconography Total

### Photography

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>na</th>
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</thead>
</table>

1. **Picture Superiority**
For most designs, use as many pictures and icons as possible as long as the important information can be made clear and represented ethically. Audiences will remember communications with images up to 60% more than ones without images.

2. **Resolution**
Use the appropriate resolution for the specific medium (72dpi for most digital and 300dpi for most print). Do not use images that are pixilated or distorted in any way; your document will lose immediate credibility.

3. **Face-ism Ratio**
When using pictures of people, increase the size of the face (and remove bodily features) to communicate personality and intellect. To communicate health, vitality, and sensuality, decrease the size of the face and include more body.

4. **Direction**
Make sure all faces look toward the inside or spine of the document. Avoid having images of people looking in the direction that goes off the page.

Photography Total

### ABOUT THE AUTHORS
Sean Williams directs the Technical Communication and Information Design program at the University of Colorado-Colorado Springs. His research focuses on the intersection of user experience design and communication in technical startups, both of which have helped him as co-founder of four new ventures.

Clay Spinuzzi is a professor of rhetoric and writing at the University of Texas at Austin. He studies how people organize, communicate, collaborate, and innovate at work. Spinuzzi has conducted multiple workplace studies, resulting in several articles and four books.

Curtis Newbold is an associate professor of communication and co-chair of the Master of Strategic Communication program at Westminster College where he teaches and researches in areas related to information design, business and technical communication, competency-based education, and self-directed learning.
ABSTRACT
Professional writers adapt their skills to suit expanded professional roles that involve production and management of information, but preparation through mere skill-based training is problematic because that communication work is messy in ways that are not addressable through simple skills training. We must understand how skills “influence and shape the discursive activities surrounding their use” (Selber, 1994). This paper reports the results of a study of people trained in humanities disciplines like communication, English, writing studies, technical communication, etc., on how they have found means to employ their training in their workplace and keep what is humanistic about writing and communicating at the foreground of their interactions with information technologies. Instead of focusing on technology alone, this research encourages a unified approach to preparing students for the workplace.

CCS Concepts
Social and professional topics → Professional topics → Computing education → Computing literacy

Keywords
Technology literacy, skills, information processing

INTRODUCTION
The practice of designing communication and the associated professional and academic training in technical and professional communication are frequently connected with discussions of technologies and technological proficiencies (e.g., recently see Brumberger and Lauer, 2015; Carnegie and Crane, 2018; Hovde and Renguette, 2017; Shalamova, Rice-Bailey, and Wikoff, 2018). Although professional communicators and people in the fields who are training them (e.g., English, Writing, and Communication programs) refuse to be thought of simply as skilled users of communication technologies, the development of new tools, such as those in componentized content management (CCM) (Andersen and Batova, 2015; Batova, Andersen, Evia, Sharp, and Stewart, 2016) and structured authoring (e.g., Evia, 2019) continue to prompt, anew, discussions of the place of tools instruction.

The argument over whether learning to design communication requires dedicated instruction about the tools of communication design has often turned on the issue of whether teaching the technology is a turn away from the “humanistic” dimensions of communication, from the concerns of rhetoric (e.g., see Selting, 2002; Selber, 1994) while also acknowledging that movements in industry are requiring writers of all kinds to understand technological trends and their associated practices and epistemologies and to adapt to their use (e.g., Andersen, 2013; Clark and Andersen, 2005). One way to understand this tension takes us back to a question that Carolyn Miller posed about the field of technical writing in late 1970’s. She asked: what is the humanistic rationale for technical writing (1979). In answering this (still relevant) question today we must take issue with how professional communicators more broadly see through their tools to the humanistic work that they are doing with them.

In 1979, the focus of Miller’s argument was that technical discourse, a kind of lexical and grammatical technology in its own right, was mistakenly understood to be aimed at enabling detachment of the world of technology and science (or other technical realms) from the situations and communities that provided the occasion and motivation for writing. Mastery of those technologies or discourses...
effectively separated the technician or writer from the world in which their communications would do some work. Technical discourse was a kind of abstraction from or a tool for stepping away from the messiness of human motivations and situations for writing (1979, p. 613).

What ultimately makes technical writing humanistic, however, is the recognition that all communication is situated in communities (1979, p. 617) and in this case technical discourse is more like a “register” than a technology (see Biber, Conrad, and Reppen 1998, p.135). The same argument can be made of other technological developments in communication design, developments that flatten the world of experience (e.g., see Johnson-Eilola, 2005, p.51) and distance writers from those experiences. For example, technologies like CCM, methodologies like topic-based authoring using XML, and other database-supported authoring, decents the writer as a communicator and “places the act of writing in a subordinate role to what one might call the act of directing” (Albers, 2003, p.335). And research on emerging (and now commonplace) technologies of communication design frequently ponders where the space for rhetorical judgement and consideration of what makes communication humanistic goes when communicators are working with isolated pieces of content (e.g., Clark, 2008; Sapienza, 2004) that disconnect writers from their own experiential and embodied sense of writing and meaning (e.g., Whittemore, 2007). The matter may remain pertinent the more that communicators develop technical proficiencies (e.g., coding) that do not resemble communication and threaten to distance them or remove them from the realm of human uses of communication.

The most satisfying answers to these debates have focused on the different critical and rhetorical ways that communicators should be thinking about their technologies (e.g., Cargile Cook, 2002; Selber, 2004). These perspectives allow us to look at the ways that people who are trained to see the human elements of communication can adapt those technologies to their workplaces in order to facilitate just those community-based communication practices. Our study arises from a similar motivation. We aim to look at technologies and technological practices that have found their way into the communication design workplace, technologies like programming languages, markup, project management tools, content management systems, data analytics, and more familiar technologies like web applications that have become incorporated into the workplace and how the people who are making use of those tools are connecting with what it is that makes technologically-mediated communication a humanistic practice.

To answer this question, we have used a data analysis approach. A survey was designed to discover the range of complex communication tasks that participants perform in their workplaces. The following discussion begins by setting up an important distinction for thinking about the relationship that communicators have with their technology when designing communication at work. Following this review, we present the methods and results of the survey, which show participants’ job positions, their responsibilities at the job, ways in which they use the skills developed through their educational training and the current training gaps in developing workplace writing skills. Next, we analyze interview data which illuminate how patterns in the survey data reflect different humanistic ways of developing communication and being embodied in the situations that call for that communication. Finally, we suggest directions for bridging the gap between training provided and training needs in workplaces.

THE CONTEXT OF WORK

Among others, Rebekka Andersen and Tatiana Batova have argued that one of the most important projects facing educators and scholars in technical communication today is to address the schism between the academy and industry. Together (Andersen and Batova, 2015) and separately (Andersen, 2013; Batova, 2018) the authors argue that the academy and industry have much to learn from each other by sharing methods and problems. But another point of connection concerns the students whom we are preparing to work in industry.

We can look at job descriptions to find out exactly what is relevant in the current industry, but the general skill set has not changed much for 8–10 years. Consistently, studies point to both people skills and technological proficiencies (for example, see Brumberger and Lauer, 2015; Lanier, 2009; Whiteside, 2003) as the abilities that people need to cultivate to adapt to their professions. In particular, we see a similar focus in the growth of the user experience profession (see Brumberger and Lauer, 2015) which broadly addresses how people participate in civic, professional, and social life, as it is mediated by information and communication technologies. To the extent that people must rely on technologies to participate effectively in their communities, we must take into consideration how those technologies or the data they produce represents and engages with human experiences rather than separates the communicator from those experiences. Collectively, these studies hint at the importance of having an adaptive knowledge of information technologies rather than a generic set of tool proficiencies or skills that are transferable across work contexts. The skills people are required to possess should be developed in service of skills with communication, social intelligence and critical thinking (Hibbs, 2017).

By looking at technology skills in the context of communication and critical thinking, it becomes difficult to separate the base technological proficiency from the humanistic activity that they support. This entanglement of motive and means suggests that skills-based learning, which commonly pertains to knowledge that is practical and transferable, is problematic because the world of work is messy in a way that is not addressable through simple skills training (e.g., see Dias, Freedman, Medway, and Pare, 1999). Instead, we must really understand how technologies are used and how those uses “influence and shape the discursive activities surrounding their use” (Selber 1994, p. 366). To continue this conversation about the use of technologies used in designing communication, it would be beneficial to recast such work as technological competency, which extends the idea of technological literacy to include not just the means of participating in a discourse but also a sense of the underlying motivation and aims of that participation, something closer to embodiment in the situations addressed. To understand communication design broadly as a humanistic activity, we need a way to talk about how technological practices are shaped by the anticipation of participation in some social activity. A competency implies a goal or an aim that is shaped by one’s motives for acting. We use technologies to accomplish ends, and the degree to which we are successful is a measure of our competency.

In the next section we overview key literature relating to pedagogical
research on technological and information literacy. These areas represent important points on ways in which competencies are being developed in light of the aims of training in communication to address human needs strategically (see Kimball, 2015). To do so, we need to understand the difference between skills and competencies. While examining these topics, we also discuss the difference between technological and information literacy before considering the contribution of our research results to this conversation. We believe that this information is not only helpful for teachers learning pedagogical strategies, but also helpful in understanding how the workplaces have evolved over the last decade, as they become more information centric (see Spinuzzi, 2007; 2008).

SKILLS, LITERACIES, AND COMPETENCIES

Due to rapid changes caused by technological advancements, competency-based training approaches are being discussed in both organizational and educational environments, but until there is a consensus on the meaning of "competence," efforts to identify "key competencies" will invariably lead to confusion (Hunt & Wallace, 1997). Beckett explains that skills and competencies both identify an ability that an individual has acquired through training and experience (Beckett, 2015) but "competency" is a broader concept that encompasses skills. Competencies are made up of three facets: skills, knowledge and abilities (Beckett, 2015). It is through the utilization of skills, ability, and knowledge that one engages in competent action.

Hunt and Wallace pull in research by various scholars, showing that competencies are identifiable and measurable across situations (Hunt & Wallace, 1997). Competency-based education measures how much was actually learned, instead of how much time was spent in a classroom (Gerstein & Friedman, 2016). Students’ progress in schools is determined by demonstrating their competence, that is their ability to use the knowledge and skills that they have gained. “Skills” are incorporated into on-the-job behaviors which demonstrate the ability to perform the job requirements competently. Competencies further lead to problem solving abilities, transferrable skills, adaptive learning and so on, which results in not just a career, but an overall development of students.

Some literature also points to the “context” which plays a key role in determining competence (Barrow, 1991; Bowden & Masters, 1993). These studies suggest that a key difference between skills, literacies, and competencies is that competencies are both ways of seeing and ways of acting. They incorporate a knowledge of how to act through technology (skill) with an understanding of what is contextually appropriate and with an understanding of what one aims to accomplish. A technological competency is heuristic knowledge, a way of seeing and acting that is shaped by technological knowledge. In information-centric workplaces the humanistic impulse to reflect on, cultivate, and record experience would, expectedly, fuse with technological knowledge to become a way of acting in a technological environment rather than an explicit base of technological skill. Skills and competencies are the prime focus of research in the field of literacy.

With the Internet, technological literacy has become an inseparable part of information literacy. Information literacy, at an early stage of development of the concept, was based on the ability to use information. In 1989, the American Library Association (2000) proposed a six-stage model for information literacy that was comprised of five aspects of a linear process of information handling: recognizing a need for information, identifying what information is needed, finding the information, evaluating the information, organizing the information, and using the information. Because of the Internet, information went online and terms like “network literacy” (McClure, 1994), “informacy” (Neelameghian, 1991), and “mediacy” (Inoue, Naito & Koshizuka, 1997) came into use. This context found its way into Geisler’s definition of information literacy that comprises critical thinking, ways of functioning within complex communicative situations, and competence with knowledge assembly (Geisler et al., 2001). In their book, Lankshear & Knobel (2008) describe Gilster’s work that sets the challenge of effective use of the internet into the long sequence of adaptation to new information technologies, beginning with the clay tablets of the Sumerian period: “technology demands of us, as it did of them, a sense of possibilities, and a willingness to adapt our skills to an evocative new medium. And that is the heart of information literacy. Our experience of the Internet will be determined by how we master its core competencies.” (Lankshear & Knobel, 2008, p. 19). Therefore, although the six-stage model is still effective, due to the digital nature of information, digital literacy is a major influence on information-seeking behavior and the effective satisfaction of information needs. (Fieldhouse & Nicholas, 2008). So, we not only need to develop new technological skills to work with information, but also to associate them with the core competencies of knowledge management and situated, humanistic communication. Gilster termed this ability to understand and use information from a variety of digital sources as “literacy in the digital age.” (1997, p. 9).

The question that remains is how communicators develop these literacies in the classroom and how they then develop associated competencies as they move out into different professions. How do communicators who are trained to understand the humanistic qualities of communication apply that training to their acquisition of tool-based knowledge and the application of that knowledge in developing communication at work? Assuming that communicators do retain this humanistic outlook on their technologically-mediated tasks, what can we learn about skills or frameworks that these people are still missing? How are they attempting to address those gaps?

In other words, how are people supported in developing proficiency with technology for humanistic applications? Through this continuation of studies looking at how to reconnect writers with the humanistic work their writing does, we hope to contribute to a discussion of how technologies as diverse as structured authoring, database management, and scripting can be contextualized as part of the humanistic work of communication, even if that work is aimed at directing content and structuring or facilitating human experiences in lieu of commenting on them directly.

METHODS

To explore the humanistic uses of communication technologies at work, we conducted an exploratory study based on observations from an online survey and follow-up interviews with survey participants. During the Spring semester of 2018, a survey was conducted for people who identified themselves as having received training in the humanities. The intent was to recruit participants who were likely to have received instruction that would focus on
social, humanistic dimensions of communication. The survey was circulated through multiple channels; however, most participants belonged to the Society for Technical Communication (STC) and the Association of Teachers of Technical Writing (ATTW), making the majority professional background to be technical communication. Data were collected from 109 survey participants and 20 interviews. Our strategy for participant recruitment did not discriminate between participants from industry or the academy. Both contexts require people to adapt uses of information and communication technologies to design effective, situated communication solutions.

After obtaining IRB approval for this study we recruited participants through email invitations on social media sites, email lists, and Slack channels where we were likely to find people with humanities background. Our solicitation email asked for participants who were trained in the humanities and who used information technologies as part of their daily work.

The final data set consisted of participants that varied in experience, age, educational background, and professional affiliation (Table 1). However, since all participants have an educational background in the field of humanities, the data can still be used to gain useful insights.

Table 1: Demographic breakdown of survey participants

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>18–24: 11</td>
</tr>
<tr>
<td></td>
<td>25–34: 45</td>
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<tr>
<td></td>
<td>35–44: 28</td>
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<td></td>
<td>45 and above: 25</td>
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<td></td>
<td>Bachelor’s: 12</td>
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<tr>
<td></td>
<td>Master’s: 63</td>
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<td></td>
<td>Doctorate: 33</td>
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<tr>
<td>Professional Affiliation</td>
<td>Academic: 54</td>
</tr>
<tr>
<td></td>
<td>Industry: 55</td>
</tr>
</tbody>
</table>

Analyzing Skills
The survey included questions about the types of technology-assisted tasks performed by participants and their level of comfort interacting with technology (see Appendix A). Questions were based on commonly performed tasks by communication professionals in a workplace. The tasks and their scope are explained below in terms of how that work appears across workplaces. Although the tasks referring to technology were not described in detail for the purpose of surveys, examples were provided which helped participants align their understandings to the fairly broad technology categories that were referred to in the survey.

Writing chunks of content
Often, writing in workplaces refers to working with chunks of multi-use content. Although the rhetorical education in communication studies prepares students for writing this kind of content, they may be engaged with creating content for audiences that they have never before written to (Dush, 2015). Along with that, they are also engaged in tasks like content strategy, content management, or content writing. The necessity of these tasks is to create and manage content by what Johnson-Eilola describes as “breakdown and incessant movement and recombination” of written content to produce what are now called “marketable chunks” (Johnson-Eilola, 2004) used in different industries and domains, including technical communication, marketing and even sales. For example, small chunks of content are used for creating social media posts, blogs and even topics to help customers solve problems that they encounter while using products and services, but they may create further distance between the communicator and the text as the goal of communication turns more toward “directing” content (Dubinsky, 2015). Such needs lead to commodification of content making it a useful skill for business communication students in workplaces.

Analyzing patterns of data
Content analysis is a frequently used skill in the communication workplace. Content analysis is conducted using a set of qualitative and quantitative methods for collecting and analyzing data from verbal, print, or electronic communication. Textual information from interviews, focus groups, and open-ended survey questions can also be analyzed using content analysis. Data analysis is not just about learning how to work with numbers and statistics, but more about “critical thinking.” Albers explains that the “goal of data analysis is to critically think about how to reveal the underlying patterns and trends in the data and its connection to the research situation.” (2017, p. 230) Although students use communication skills to ask informed questions and conduct thematic analysis, Albers argues that the pedagogical scope for graduate coursework lacks a focus on fundamental critical-thinking processes useful for analyzing quantitative data (Albers, 2017).

Using code for data files
Qualitative coding is a process of reflection and a way of interacting with and thinking about data (Nowell, Norris, White, Moules, 2017). During coding, communication researchers simplify the unstructured datasets and create themes by focusing on specific characteristics of the data. Metadata (information about data), includes characteristics like title, author, keywords and so on. To store metadata, technologies like XML, HTML and JSON are used. These markup languages provide simple ways to save data that do not require programming knowledge, but contextual analysis techniques.

Organizing content
Another skill used for content strategy includes the ability to obtain, organize, store, and deliver content whenever required. Duin and Tham have highlighted the need of code literacy to organize content. While curating content is a practical strategy, it might also be said to lack values that should be at the core of any communication initiative pedagogy (Duin & Tham, 2018).

Digitizing content
A lot of research spaces have taken a digital turn. Research tools and methodologies have evolved and communication workplaces are no exception. Work on digitization supports thorough research on expansive bodies of information or documentation. The outcome of effective digitization is information about the cost, purpose, longevity and use of information. In addition to the skills required for producing information about information are the attendant skills of information management, or coordinating access to and queries of those data sets.

Visualizing data sets
Related to the digitization of content is data visualization, or skill
that uses graphical display of abstract information used for sense-making (also called data analysis) and communication (Few, 2003). Visual representations of scientific data have been central to science communication. Communicators are tasked with establishing links between knowledge and evidence and communicating with audiences through engagement techniques like visualizations.

Developing websites
Online content publishing has become a primary requirement for all professions. Along with that, delivering content in more than one format, to allow single sourcing, is also becoming common. Communicators use technology literacy to create interactive digital experiences for users along with delivering information (Duin & Tham, 2018).

Designing user interactions
Although user interaction is a field closely associated with user experience, which classifies it as a technical communication or psychological field in the social sciences, its relevance in communication and writing studies is significant. Along with products, usability evaluations are also conducted by marketing and sales professionals to evaluate their users. Cross-cultural usability evaluations are on the rise. Conceptual clarity of users’ views is generated through a combination of interdisciplinary strategies including personal interactions and participant collaborations.

Finally, to understand their source of discomfort, the survey included a question about the problems survey participants reported having with the technology they used. At the end of the survey, participants were invited to opt in to an interview about their answers. They survey was administered through Qualtrics. All participants were anonymous unless they volunteered to be contacted for a follow-up interview. The data resulting from the survey responses were aggregated using the built in analytics provided on the backend of Qualtrics. These data are reported using simple descriptive statistical measures.

Interviews
Similar to the survey, the interview participants varied in experience, technology experiences and professional affiliation. In all, 20 participants were interviewed out of which 9 were from the academy and 11 from the industry. 88% of academic participants worked as faculty or administrative staff and 22% made up of graduate students. A majority (45%) of the interviewees were in the age range of 24–35 years, 35% were between 35–44 years and only 10% belonged to the 40+ and 10% for under 24 years age bracket. These distributions helped in achieving a proportionate representation of the survey data samples. Each interview lasted for 15–20 minutes.

During the interviews, participants elaborated on the ways in which they used technology and described the problems they faced. The interview questions were as follows:

1. You answered Yes/No/Not sure to Question 9 (“Have you encountered problems when using these technologies?”). Can you elaborate? Have you/have you not face any issues at work?
2. You mentioned using technology in your workplace. Can you elaborate? When do you need to use it? What was your first encounter? What kind of training did you receive, if any?
3. What accounts for your level of comfort using the technologies that you do?
4. If you use programming languages, which ones and for what purposes?
5. How would you rate the adequacy of the training you receive or seek out for learning technologies you use at work? (1–10, with 10 being highest).

All interviews were either submitted via email as written responses or were conducted on an audio-enabled communication platform like Google Hangouts, Skype or on phone. All interviews were recorded using QuickTime Player and subsequently transcribed for analysis. Analysis consisted of close reading of the responses for similarities of themes across the responses. After identifying themes through close reading, we returned to the literature reviewed above in order to identify any themes related to the humanistic applications of those technologies in communication design. These themes were then connected to details from the participant interviews (see Geisler and Swarts, 2019) that elaborated those humanistic activities and placed them in the context of situated technology use.

Finally, we extracted participant responses about the challenges of learning and maintaining competence with information technologies in order to see where learning gaps might still need to be addressed.

All interviews were transcribed for data analysis. Interview participants were classified into two categories, academia and industry and were assigned IDs to make it easier to trace responses to this potential analytic contrast. The number of interviewees almost equaled between academia and industry. The ratio of interviewees to survey participants suggests a fair representation of all participants. Transcriptions for each category of users were kept in one place, making it easier to compare and contrast the data for observations.

We prepared the transcribed interviews for analysis by following a process of constant comparison for the purpose of theory building by engagement with the source data (see Glaser and Strauss, 1967, pp. 101–115). Initial coding of the transcripts involved examining how the participants discussed their contexts of work. This focus was prompted by our engagement with Miller (1979) and the idea that technical communication in all of its forms would rely on an “understanding of how to belong to a community” (p. 617) and that this understanding would reveal something about how participants used and learned technologies in the context of joining a community.

From the first round of coding, we developed a comprehensive understanding of what the participants understood to be their motives and motivations for using technology as well as the workplace factors that influenced whether and how they were trained to use different technologies. From this comprehensive look at the data, we started to consolidate (or “reduce”) the codes to arrive at themes of enculturation and deference to the needs of communities that appeared to be meaningful for how multiple participants thought about their technological experiences (see Glaser and Strauss, 1967, p.110). The themes that accounted for all coded references to communities and technology use/training then became the basis of our qualitative analysis reported below.

RESULTS
The survey data show that with few exceptions participants are utilizing all of the technological skills that we had asked about. The amounts varied a bit by professional affiliation and age categories. On question six, we asked about the frequency with which people access and process information in different ways (Figure 1).

The most common technological skills practiced among all participants were writing small chunks of content for reuse or collaboration, analyzing patterns in qualitative or quantitative data, organizing content for retrieval by colleagues or users, and digitizing content.

When comparing the responses of participants who identified as academics (e.g., professors, graduate students) or industry professionals, we see some variations in the frequency (“everyday” and “frequently”) of engaging in different information processing tasks (see Figure 2) but the data show that both groups engage to some extent with all of these technological skills.

The breakdown by profession shows that in nearly all categories, those skills are more likely to be used by professional communicators working in industry. The most notable differences are:

- Analyzing patterns in qualitative or quantitative data: Academics were more likely to do this work “frequently” or “everyday” (39% compared to 22% of participants in industry).

- Organizing content for retrieval by colleagues or users:

Industry participants were more likely to do this work “frequently” or “everyday” (65% compared to 25% for academics).

- Digitize content: Industry participants were more likely to do this work “frequently” or “every day” (66% compared to 30% for academics).

- Visualize data sets: Industry participants were more likely to say they did this work “frequently” or “every day” (31% compared to 12% for academics).

A few (n=24) of the survey respondents noted that they used code to make data files; although, academics reported doing this work sometimes (27%). Industry participants were most likely to either do the work infrequently (25%) or never (33%). Each group had a smaller number of people who did this work more frequently. Similarly, there was less focus on developing websites or designing user interactions with hardware and software.

Although the academic and industry participants practiced these technological skills in different amounts, it is notable that the participants from each group used all of them to some degree. The differences stem from two areas: audience and types of tasks. Both participants use technologies to solve problems. The range of technologies used by academicians have to be accessible to audiences inside and outside of the academy. For example, they learn to develop websites which are visible to researchers in their field as well as students seeking to learn to build websites from them. Further, audiences affect the nature of tasks performed by individuals in academia and industry. Participants from academia are expected to use these technologies and develop proficiencies not just to use them but also to offer instruction about them. They require humanistic skills to transform their knowledge into training.

The range of information technologies used across all participants showed that a majority of them extensively used web applications like Google docs and content management or version control systems like WordPress and GitHub. A number of them (68%) also conducted data analysis using tools and worked with markup languages (57%) for website building or to construct databases.

A few (n=24) of the survey respondents noted that they used code to make data files; although, academics reported doing this work sometimes (27%). Industry participants were most likely to either do the work infrequently (25%) or never (33%). Each group had a smaller number of people who did this work more frequently. Similarly, there was less focus on developing websites or designing user interactions with hardware and software.
management tools (~37%) than the ones in academia (~16%).

Questions 9 through 11 sought to reveal if there were technologies that the participants had problems using. Unsurprisingly, people experienced problems all of the time when using a variety of technologies. 60% of all participants said that they had experienced problems compared to 11% who said they had not experienced problems. Sometimes those problems are technical failures, but more often the source was a lack of knowledge or training (56%).

Our last question then asked participants to describe the sources that they rely upon for learning or refining their understanding of the technologies that they use. Overall, the most common forms of instruction are “self-instruction” (29%) and peer based training, learning from friends and co-workers (23%). This is consistent irrespective of the field. We found that learning technologies in most cases is informal, primarily through self-instruction (52 in Academia, 56 in Industry) and peer based (39 in Academia, 44 in Industry). This emphasizes the need for training in both environments. While some of the participants noted that they do receive expert training in the workplace (14%) not everyone who received such training thought it was the most helpful form of support received.

ANALYSIS

Based on a close reading of the data, using techniques of constant comparison outlined in the methods section, we focused our analysis on themes of community and “enculturation” that are at the heart of Miller’s argument about what is humanistic in technical communication (1979, p.617). Overall, this thematic analysis led us to focus on what people trained in the humanities are bringing into the workplace and whether they adapt that training as competencies that allow them to maintain a focus on what makes communication humanistic. Taken at this level of analytic abstraction, we found similar patterns of enculturation and community acknowledgement of both the academic and industry partners. While those groups might have differed some in the rates at which they use different technologies they share many of the same motivations for using those technologies and for understanding the humanistic work that these technologies support and the competencies that one develops around them.

The issue of concern that we used to lead into this argument is that as communication work has become more technologically-supported and as more instruction on communication has incorporated technology instruction, developing expertise in technologies may have become a wedge that drives communicators further away from the humanistic situations for which they are developing communication.

This argument about writing technologies separating communicators from their audiences and producing different states of mind and engagement is as old as ancient Greece (e.g., see Havelock, 1988, p. 24). The gist is that as people become more trained in and proficient with communication technologies (starting with written language) they take steps further away from the immediacy of the communicative situation. This argument has persisted over time even though we have grown to understand that some technologies (e.g., written language) do not impede humanistic application. Carolyn Miller joined the same argument in 1979 to show that technical and scientific discourse also does not sever this connection to the humanistic; although, it is easy to overlook it. The argument persists to this day in the way that skeptics talk about new communication technologies and adjunct technological
proficiencies (i.e., like XML markup and coding) that seem further away from what one might consider humanistic communication. For example, see a discussion of this concern throughout debates over whether the use of structured authoring is rhetorical work (Evia and Priestley, 2016).

The data collected in this study show that participants are deeply invested in technological ways of communicating but that they are doing so, explicitly and consciously, toward humanistic ends. To summarize, industry participants use humanistic skills to collaborate, articulate problems and solve problems. Participants in academia use their humanistic skills to analyze problems critically, break down problems and articulate them, develop curiosity and facilitate training. Both develop solutions by using data and information situationally. It is in examining these activities and the ways that participants have adapted their understanding and uses of technology that we can see the outlines of technological competencies that ought to be the focus of both workplace and classroom technology instruction.

Is technologically-mediated communication today still humanistic? Yes. All participants show concern with humanistic qualities of communication that are supported through these technologies. Overall, we find that these domains of humanistic practice still apply to the way that our participants are adapting the information technologies that they use to their workplaces.

**HUMANISTIC MEDIATION OF TECHNOLOGY**

As the interview data showed us, many of the participants saw their work through a humanistic lens that shaped both how they use technology and what they understood to be their ongoing learning needs. For example, a faculty member said that they “adopt Google Docs platform for teaching (technical writing) because it is a live document and helps meet user need for up-to-date information”. Another participant from the industry commented, “we also use product APIs (like Slack APIs) to set up integrations for something like posting in a channel whenever a user gives us feedback on a doc page”. In both these instances, participants are articulating various activities not as being connected to the feature provided by the tool, but rather as a task achieved to solve problems in the communities where they work. Using similar examples, this section discusses two overarching themes which showed how a concern with the humanistic dimensions of communication shaped the way people thought about their acquired technological skills.

**Accounting for and accommodating human experience**

One activity that is central to the humanistic work of any kind of communication is using language to document and reflect upon human experience. Such work entails being immersed in and working in social environments in a number of ways. Professional communicators of all types can empathize with others’ viewpoints; they can generate insights about others’ viewpoints; they can recognize how viewpoints are influenced by cultural and historical context, and they can recognize human experiences and values in cultural artifacts. These perspectives are essential for communicators to advocate for users and to facilitate communication between people within an organization (e.g., see Hart-Davidson, 2013). Of course, technologies are themselves socio-cultural artifacts and they are central players in supporting the small-scale and large-scale interrelations that collectively make up different social networks (see Latour, 2005). One might expect that people trained in the humanities would bring such a social awareness to their technologies, both those that they use and those that they might document.

The study findings supported this view of how people are using and interacting with their technologies. The interviews pointed to the different ways in which communicators used their technology skills to enhance their professional environments as well as end user experiences. Selection of technologies generally depends on the proficiency of end users using the tools. For example, one participant chose Google docs and Blackboard to interact with the students as they were aware of the students’ ability to use these tools. In workplace settings where people work collaboratively, human characteristics influence the outcome of projects. By understanding factors such as motivation, emotions, rational thought, habits, politics and culture, communicators organize people and tasks to build better and successful project workflows. One of the participants mentioned the need to appreciate the value that human experience imparts to information that one might be considering for use at work. One participant recalled an anecdote that influenced their use of project management support technologies: “When I wanted to pull a list of GitHub issues and post them in Slack, I found example code snippets in Stack Overflow for different pieces of the script and put them all together to form my script. I just figured it out as I went along by looking at what other people have done.”

These comments from participants show us that the consideration of what is humanistic about technology use starts with the selection of technologies based on an understanding of others who would be engaging with it or through it. Each participant stressed that the selecting technologies required an understanding of users, their needs, what they value, their abilities, and also their limitations to create effective user experiences. For example, is GitHub or a Slack channel the most effective setting for a supporting users or supporting engagement between people?

Communicators also need to develop technological skills in order to address the requirements of creative effective human experiences. For example, one participant discussed the need to modify training quizzes for learners, and this person needed to use JavaScript to do so. However, the skills described was not just writing the script but also facilitating a user experience with a training module through the choices made in scripting. Like others facing similar demands for shaping user experiences, however, they learn the skills with programming or scripting through peer interaction and/or other training available online, rather than in an academic setting where the context of communication might be foregrounded.

Similarly, API documentation has become crucial for the software industry needs. Technical communicators need to understand programming languages like C, C++, etc. in order to document APIs. By placing themselves into users’ shoes, technical communicators try to understand how APIs work, where and how they can be used, and then document all the information that will be required by users to use APIs. Technical communicators mentioned the use of JavaScript, CSS, Python for data manipulation and an understanding of collaborative frameworks like Git. In each of these cases, the kind of programming knowledge these participants required revolved around understanding how to create effective user experiences.
For project management, the primary technologies mentioned by participants served the purpose of organizational communication, collaboration and project delegation and tracking. Some of the popular ones that were discussed are: Slack, Github, SharePoint (Share Calendar and Share Templates). One of the participants clearly mentions, “I use technology on a daily basis as part of my job. We use it for communications (Google Apps, Outlook, etc.), customer/client relationship management (CRM) such as ServiceNow—a ticketing / incident management system.” Here as well, the core knowledge that the participants needed to apply (whether in academic or industry settings) relied on understanding how people experience their work and work through those experiences in order to interact with a technology or with other people. Humanistic training provides this lens, which can be developed further for using those technologies.

The common point in these experience recounted so far is that the humanistic concern that mediates use of these technologies is with the experiences that one can create for users and an understanding of what experiences are valued and useful based on who is involved. It is not communication with the aim of imparting information to recipients, always, but sometimes ways of using information technologies to shape the environment in which information is encountered. Understanding the influence of environment on reception and on delivery of the content is clearly a humanistic concern, and the competency that participants are developing for using those technologies takes into account that application.

Understanding and designing the uptake of content

Solving problems requires a variety of “skills,” including both pragmatic and vocational ones (Katopes, 2011). Katopes suggests that devising solutions to currently unimaginined problems requires “an entrepreneurship of the imagination, encouraged by a rigorous immersion in the liberal arts – especially the humanities” (p. 145). Humanities professionals are natural problem solvers. Along with that, they can engage with, explain, and work to break down complexity and complex systems. Katopes has defined two facets of complexity – the inability to take action and the power of dominance, both resulting in chaos. In the first one, there is no core unifying body. Therefore, unless stated in job descriptions, professionals do not think of utilizing their skills for different positions. In the second, if the unifying power is like the Internet, which provides an ability to search for synonymous job descriptions, it still results in complex connections between information and interpretation. Communicators can make connections between data, people, texts, or other artifacts as part of a broad, complex system. This helps them to critically trace the connections that will lead to solutions to complex problems in workplace ecologies. One example of such a problem is automation. For automation, technologies are used to develop systems that can perform tasks without human intervention. The role of humans in performing these tasks needs to be understood and mapped to the processes that a machine can perform instead of humans.

Silvia, Beaty and Nusbaum discuss the need for real-world creativity to solve such insightful problems (2013). Training in the humanities (and of course in other disciplines as well) focuses student attention on how to critically analyze various discourses. This training provides them the ability to not only analyze a problem, but to test its possible solutions before implementation. Communicators assist in resolving such problems in workplaces by appreciating a problem’s complexity and then working through that complexity to make the problem and the solution accessible to those who need it. After working through the complexity of a problem, one can rely on automation to reduce the cognitive or social burden of engaging with that complexity (e.g., a cognitive problem like pattern analysis in a data set, or a social problem like version control). For example, some participants described applying programming in order to relieve the burden of some common tasks: “our team uses python to automate tasks like checking for broken links. go: Our development team uses go, so I’ve had exposure to it and had to use it for a few commands. Curl.” and another who said that they use “Python to automate tasks, specifically automatically updated files for a variety of reasons.” Doing this kind of work effectively relies on understanding either what kinds of tasks users are skilled or less skilled at doing (e.g., checking broken links) or it relies on people being able to understand complex patterns of work to see which of those could be delegated to technological agents.

The same sensibility and appreciation of complex, situated uses of information is on display in how communicators talk about their uses of markup languages for producing documents. For example, one participant described the use of XML to carry out conversion processes, “We use XML for digitizing content. We use Oxygen for editing content and then we have a content management system to publish those documents. The process is called transform. If there is a problem in the chain, the entire process collapses. Transforming content from one form to another is always a complex process. Sometimes work sometimes and do not work at other times. Troubleshooting those problems is a major issue.” Another participant uses XML markup to understand a methodology “I was given a foundation in XML, thank heavens. I don’t think I would get a job if I hadn’t known DITA even though my team mostly uses markdown now. Also, I’m perpetually in a state of converting materials from other disciplines to apply to my job role.” Such interactions with code last much longer than the time required to perform the task or solve a problem. These competencies create a bridge between understanding processes and implementing solutions which communicators extend to other operations in the workplace.

Among all participants, more than 73% wrote content for reuse or collaboration purposes. A majority of the participants mentioned using skills for writing small chunks of content, organizing content for retrieval by colleagues, digitizing content, and visualizing data frequently. These communicators are well trained to create visual and verbal content to communicate both visually and verbally to carry out those tasks. They generally have good presentation and writing skills. Areas of communication, collaboration and social responsibility have their roots in the humanities (Jahlokow, 2007). They employ these skills for various day-to-day tasks in their workplace. For example, solo or collaborative authoring, styling information and publishing content. All these tasks involve use of technology.

Although these communicators are exercising a skill with coding and markup that creates helpful automations and allows content to be automatically shuffled and recombined into different outputs, the competency required to build these automations, to develop the markup, and to apply the markup require an understanding of the problems those automations address. Which people and which resources need to interact at what time and when? The work is humanistic in that communicators are creating the environments in which communication is happening and in that sense they are
controlling not only the content of that communication but the arrangement and delivery as well. It is an embodiment of what Slack, Miller, and Doak had called an “articulation” function of communication (1993).

Returning to an earlier finding from the survey about how the participants are learning about the technologies they are using, it is noteworthy how often they are relying on their own resources or peers to learn the technologies. If the humanistic adaptations of technology that we have discussed in this section are enough inspiration to see a wider range of technology competencies as influenced by humanistic training, this might be evidence in support of a broader effort to introduce these technologies in the classroom so that their mediating properties can be contextualized against a background of humanistic concerns.

Limitations and Implications

Developing a technological competency, without focusing on mere technical skills, while also embodying the humanistic qualities and aims of communication, is the primary challenge faced by communicators who are inundated with technologies the workplace. Data for both industry and academic participants is similar when it comes to training. Most participants develop technological skills on the job through self-training or from peer collaboration. However, this also helped us identify the limitation of this study.

Our survey design attracted a significant number of respondents with graduate degrees and who are working in fields that are primarily thought of as technical communication of some type. It may be the case that people who have graduate training are more likely to see what is humanistic about technologically-mediated communication work. It may also be the case that people who work in technical communication are more likely to see the same. If we narrow down the survey responses for training issues, the data present a complex pedagogical issue. There exists a significant gap between tasks supported by current pedagogical frameworks for communication and those required to participate in workplace practices. For example, Batova and Andersen discuss this issue by focusing on the technical communication field. They argue that although elements of content management may be integrated into other existing courses, this is not adequate to represent “a seismic shift in the practice of TC” (Batova and Andersen, 2017) brought about by technology. Nevertheless, how these people see what is humanistic is still a valuable outcome that can drive pedagogical decisions. It would take a broader survey population to see if this awareness of what is humanistic pervades other communication-centric fields.

Miller urges that the teachers of writing should teach technical or scientific writing, not as a set of techniques (or technological skills) for accommodating workplace tasks, “but as an understanding of how to belong to a community”... “to engage in any communication, to understand the conditions of one’s own participation—the concepts, values, traditions, and style which permit identification with that community and determine the success or failure of communication” (Miller, 1979, p. 617). The lack of programs that teach students to fulfill such technology-oriented roles is an opportunity for academia–industry collaboration in curriculum design. At the very least this reminder of what remains humanistic about technologically-mediated communication can point to the kinds of humanistic competencies that ought to be cultivated in the workplace and that should be the critical frameworks through which academics are teaching the technologies through which those competencies are practiced.

More than 90% of participants relied on self-training for learning the technologies that they use and the competencies that they practice. Educators in the humanities have to include these technological skills in the curriculum by demonstrating their application to help communicators practice what remains humanistic about their communication practices. As the participants in this study have shown us, accounting for and accommodating human experience and understanding and designing the uptake of information is what connects communicators to their audiences even through the lenses of technologies that would appear to separate them from communicative engagement with real readers.

However, some of the participants we interviewed are not skilled in using technologies (e.g., those supporting automation). Those participants often rely on engineers to solve such technological problems. A participant mentioned “there is always some sort of problem with technologies: compatibility, connectivity, the need to collaborate across platforms, versioning, and getting people to pay for license fees.” This is an area that can be improved. Communicators rely on engineers, peers or online available instructions to troubleshoot technological problems, and a lack of familiarity with the vocabulary can increase the time required to look for the solution. Another participant states, “Usually when I run into problems it is when I overlook a programming error or get stuck at a part of a tutorial where I’m using a different software version or the author of the tutorial assumed background knowledge that I did not have.” A knowledge of programming languages like Python that are widely used for the purpose of automation and acquisition of the skills to communicate technological issues can further develop communicators’ ability to think about problems critically and solve them.

Due to the constant exposure to different technologies and lack of formal training, humanists find it hard to learn any one tool in detail. One of the participants explained that they have little knowledge of the technology that they use: “Can look at it but not proficient to work.” Another participant states this difficulty as “It would take me a while to list all of the tools, and we’re shifting and adding new ones all the time.” In response, many participants learned the required technological skills on the job through self-training or peers. One participant explained, “I use HTML and CSS, sometimes to clean junk code. As a technical editor for a rhetoric journal, I have learned a little bit about JavaScript, PHP and other stuff.” Humanities professionals are forced to learn new tools due to several reasons. A participant discussed one of them: “Tools are based on audience. They use collaborative tools for producing documentation.” Therefore, these professionals learn to use different tools for achieving the same task.

While these sources of informal learning are certainly beneficial it is questionable whether the technological training one receives is sensitive to humanistic work that those technologies are supporting. To avoid these training problems, contextual and conceptual understanding must be inculcated in academia, among humanities students to make transitioning easier. For example, moving to new tools and technologies requires transferring skills. However, if the students were able to understand tools as frameworks to develop and publish information collaboratively, it would make it easier for them to shift among various collaborative platforms. This will also help them make informed decisions while choosing tools and technologies that suit their needs instead of merely
considering audience accessibility. So, while it is important for academic audiences to engage with the technology skills in light of the humanistic work that those technologies support, it is equally important for recognizing and incorporating awareness of that humanistic work in the workplace setting where this just-in-time learning is taking place.

The constant change makes technology training the biggest challenge in humanities classrooms. Training by creating a purpose, context and critical thinking about technological use is easier said than done. Some ways to accomplish this could be to provide students with a problem and asking them to identify the technology they would need to solve it by applying their humanistic understanding and communicative abilities for justifying their choice. Most participants relied on peers in their work environments to teach them how to navigate certain processes that demanded a deeper understanding of technology. Collaborative projects in interdisciplinary classes can boost the need to not only learn from one another in guided classroom spaces, but also increase their ability to consciously participate in problem solving through articulation and other communication practices.

Scholars in our field often stress the need for building technology skills when teaching students about communication design. However, this tendency to consider the technology as separable from the human concerns that it addresses and that situations in which those technologies are used, undercuts the idea of a unified approach in preparing students for the workplace. Through the findings of this research, we have tried to emphasize the relationship of humanistic perspectives on communication with technological skills used in the workplace. Our hope is that this humanistic framework for thinking about technology use will encourage instructors to include technology in their classes and to focus critically on the work that technologies do to advance humanistic ideals in information-centric workplaces.

ACKNOWLEDGEMENTS
We would like to thank everyone who participated in the survey and interviews and contributed data for this research. We would also like to thank the editor and the two anonymous reviewers, all of whom patiently guided our revision.

NOTE
This study was approved by the North Carolina State University’s Institutional Review Board (IRB number 12647).

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APPENDIX A: SURVEY QUESTIONS
This study is designed to gain an understanding of the technological needs of individuals with humanities backgrounds, particularly those that indicate the need for developing programming knowledge.

Personal Information
1. Age:
   a. 18–24
   b. 25–34
   c. 35–44
   d. 45 and above

2. Gender
   a. Male
   b. Female

Information Access
6. How frequently do you do each the following at work:
   a. Write small chunks of content for reuse or collaborative purposes
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   b. Analyze patterns in qualitative or quantitative data
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   c. Organize content for retrieval by colleagues or users
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   d. Digitize content
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   e. Visualize data sets
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   f. Use code to make data files
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   g. Develop websites
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   h. Designing user interactions with hardware and software
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never
   i. Other ______________________
      Everyday -- Frequently -- Sometimes -- Infrequently -- Never

7. What information technologies do you use for academic or professional purposes? Check all that apply.
   a. Data analysis software (e.g. R, SAS, MS Excel analysis)
   b. Content management systems (e.g. WordPress, Git, Subversion, GitHub content repositories)
   c. Project management tools (e.g. GitHub Issues/ZenHub, Jira, ServiceNow)
   d. Markup languages (e.g. XML, XSL, HTML, Markdown)
n. Programming languages (e.g. Python, Javascript)

o. Database technologies (e.g. SQL, queries)

p. Web applications (e.g. Google docs,)

q. Other ______________

r. None of the above

8. For each technology that applies, how comfortable are you with using it?

s. Data analysis software
   ● Extremely comfortable
   ● Very comfortable
   ● Slightly comfortable
   ● Not at all comfortable
   ● Not applicable

t. Content management systems
   ● Extremely comfortable
   ● Very comfortable
   ● Slightly comfortable
   ● Not at all comfortable
   ● Not applicable

u. Project management tools (e.g., GitHub)
   ● Extremely comfortable
   ● Very comfortable
   ● Slightly comfortable
   ● Not at all comfortable
   ● Not applicable

v. Programming languages (e.g., Markdown, Javascript, etc)
   ● Extremely comfortable
   ● Very comfortable
   ● Slightly comfortable
   ● Not at all comfortable
   ● Not applicable

w. Web applications
   ● Extremely comfortable

x. Other ______________
   ● Extremely comfortable
   ● Very comfortable
   ● Slightly comfortable
   ● Not at all comfortable
   ● Not applicable

9. Have you encountered problems when using any of these technologies?

   y. Yes
   z. No

(link question 10 to question 9 … show only if ‘yes’ on question 9)

10. How would you characterize these problems?

   a. Lack of knowledge/training
   b. Technical failure
   c. Other: __________

11. What sources do you rely on for learning or refining your knowledge of technologies that you use? (Check all that apply)

   aa. Academic training
   bb. Professional/Industry training, workshops, or certification
   cc. Self instruction
   dd. Expert/trainer at workplace
   ee. Peers
   ff. Not applicable

Miscellaneous

12. Are you willing to participate in an interview (about 20 minutes) in case you get selected for it based on the responses?

   a. Yes
   b. No
ABOUT THE AUTHORS
Nupoor Ranade is a PhD candidate with a research focus on audience analysis, digital literacy, digital rhetoric and user experience, primarily in the field of technical communication and artificial intelligence. Her research experience and partnerships with the industry help her bridge gaps of knowledge that she then brings to her pedagogical practices. She is interested in exploring interdisciplinary collaborative work which helps in redefining perceptions of audiences and identifying roles of marginalised populations.

Jason Swarts is a professor of technical communication in the Department of English at North Carolina State University. He teaches courses on structured authoring, community-based approaches to knowledge work, networks, and discourse analysis. His research focuses on interrelated areas of genre studies, computer-mediated communication, networks, knowledge work, and knowledge communities.
Book Review

Creating Intelligent Content with Lightweight DITA
Carlos Evia


With growing attention to “intelligent content” and “dynamic delivery” in the advent of connected technologies (i.e., Internet of Things, artificial intelligence agents), component content management and structured authoring skills are becoming increasingly required of technical communicators today. To produce reusable intelligent content, technical communicators need a systematic workflow and common authoring standard. Our experience in industry and in educating technical communicators has led us to seek out resources for understanding existing standards and practicing them with technical communication students. As such, both authors have used the Darwin Information Typing Architecture (DITA) markup standard and experienced what may be a perplexing process in content creation and management. Carlos Evia’s book, Creating Intelligent Content with Lightweight DITA, caught our attention as the title suggests an accessible way into learning and applying what has become a widely adopted standard for structured authoring. Understanding that Lightweight DITA (LwDITA) does not aim to replace existing DITA standards, we approach this review not with an intention to examine its viability, but rather a focus on the rhetorical work in structured content authoring and its continuous evolution.

In his opening chapter, Evia provides a brief account on the development of structured authoring in technical communication. For students—undergraduate and graduate alike—as well as those who are new to the industry, this may be a helpful background reading on the shift from free-form (unstructured) writing to single-source authoring of technical content. The key idea is to prioritize content reuse-ability over aesthetics and contextual information. This way, technical content may be published quickly and easily across multiple platforms, saving time and costs typically associated with content reproduction and customization. Unique to this discussion is Evia’s tracing of the DITA evolution to computational thinking and humanistic treatment of computer coding, situating topic-based content development, management, and publishing as a viable approach for the future of technical communication.

Evia reveals in his introduction that the original focus for this book was on the history of technical documentation. His direction was modified upon recommendations by reviewers, but Evia has kept the essence of this history in the second chapter of his book. To technical communication scholars, this is an intellectual gem; Evia offers insights and syntheses of critiques on past documentation practices, leading to the growth of extensible markup language (XML) in technical writing. This paradigm shift, some experts perceive, has altered the ways organizations invest in content creation and management strategies. Evia gives a concise summary of the changes that happened to computer manuals since 1975. He provides snapshots of the conventions of the manual published by Joe Rigo (1976) of the Association for Computing Machinery (ACM), Gerald Cohen and Donald Cunningham’s Creating Technical Manuals (1984), Jonathan Price’s How to Write a Computer Manual (1984) for Apple, Morris Dean and colleagues’ Producing Quality Technical Information (1983) for IBM, as well as its subsequent iteration, Developing Quality Technical Information by Gretchen Hargis (1998, 2004). Evia uses Carolyn Miller and Jack Selzer’s (1985) rhetorical genre theory to identify the typification of topical elements across these manuals, and discusses how they ultimately gave birth to the content types and elements included in DITA XML. For readers interested in the rhetorical foundations of technical communication, this historical account reveals how industry practices were taken up and examined through academic lens, and how the theories and concepts born of these examinations in turn affect industry directions.

In Chapters 3 and 4, Evia gives readers an insider’s look at the
process of developing the proposed LwDITA standard. As co-chair of the Lightweight DITA subcommittee (formed in 2014) at the Organization for the Advancement of Structured Information Standards (OASIS), Evia shares the visions, development, and definition of LwDITA (which were accurate at the time of his writing). LwDITA is set out “to simplify the DITA authoring and publishing experience” (p. 62) with a minimalist content component approach. Evia takes readers along the developmental journey the LwDITA subcommittee traversed and the deliberations that took place and subsequently informed the decisions to represent LwDITA topic and map in three authoring formats he calls “ice-cream flavors”: XDITA, HDITA, and MDITA. Evia provides an accessible module for learning each of these flavors while providing specific examples to demonstrate their similarity and differences.

Evia also introduces additional support tools for these authoring formats. They include the existing open source DITA Open Toolkit (OT) and Document Type Definitions (DTD). An additional supportive feature is the LwDITA map to group topics, which is elaborated on in Chapters 5 and 6. With the advancement of cross-collaboration and compatibility of authoring formats, any LwDITA map can reference any LwDITA topic. Evia provides a short description of each authoring format map, which serves as a “collection and organization mechanism for content units” (p. 101). Following this discussion, Evia describes how to represent each topic component in the authoring formats in Chapter 6. The components include basic topic, table, highlight, metadata, and multimedia components. Becoming familiar with these components is essential for preparing intelligent content for the end-user.

To conclude, Evia discusses the layers of abstraction behind the process of authoring intelligent content in Chapter 7. By placing deliverables at the lowest level of abstraction, content development and technical communication become a dynamic process. Abstraction allows for layers of a problem to be separated, so LwDITA users can work on topics individually without worrying about the other layers. Furthermore, this layering requires authors to view content as non-linear and plan for future applications. When content is processed and tagged correctly, the rest of the work can be automated, saving time, effort, and money. This evolution strikes Evia as an opportunity to not only merge computational thinking and writing studies but also incorporate computing principles within technical communication, without the fear of losing “our academic or disciplinary identities” (p. 154). Intelligent content requires computational thinking, so content is “future-proof,” ready for automation, and not restricted to one deliverable or audience.

Notably, Evia proposes a sixth characteristic—rhetorical effectiveness—to follow the five characteristics of intelligent content: modular, structured, reusable, format-free, and semantically rich. Rhetorical effectiveness is necessary for context awareness and future-orientation. Moreover, Evia described the layers of abstraction by evaluating intelligent content through the content lifecycle and several rhetorical strategies in Chapter 8. In doing so, Evia aims to breakdown the intimidation of learning industry practices by turning the layers into manageable tasks that can be taught in the classroom. We see this bridging of industry and academy as a key issue this book is addressing and has done so successfully.

Overall, this book may serve as a guide for technical communicators who may not have used DITA or practiced structured authoring but are interested in experimenting with LwDITA. Beginning with developing a content strategy, to envisioning automated dynamic content, Evia walks the reader through the stages of reuse and delivery of content and concluded with a future orientation for content creation. The book uses a consistent scenario (Chef Pedro’s recipes) and is supplemented with extended examples made available at https://github.com/carlosevia/lwdita-book (with errata and LwDITA updates). The book’s accessible language makes it an excellent resource for undergraduate content strategy courses as well as graduate seminars to introduce students to the practice of structured authoring. Instructors may use the recipe examples as a springboard to class projects in which students may build their own intelligent content. Instructors may also want to provide some contextual readings to help frame the historical development of structured authoring, such as Steve Manning (2002) and Michael Priestley, Gretchen Hargis, and Susan Carpenter (2001), so students could see the influence of DITA on the practice of technical communication.

ENDNOTE

1. These recipes are worth trying. Also, readers might be amused to learn that Chef Pedro is actually Evia’s brother.

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ABOUT THE AUTHORS
Jason Tham is an assistant professor of technical communication and rhetoric in the Department of English at Texas Tech University.

Dana Wilder is a second-year graduate student studying technical communication in the Department of English at Texas Tech University.
I still remember the feeling. I was beginning the 2nd year of my PhD program and was finally feeling like I had an understanding of what being a technical communication scholar means. I was also starting to feel critical of our field—wondering if I, an Indigenous scholar from rural Alaska, would find a meaningful place in technical and professional communication (TPC). I was at the grocery store and my phone dinged; I had received an email from Natasha Jones. She and her coauthors were writing a book and wanted to include a list of multiply marginalized and underrepresented (MMU) scholars to amplify in its pages. They asked if I wanted to be part of their list and if I knew others who should be added. I emailed back immediately thanking them, consenting, and gave them my friends Zarah Moeggenberg and Les Hutchinson’s names. I paid for my groceries, walked out to my truck, and cried.

This book review isn’t about me. Rather, it is about the impact a book like *Technical Communication After the Social Justice Turn: Building Coalitions for Action* by Rebecca Walton, Kristen R. Moore, and Natasha N. Jones has on scholars like me. The clear call to social justice action in TPC that the authors sing out boldly and purposefully centralizes MMU voices as the way forward. Reading this book as an MMU scholar rings true with my own experiences and concerns and provides a necessary tool to do my part in establishing equity in our field. Walton, Moore, and Jones help readers from many backgrounds better recognize the reality of TPC’s ongoing complicit relationship with oppression so they can reveal it to others and work together to reject and replace oppressive structures with equitable and just ones.

Walton, Moore, and Jones’s main argument is that social justice work is not neutral (p. 18) and that all technical communicators contribute—even if unwittingly—to social justice or injustice. The authors state, “We could not be neutral even if we wanted to be; there is no neutral” (p. 29). Because technical communicators can no longer claim ignorance regarding how our work can uphold and actively uphold oppression, the authors suggest that it is through the 4Rs (recognizing, revealing, rejecting, and replacing) that we can act together, via a coalitional approach, towards social justice.

The book is comprised of three interlocking parts that provide a solid foundation for doing social justice work in TPC. In Section I, the authors unpack the concepts of oppression and justice through centralizing the perspectives of MMU scholars across several fields, as well as American political theorist Iris M. Young. The authors claim that in order for technical communicators to understand “our role in systems of domination and injustice, we must first understand the various manifestations of oppression, recognize the ways they have worked, and develop sensitivities to them” (p. 19). The use of Young’s five faces of oppression (marginalization, cultural imperialism, powerlessness, violence, and exploitation) to organize their discussion is effective and provides necessary context for their overview of various concepts of justice. The discussion of social justice provides an important distinction that is missing from many of its definitions, “Social justice is collective and active” (p. 50)—a distinction deeply developed in the remaining two sections of the book.

In Section II, the authors expand on their previously published discussion of the concepts of positionality, privilege, and power through, again, centralizing the perspectives of MMU scholars across several fields, while linking these concepts clearly to coalitional work. The authors call for active allyship, warning that casual allyship “costs nothing of allies but drains the energy of oppressed people, who are expected to recognize, praise, and unoffensively educate their more privileged coalition members.”
If Section I and II are the conceptual components of social justice work, then Section III is the guide for sustainable practices for social justice and advocacy. A delicate process, this work is best undertaken by a group of like-hearted individuals—a coalition—of varying experience and abilities. The process is comprised of four essential components, the 4Rs: recognize, reveal, reject, and replace. The 4Rs seem deceptively simple, however they require a level of humility—a true recognition of one’s own relative positionality, privilege, power, and margin of maneuverability— in order to really do the work of dismantling oppression. The first steps consist of recognizing oppressive structures as problematic, and revealing them to others as such. Note that because oppressive structures are often invisible to those who do not regularly face them, it is important to listen to MMU people when they say “this is a problem.” After an injustice is revealed, then rejecting and replacing are the next steps. Rejecting is a “[refusal] to support the behaviors and structures that oppress groups of people and leave them at the margins” (p. 141). It is important to keep in mind one’s own relative power and not to let MMU coalitional members do all the risk-taking. Finally, replacing is the difficult work of “building and re-building” strategies that are “planned collectively with intersectional thinking at the forefront” (p. 143).

The 4Rs are incredibly useful as a tool for doing social justice work in real-life circumstances. For example, I was recently part of Utah State University’s Office of Equity’s working group tasked with designing Implicit Bias training for university deans and department heads. Because of my close working relationship with Rebecca Walton, I was aware of the 4Rs and thought it could help with this training. My partners agreed that the 4Rs would be a useful method for teaching university leadership the importance of taking critical action to reveal, reject and replace attitudes and structures that perpetuate implicit bias, rather than merely recognizing their existence. In the training we developed, we use a narrative approach to help university leadership recognize how implicit bias negatively affects students and staff. The participants then complete a think-pair-share activity in small groups and reveal to one another at least one instance of implicit bias that they have experienced or witnessed. Working together, they then dismantle the bias and reject its premises, finding practical ways to replace that particular bias with prosocial attitudes, behaviors, and policy, all the while keeping in mind their own sphere of influence and ability to act. This action-based training moves away from the shame-and-blame models that leave participants with little information about what they can actually do to be part of a solution. Furthermore, using the 4Rs highlights how each individual has a different margin of maneuverability based on their positionality, privilege, and power. By helping participants recognize that they hold certain pieces of a puzzle, while others hold others, underscores the need for building coalitions to improve unjust conditions.

Beyond its use as a tool for those looking to enact social justice, this book provides a wealth of resources for scholars interested in social justice action in the form of definitions, references, and detailed notes for each chapter as well concrete, research-backed responses and readings related to common pushback. Because of the limitations of its scope—and, quite frankly, because of the limitations of existing TPC research into the nuances of social justice issues—this book raises many questions and opens up a lot of possibilities for future research. For example, in the opening of this review I discussed my inclusion in a list highlighting MMU scholars. As someone who researches how persistent mechanisms of marginalization interfere with inclusion efforts, I was curious how the authors defined “multiply marginalized and underrepresented.” Technical communicators are especially aware of how definitions can have large-scale and unforeseen impacts, so careful consideration of how terms are defined is important. While the authors repeatedly emphasize MMU experience and expertise as necessary components of social justice, their actual definition of “multiply marginalized and underrepresented” is relatively elusive (p. 171). However, providing a detailed definition of “multiply marginalized and underrepresented” is not a central focus of this book, and recognizing their definition’s limitations provides a rich area of study for scholars looking to extend this work.

Technical Communication After the Social Justice Turn: Building Coalitions for Action is a must read for any TPC scholar. Walton, Moore, and Jones have created a guidebook for doing social justice work in TPC that cannot be ignored. Regardless of your particular sub-field in TPC, this book will enrich your work, and will enrich your students’ work. This book equips technical communicators with necessary tools for working together towards good technical communication through thorough discussions of oppression, justice, positionality, privilege, and power, as well as providing clear steps for coalitional action towards social justice.

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Cana Uluaq Itchaqiyaq is a Ph.D. student in Technical Communication and Rhetoric at Utah State University. She is the Managing Editor of Technical Communication Quarterly. Cana Uluaq’s research addresses how mainstream academic practice often perpetuates the marginalization of underrepresented scholars and communities and consequentially interferes with diversity and inclusion efforts. She is the winner of multiple national awards, including CPTSC Bedford/St. Martin’s Diversity Scholarship and the American Indian Graduate Center Science Post Graduate Scholarship. She is the winner of multiple national awards, including CPTSC Bedford/St. Martin Diversity Scholarship, the American Indian Graduate Center Science Post Graduate Scholarship, and the CCCC Scholars for the Dream Award.
Book Review

Thinking Globally, Composing Locally: Rethinking Online Writing in the Age of the Global Internet

Rich Rice and Kirk St. Amant (Eds.)


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With the emergence of online media, as traditional boundaries are breaking in the field of communication and the notion of audience is changing, the necessity of reviewing the modes of writing becomes consequential. Thinking Globally, Composing Locally, an edited collection by Rich Rice and Kirk St. Amant, takes a kairotic approach and aims to offer a foundation for addressing the technical issues related to online writing in terms of composition and rhetoric. To address the new audience, the editors believe writers need to rethink their writing contexts, reassess their perception of global communication, and reconsider their writing methods to create content for online media. To practically implement these key issues, this book proposes “3Cs”—Contacting, Conveying, and Connecting. In an interview with Gustav Verhulsdonck (2018), Kirk St. Amant clarified the 3Cs. According to him, contact is a wish to get recognized by the audience that the composed work is worthy of attention, convey is the way information flows, and connect is the bridge of interaction between author and audience.

The book is divided into three sections based on the 3Cs, where each of these sections has five chapters directed toward the respective section’s concept. Although the chapters in each section follow a certain theme, they all intend to identify a potential “friction point” that may hinder the flow of information from author to audience in international communication through online writing, and attempt to understand how the conflicts are created and what are the practicable ways to address those conflicts.

The first section, Contacting, focuses on sharing “ideas and information effectively with a global audience” (p. 8). In Chapter 1, Walwema discusses how peers from different countries or cultures can compose locally, and collaborate with global audiences using the digital notebook. She identifies that a global platform can help writers to overcome barriers by engaging epistemological differences beyond localities (p. 23), thus opening space for knowledge coming from more than one peer rather being communal (p. 25); normalizing language differences (p. 23) by acknowledging vernaculars; and debunking assumptions on a particular culture (p. 24). In Chapter 2, Nguyen, Turner, and Lauren maintain that designing an “experience map” to visualizing users’ interactions and experience with a service, a product, or an organization is a common practice (p. 35). Their case study shows that the map needs careful attention to methodological and epistemological training, especially in global context (p. 53), so that the individual or cultural expectations can be identified instead of generalizing a behavioral pattern from the collected data. Aiming on a particular online public learning forum, Lee shows in Chapter 3, how users adjust with set rules on language learning (p. 61). She then extends the findings and proposes to apply these forum-learning aspects in pedagogical context so that “people self-instruct without the guidance of instructors, assignments, or syllabi” (p. 70). Davidson, in Chapter 4, tries to locate ‘ethos’ as a dwelling place in the new digital literary landscape (p. 72). Similar to Heidegger’s bridge, e-portfolios and blogfolios also create a space in the global network that empowers the readers with an agency “to dwell and reflect, rather than simply respond and react” (p. 89). In Chapter 5, Lane and Unger describe a three-year initiative implemented through the CCCC (Conference on College Composition and Communication) that attracts global concerns of conference attendees to local issues (p. 93). The initiative has established “network engagement” as a global communication tactic to create a link between the global audience and the local activists.

The second section, Conveying, establishes that only contact is not enough, it also needs to convey the writer’s purpose for sharing a composition with the global audience. This section starts with Chapter 6, in which Malley argues that exchange of playful small
talk (Phatic) is essential to fostering meaningful social relationships (p. 117). She presents a study and proposes to include “Ludic-as-Phatic” as a key element of pedagogy design in Internet-mediated, asynchronous learning environments (IMLEs) (p. 136) to create “social fabric in digital, networked, and intercultural spaces” (p. 137). Clinnin, Halasek, McCorkle, Delagrange, Dewitt, Michaels, and Selfe present a study in Chapter 7, which assures that through universal and participatory design, Massive Open Online Course (MOOC) can transform a student-centered pedagogy to a student-built one to offer even more meaningful educational experience in a global context (pp. 158–159). In Chapter 8, Engelson talks about an ethnographic study conducted in Indonesia, in which the participants faced difficulty due to the digital divide. According to Engelson, this divide has been created by imposing and emphasizing on hierarchical power of equating Internet to English language and having large-scale access to digital technology (p. 163). To provide a solution, she suggests, “all research should be framed as a translingual, global endeavor” (p. 178). Chapter 9 presents research on intercultural communication using a framework based on activity theory (AN) and actor-network theory (ANT) (p. 182). In this chapter, Phihlaja demonstrates how this framework helps instructors to teach students and assess their abilities to compose online beyond any particular cultural context (p. 197). In Chapter 10, Milagros argues, with emerging technologies, English as second language (ESL) educators in Turkey are in need to provide spaces for students, where they can compose multimodal assignments, create knowledge, and negotiate various identities. Moving from the traditional teacher-centered education system in Turkey where students are receptors of knowledge, the author prescribes that instructors should create spaces using online communication technologies that will encourage students to participate in the process of knowledge creation.

The third section, Connecting, explores the stage when dialogue starts between the reader and the writer. Starting off the section, in Chapter 11, Kourbani deals with the writing center’s asynchronous feedback and its impact on non-native speaker students’ learning (p. 236). Based on a study, Kourbani identifies the limitations to work with English as foreign language (EFL) students and recommends ways to overcome the limitations both in terms of practical and technological aspects. Hirus examines how global citizens reshape and react on issues irrespective of its physical distance, in the 12th chapter of the book. She introduces a viral campaign, Kony 2012, to study two concepts—spreadability and drillability—in the context of powerful yet rapidly changing agencies in social media (p. 257). In Chapter 13, Bridgman explains the connection between local and global in the context of Egyptian Revolution 2011. She examines how some activists concurrently maintained both physical and digital presence during that protest, and whether this approach can be introduced in classroom to prepare students as powerful global communicators (p. 278). Lamsal describes an ethnographic study on Bhutanese refugees’ digital literacy to examine “how refugee youth used transnational, semiotic, and cultural resources for reading and constructing identity online” (p. 317) in Chapter 14. In the closing chapter of this section, Hocutt and Brown discuss composing on digital platforms by using technologies such as Google App for education (GAFE) in the context of “glocalization”. They emphasize on how a locally situated composition class transcends the boundaries and benefits students by creating a global network.

In the special issue of Computers and Composition called “Online writing in global contexts: Rethinking the nature of connections and communication in the age of international online media” (2015), Rice and St. Amant explored how scholars should tackle the ever-evolving online writing in terms of audience in that specific context. Thinking Globally, Composing Locally can be read as a subsequent work that presents some new contexts in online writing and suggests possible directions to develop unique answers. According to the editor duo, “the overarching objective of this volume is to identify areas that can serve as starting points for fields within technical communication and writing studies” (p. 5). In the Afterword section, they describe the book by using the metaphor of “mapping a terrain.” Indeed, each chapter offers a current challenge in digital communication that goes beyond a theoretical discussion and provides a practical scenario to identify and understand the “friction point.” This collection sheds light on the challenges of the diverse contexts of online writing platforms and offers potential solutions. While it does not encompass all possible friction-points, yet covers representative examples to explore the 3Cs. Thorough and rhetorically connected chapters make this a valuable resource to acknowledge how culture plays an active role and impacts digital composition. Thus, understanding and appreciating the plurality opens new horizon for engaging pedagogical discussions that could be particularly beneficial for both the practitioners and the academicians interested in cross-cultural communication.

REFERENCES

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