How are new technologies affecting the technical writer/audience relationship?

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Abstract

This research investigates how the technical writer/audience relationship is affected by new technologies. The emergence of new technologies is occurring at a rapid pace and is changing the technical writer and audience relationship. The revised rhetorical triangle model by Lunsford and Ede (2009) does not adequately describe the relationship among these three dimensions (technology, writer, and audience). Therefore, I conducted an online survey with open-ended questions that were designed to gather opinions from an audience familiar with technical writing. I performed qualitative affinity mapping analysis of the responses to determine themes for the relationship among the writer, audience, and technology. I determined that new and emerging technologies are increasing the interaction of the audience with social media, wearables, augmented, and assistive technologies. This gives them easy access to new and archived information, which increases their cognition of the technological world. As a result, they seek alternate ways to comprehend technical information such as in choosing online technical manuals over the printed document, video tutorials over the written format, and opinions and evaluations of products from other users who are posting online. The audience has been also changing from being observers on the internet to becoming more involved and participatory by giving feedback, comments, and evaluations of products. More recently, the audience is changing to becoming more interactive by engaging in two-way conversations with the technical writer, which helps in usability studies for testing products. The audience is also becoming more immersed with assistive and wearable technologies for their personal lives.

New technologies are also affecting the technical writer who is changing the conventional writing format to a more structured and streamlined format. The technical writer is changing his writing to be more concise. The writer is also changing the writing to accommodate the audience's need for "snackable" short writing.

From affinity mapping analysis and literature review, I was able to model the relationship among the three dimensions in a Venn diagram model. This model allows for three types of relationships; (1) development of each dimension independently, (2) a bi-directional interaction between any two dimensions, and (3) an interaction among the three dimensions. The latter describes a relationship where changes in one dimension impacts the other two dimensions simultaneously. Therefore, new technologies are affecting the technical writer/ audience relationship by making the audience more interactive with the writer and more immersed with technology.

Keywords: technology, technical writer, audience, relationship, Web, survey,

Introduction

In this age of new online technologies, social media, messaging, real-time collaborative writing, and online publishing have become so accessible that the audience are changing their need for technical writing. This changes the writer/audience relationship in technical communication and in other fields such as composition and business. The focus of this capstone report is to investigate the changes in the technical writer/audience relationship in the age of new technologies.

Much is known and theorized about the relationship between conventional writers and audience of composition, literature, fiction, non-fiction, scientific, and technical papers. Much less is written about the impact of emerging new technologies on the relationship between technical writers and the audience. The new technologies include the internet (social media, organizations, societies), non-internet (commercial and free programs), devices (desktops, laptops, iPhone, iPad), immersive technology (virtual and augmented reality).

The Rhetorical triangle.

The rhetorical triangle is an equilateral triangle that describes the relationship between the text (or message), writer, and reader (or audience), which occur at the nodes of the triangle (Figure 1). This describes a two-way relationship between two nodes of the triangle where a cause in one and induces an effect on another. The rhetorical triangle originated from work of Aristotle to describe the relationship between ethos (writer), pathos (audience), and logos (message). The relevance of the rhetorical triangle has been questioned in light of the changing medium (technology in this paper) and the context of the message (Ede and Lunsford, 1989; Lunsford and Ede, 2009) (Figure 1). The interaction of the medium (technology) with the writer and the audience is not well-defined in the revised model that Lunsford and Ede proposed in 2009 for the five nodes or dimensions (writer, audience, message, medium, and context). As the lines between these nodes are becoming less defined and blurred, it is important to reinvestigate the relationship among the three dimensions. I am investigating the relationship between the technical writer and the audience as a result of new technologies. This is illustrated in Figure 1 (colored oval).

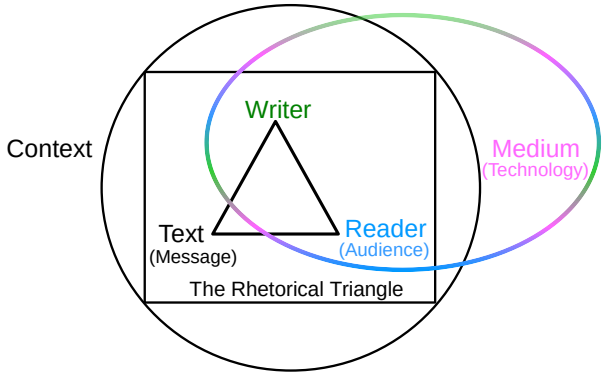

Figure 1. The Rhetorical Triangle Revisited (Lunsford and Ede, 2009). The focus of this paper is in the colored oval that includes the writer, audience, and technology.

What are new technologies?

First, we must define what the "old" technologies are in terms of the World Wide Web (Web). The internet is a global computer network with new emerging technologies that develop alongside the original technology, not replacing the established technology, but growing and evolving into new technologies. This supports a parallel development model rather than a replacement model of old to new technologies. The Web 2.0 is an evolution of the Web 1.0. The term Web 2.0 was coined during 2003-2004, and it was meant to represent the changes to Web 1.0 that were "associated with the growth of social networks, bi-directional communication, various *glue* technologies, and significant diversity in content types" (Cormode & Krishnamurty (2008). Web 1.0 consisted of static web pages that the users accessed information to read only

and not interact reciprocally with the writer (Table 1). In Web 2.0, the changes to the internet allowed the user to interact with *dynamic websites* that were more than simple pages of information (Thacker and Dayton, 2008) (Table 1). During this time, the user or audience for a particular piece of technical writing had the opportunity to give feedback to the writer, and in some cases as in Wikipedia write content on the web. The ease of creating dynamic websites lead to the audience creating blogs, and the explosion of social media forums allowed the audience to create short informal posts on site such as Facebook and Twitter.

Table 1. Description of Web, Writer, and Audience genres

Web	Year	Website	Examples	Writer	Audience gain	Audience
1.0	1990-	Static	Single web page	Technical writer	*Read-only information	Passive
2.0	2000-	Dynamic	Social networks Facebook, Twitter	Technical Communicator	*Read-Write information, Feedback	Addressed
3.0	2010-	Participatory	Cloud, device for syncing transfer of information	Information Architect	*Read-Write-Execute information, Web services, Semantic markup information, Feedback, Analytics	Involved

* Berners-Lee, Tim (http://www.w3.org/)

Web 3.0 is not an evolution of Web 2.0, but rather is a reinvention of the Web 2.0 (Technopedia, https://www.techopedia.com/definition/4923/web-30) . In this era, the user has different experiences with the internet that is smarter and seemingly cognizant of the user needs. So search engine operations will be more intuitive of the user's needs and will be able to make suitable choices in favor of the user. The technologies to make this happen are being developed at this time (2018).

The Technical Writer and New Technologies

The technical writer (TW) writes about technology that is complex and makes it clear and understandable to those who needs or uses it. This ranges from creating step-by-step protocols for using instruments or products to scientific and regulatory documents. The TW may write independently or as part of a team of professional researchers, engineers, physicians, etc. Therefore, the TW's job description may be fluid and dynamic, and adaptable to the nature of the work they write about, for e.g. a technical writer who writes about drugs or medical devices may have to write about medical or legal communications. The TWs are constantly learning as they must understand new products, keep up with new media, and tools such as web publishing and authoring tools.

How are new technologies affecting the technical writer?

New technologies have affected the printing industry as many documents are now printed online so the need for hardcopies has decreased significantly (Fawcett, 2017)). There are more e-books and online documentation. The length and format of articles are also shorter and are immersed with multimodal elements such videos, pictures, blogs, podcast, and other hyperlinks. Therefore, the writer has had to change their style and form of writing. The rise of new online

software that allow XML and DITA that engages in structured authoring of content vastly increased the number of online documents and literature on the Web.

The technical writer and the audience

Generally, a writer writes to an audience who may be an internal audience within the text, but is most often to an external audience (Nordquist, 2017). We focus here on the relationship between the technical writer and the external audience and how new technologies affect this relationship. Traditionally, a writer has a target audience that may be comprised of real people (audience addressed), imagined people (audience invoked), or participatory people (audience involved).

How are new technologies affecting the audience/user?

New technologies are affecting the audience significantly because they allow the audience easy access to information through the internet. Readers could easily research any topic from multiples sources on the internet ranging from Wikipedia to peer-reviewed journals, and from their peers. This is changing the audience (readers) because they are:

1. Becoming more educated about different topics that include medical, science, politics, business, and many more. Their understanding of content and how to find information is higher than before.
2. Asking more relevant and succinct questions about the topics.
3. Analyzing and comprehending content that enable them to better distinguish between fraudulent or exaggerated claims.
4. Requiring proof of statements and claims in the form of valid expert citations.
5. Requiring "snackable content" because they are consuming information quickly and on the go (on portable devices). (Fawcett, 2017).

Audience analysis

Technical writers must know the audience they are writing for to achieve success in the message. Traditionally, there are four categories of audiences a technical writer must consider; experts, technicians, executives, and non-specialists, which constitute the "audience addressed" category of audience. Experts are knowledgeable about the theory and how to use the product. They usually have advanced degrees in the field and know the product inside out. The technicians know how to use the products but not the theory behind the product. The executives usually make the administrative, legal, business, economic and marketing decisions about the products. They don't typically have much information about the product as the experts or technicians, but rather have knowledge similar to the non-specialists. The non-specialist has the least technical knowledge about the product and wants to know how to use the product.

A new category of audience consists of those who have more knowledge than the non-specialist, but less than the technician. They include the "Millennials" and others who are more "savvy with new technologies. Millennials are born between 1977 and 1995 and comprise of approximately 25 percent of the US population in 2018. This is larger than the percent of Baby Boomers (born between 1946 to 1964), and Generation X who were born between 1965 to 1976.

User-interface based products have been a big hit with the audience, as they are able better able to follow the interface directions without relying on a written manual because of their computer experience and knowledge. This success of the audience has influenced the technical writers to be involved in the "back end" of the product development stages such interacting more

with the designers and engineers, thus moving the technical writer in a leftward direction why still being a force to help the audience.

In other instances, the need of the audience is moving the technical writer/technical communicator to be intermediate between the engineer/designer to facilitate a "bridge" between the two groups. In other words, the audience still relies on the technical writer/communicator to assist with new technologies (either user interfaced or not).

For this research study, the focus is to answer the question "How are new technologies affecting the technical writer/audience relationship?" A survey with open ended questions will be used to gather information from technical writers familiar with the technical communication field. The responses will be analyzed by affinity analysis to determine possible themes, and by word cloud analysis to generate a hierarchy of the words based on the frequency of their occurrence. The results and analyses along with a literature review will be used to develop a model for the relationship among technology, the technical writer, and the audience.

Methods

Required documents

Prior to the initiation of a Human Research study, researchers are required to submit a Human Research Determination form to the Institutional Review Board (IRB) for conducting surveys and interviews. The application was submitted for IRB review through ETHOS (Ethical Oversight Submission System), which is a web-based platform for IRB submissions. The IRB deemed that this study was assigned a determination of Not Human Research. Written permission was obtained from the participants to use their name and a portion of their responses in support of the research findings.

Survey

A survey with open-ended questions was created in Google Forms (Table 2). The survey questions were designed to gather information (Rude, 2009) to determine the effect of new online technologies on the technical writer/audience relationship. Demographic information about the participants were derived from questions 1 to 4. While questions 5 to 8 were designed to probe the specific two-way pathway between the technical writer and the audience as shown in Figure 2. Question 5 and 6 focused on the relationship between the technical writer and technologies, while questions 7 and 8 focused on the writer and audience relationship. Information about the impact of the audience or writer on technologies were also derived from questions 7 and 5, respectively (Figure 2, shaded numbers).

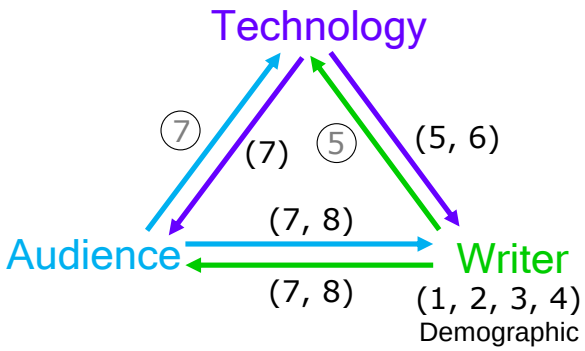

Figure 2. The relationship of the survey questions to the main question of this paper. The circled gray-shaded Q5 and Q7 indicate that responses contributed to this pathway.

Table 2. Survey questions/requests and analysis method

Number	Question/Request
Q1	Please enter your name and preferred email address.
Q2	Please select your age group a. Millennial (born between 1977 to 1995) b. Generation X (born between 1965 to 1976) c. Baby Boomer (born between 1945 to 1964)
Q3	What is your current profession, and what type of writing are you doing in your profession?
Q4	Approximately what percentage of your work involves technical writing?
Q5	How have new technologies changed technical writing?
Q6	How has your technical writing changed as a result of new technologies?
Q7	How have new technologies changed the audience's interactions with technical writers?
Q8	Are there direct interactions from the audience with you or with other technical writers at your work? Please describe the interactions and how they impact the technical writing.

Target Audience

To gather data, the survey was emailed to the members of the Technical Communication Advisory Board (TCAB) community, the graduate students in the Certificate, MS, MA, and Ph.D. programs at the Dept. of Writing Studies, U of MN. 15 responses from the Google Form survey were received within a week, and the participants were annotated P1 to P15.

Analysis of survey

The survey was analysis by mixed methods analysis of simple quantitative analysis where appropriate and qualitative analysis (Andersen, 2013). For the quantitative analysis, percentages were represented as pie or bar charts using the Excel program. The demographic data were quantified in pie and bar charts (questions 2-4). Question 5-8 were analyzed by word cloud and affinity mapping analysis.

Qualitative analysis.

As several questions were open-ended questions qualitative analysis was performed Affinity mapping analysis for Questions 5 to 8 was performed. First, all of the responses were subjected to a text analysis program (www.textanalyzer.com) to determine the frequency of use of words to determine a word pattern. Then, each response was subjected to Word Cloud analysis (www.wordcloud.com) to demonstrate the word pattern. All the words were initially mapped, then they were edited to remove the conjunctives, pronouns, qualifiers, and other non-relevant words to simply the Word Cloud pattern. This decreased the clutter in the Word Cloud and increased the clarity of the frequently used words. As the word cloud omits patterns that may be formed by phrases, further analysis and linking of the phrases by hyphenation was done and the word cloud analysis was repeated. Affinity mapping was conducted using the phrases determined from this analysis.

The phases and word for all participants were listed and sorted in Microsoft WORD with key topic areas that affect changes in: new technologies, technical writer, audience. Themes were developed from this mapping.

Results

Demographic data of the Participants.

The 15 participants who responded consisted of five TCAB members and ten graduate students (from Certificate, MS, and Ph.D programs) at the Department of Writing Studies, U of MN. The participants were in the age categories of Baby Boomers (1945-1964), GenX (1965-1976), and Millennials (1977-1995). The Millennials were the largest group of participants, and composed of 54% of the total, the Baby Boomers were the second largest group at 33%, and the GenX were at 13% of the total (Figure 3).

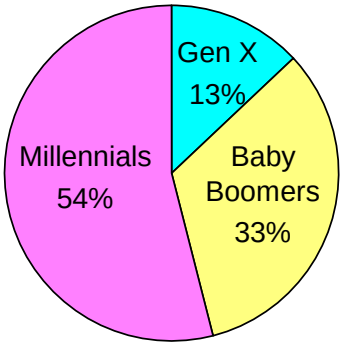

Figure 3. Age demographic for survey participants.

The percentage of the participants' technical writing at their current work ranged from 2-80% (Figure 4) depending on their career situation, and did not reflect their actual experience or exposure to technical writing. Two of the baby boomers were retired from long careers in technical writing, but were still continuing to write in the field. There were ten graduate students (either from the Certificate, MS, or Ph.D programs) and three professional communicators. Seven of the graduate students were Millennials, two were Baby Boomers and worked in the technical communication field, and one was a GenX. All of the participants had some experience and knowledge of technical writing.

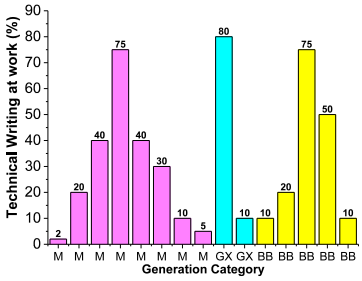

Figure 4. Percentage (values shown above each bar) of current technical writing at work for survey participants.

The actual job titles of the work performed by the fifteen participants included a range of professions that involved technical writing (shown in the Word Cloud in Figure 5). Affinity mapping of these job titles reveal categories of writing such as Technical writer, technical communicator, Information Architect, Content Manager, and Scientist (Table 3). This broad range of job titles demonstrates the wide range of jobs that the technical writer is involved in disseminating technology to the audience.

Figure 5. Professions of survey participants.

Table 3: Professions and Descriptions

	Technical Writer	Technical Communicator	Information Architect	Content Manager	Scientist
Titles	Academic, Sci. writer, Retired Writer, Writing Instr. of Tech. &Bus.	Communication associate, UX analyst, UX designer	Chief information officer, Information Technologist	Knowledge Manager, Web Specialist, Contract worker	Engineer, Process Scientist, Medical Lab. Sci.
Description	Write acad. papers, Grant proposals IRB review. Articles, Political letters, Conference Papers, Lectures, Assessments, ISO standard	Articles on client, Location openings, Comm. from audit leaders, comm. Template-driven writing, Creating scenarios, tasks, Reports for usability studies	Summary reports, and briefs for executive team and Board members	Policy, Process, procedure doc., Training, Intranet admin. User's guides, Product release notes, Update web content, Design forms, Tax compliance doc,	White papers, Municipal code, Mgmt. plans, Envir.docs, Editing, Ref. sheet, Training materials (worksheets, memory aids), Manual for data entry computer

Analysis of Survey Questions 5 to 7

Q5. How have new technologies changed technical writing?

All 15 survey participants said that new technologies changed technical writing. Word cloud analysis of their responses showed that some of the more common effects are in real-time collaboration, content-management, streamlined writing, team work, and translation (Figure 6). Affinity analysis of the responses showed a direct impact of technology on technical writing (Table 4). Five categories of impact were determined; access, content development, communication, share/collaboration, and writing. New technologies included authoring tools, XML, DITA, Agile, social media, YouTube, Blogs, websites, mobile devices, repositories, Cloud sharing, collaborative tools such as Google Docs, and open share and source tools. These technologies influenced and changed the technical writer's style by increasing precision and conciseness, content creation and management, sharing and collaboration, and the need to be adaptable and flexible (Table 4).

Figure 6. Word Cloud analysis showing changes in technical writing due to new technologies.

Table 4. Effect of new Technologies on the Writer

Feature	Technology	Writer's Action
Access	Online software	More writers online
Content Development	XML, DITA, Agile, Authoring tools	Structured →Multimodal Precise, consistent writing Reuse of content Printed docs → redesigned for Web Creating educational and learning templates Democratized content creation and manage Collective-writing Teams Curation of information, Chunks, More-repetition, Translation
Communication	Social media, YouTube, Blogs, Personal Websites, Mobile devices, wearable technology	Shared instantaneously Feedback, Comments Written Instructions → video tutorials Writing with screenshot apps Writing/doing business on mobile devices Adaptable and flexible
Share/Collaboration	Repositories, Cloud Collaborative tools: Google docs open source tools	Real-time Collaborative Editing, Multiple authoring, Version control, Online reviews/approvals Teamwork, remote teamwork, No need for printing
Writing	Online	More online writing, Streamlined writing, Navigational-menus, Less Technical, Online Grammar and spelling, Write clearly to distinguish between step and results in a procedure

Q6. How has your technical writing changed as a result of new technologies?

Ten out of 15 survey participants said that their writing has changed because of new web technologies. Overall, the impact was positive and constructive for the technical writers in their access to new online software for communication, collaboration, sharing, content development, and single sourcing of text (Table 5). The technical writer admitted to improvements in their writing, organization, accuracy, concision, and reuse of content.

Table 5. Effect of new Technologies on the Writer

Feature	Technology	Participant's Action
Access	Online software Open share software	More users of UX design to coding/development to copy writing or documentation
Communication	Cloud SharePoint	Collaboration through web-content services

		Dedicated roles and times All work together
Collaborate/Share	Cloud Google Suite	Active-collaboration Multi share/edit documents Remote working Video meetings Screen shares
Content development Single Sourcing	DITA XML ArborText	More focused and quicker More efficient and organized writer More accurate and concise Reuse-content Writing-in-Chunks Ease of translation

Q7. How have new technologies changed the audience's interactions with technical writers?

Twelve of the 15 participants said that new technologies changed the audience's interactions with technical writers. A Word Cloud analysis of their responses showed that most relevant and frequent changes were in their comments, feedback, Virtual and Augmented reality, and usability studies (Figure 7). Affinity analysis of the responses (Table 6) showed that the audience are finding much of the general information on life on their own via the internet through search engines and social media. The audiences' familiarity to the internet has enabled them to find writers on the social network to send feedback and comments, to create content on the internet, help users solve problems, and perform usability evaluations and testing remotely. The audience are also able to use wayfinding maps to determine locations, and use AR and VR devices for new experiences and information (Table 6). Much of this interaction that the audience has with Web technology and the technical writer is participatory, interactive, or experiential (Table 6, last column).

Figure 7. Word Cloud analysis showing changes in audience due to new technologies.

Table 6. Effect of Technology on the Audience's interaction with the Writer.

Feature	Technology	Audience's Action	Interaction
Access	Internet	Fast	Participatory, Interactive
Search Engines	Google, Bing, Yahoo, Chrome	Find training manuals and videos, information	Participatory Interactive
Communicate/Share	Google docs, Facebook, Twitter, Blogs Alerts Online usability	Find writers on socials media to send feedback/comments, manuals and videos, Audience alerted to new products Provide feedback, Evaluations, comments	Participatory Interactive,

		for remote usability studies	
Content	Online programs to add content to Web via websites, blogs, Wikipedia	Knowledgeable audience create content on Web User helps users	Participatory, Interactive
Location	Wayfinding	Uses interactive maps, e.g. Google map, GPS,	Participatory
Augmented Assistive	Alexa, Siri, Cortana, Google Assistant assistive, adaptive, and rehabilitative devices, VR and AR devices	Use assistive health devices for health and living, Use assistant for everyday information	Participatory Interactive, Experiential

Q8. Are there direct interactions from the audience with you or with other technical writers at your work? Please describe the interactions and how they impact the technical writing.

Ten of the 15 participants said that there are direct interactions between the audience and the technical writer, while the other five participants either had no interaction or the question was not applicable to their work. From the survey responses it was determined that in general, the technical writer uses feedback and comments from the audience either by directly asking the internal users (co-workers, managers, stakeholders) or the users of the product or document. Sometimes, users requested clarification and offered feedback on a product. The writer implemented changes when appropriate. The writers were also involved in getting feedback through evaluations of usability testing either online or in person. The feedback is used to implement changes in web sites, application, documentation. The impact to the interactions of the audience with the technical writer is that the TW makes changes due to the feedback, comments, and questions from the audience.

The communication between the technical writer and the audience (whether internal within the company or external to the company) was a predominantly one-way interaction, where the technical writer responded to the feedback or comment from the user. Here, the audience is "participating" in the activity by giving feedback in one direction and not receiving a reciprocal response from the writer. Instead, the writer makes the appropriate change in the product or document. In two cases, the survey participant response hinted as at an "interactive" feedback process whereby they had a conversation where the "they would walk over to discuss it." (P5), or "ask questions about the protocol document; changes can become many and frequent until the protocol is approved" (P10).

Supporting Quotes:

Impact of Technology on the Audience

"New technologies, such as the internet and the cloud, have made a lot of products more widespread and integrated between users."
Kiley Schmidt.

Impact of Technology on the Writer

"Authoring tools, such as Arbortext Editor store bits of translated text to be reused in the creation of manuals." *Kathy Gruber.*

Impact of the Writer on Technology

"The job became much more the management and curation of information vs. new writing. Writing in chunks means not using referents as much, and more repetition." *Daphne Walmer.*

"Mobile and wearable technologies also change the dynamics of communication tremendously. As a result, technical writers have to be very adaptable and flexible." *Jeremy Rosselot-Merrit.*

Impact of the Writer on the Audience

"Writers include multimodal elements and write in snackable (short) form for the audience". *Osha Roopnarine*

I had used in lab usability testing, web-based usability studies, and customer-site visits…" *JoAnn Hackos.*

Impact of the Audience on Technology

"Users influence designs through their feedback, evaluations, and usability testing responses." *Osha Roopnarine*

Impact of Audience on the Writer

"They can interact more freely now, like leaving comments or sending a direct email, or even finding authors through social media platforms." *Sarah Canon.*

"My audience engages with me, and with each other, via a single repository of feedback. This focuses our conversations and makes our time together more effective." *P2.*

Discussion and Conclusions

The audience for my survey had varied experience and opinions about the relationship between the dimensions. They included the Baby-Boomers, Generation X, and Millennials, who were knowledgeable about the impact of web technology in the technical communication field, and the roles of the technical writer and the audience/user.

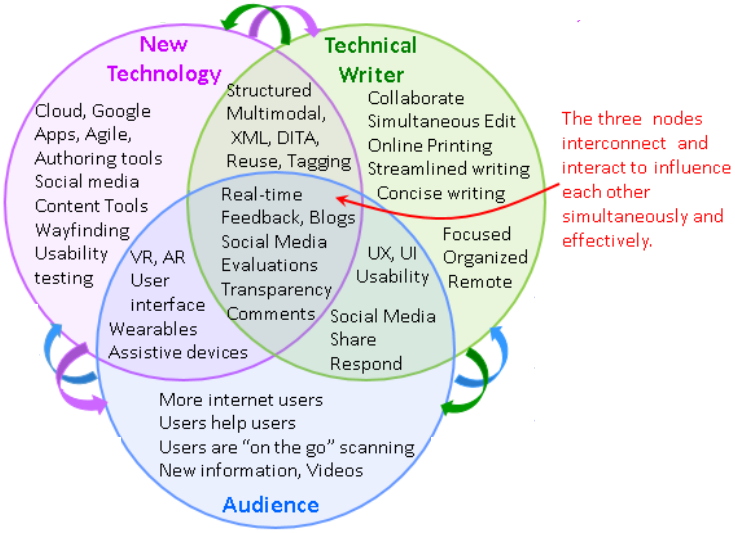

Figure 8. A Venn model for the relationship among the new technology, the technical writer, and the audience.

From the results and analysis of the survey, I created a Venn diagram model (Figure 8) that describes how new online technologies are affecting the technical writer/audience relationship. There are three parts to each circle. First, I show examples of how each topic is developing independently. Second, I show that there is a two-way interaction between the dimension or topic (Figure 8, colored curved arrows), and I support this by quotes from the participants from my survey about each topic. Third, the three topics interconnect and interact to influence each other simultaneously and effectively.

The technical writer/audience relationship is changing because of new technologies such as: easy online access, social media and online forums, free repositories to store data and access software open share and open source tools. Their relationship is becoming more collaborative and interactive because the feedback is a two-way process between the digitally-aware audience and writer, the audience influences the success of technology by causing it to go either "viral" or not, the writer uses new tools to modify writing for the audience needs, the three nodes interconnect and interact to influence each other simultaneously and effectively.

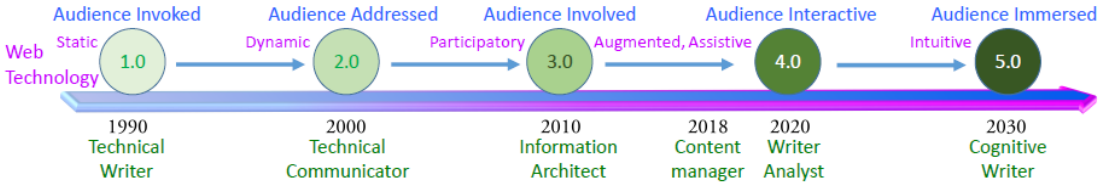

Figure 9. Timeline for technology, writer, and audience.

In the Introduction, I briefly discussed the Web 1 .0 to 3.0. I describe a timeline for the relationship among Web technologies, the technical writer, and the audience from Web 1.0 to Web 5.0 (Figure 9). The timeline shows that there is a synchronous change in the Web, and the in the definitions of the audience (Figure 8, blue text), and the technical writer (Figure 9, green text). As the Web technology changed from static to dynamic to participatory, both the audience and writer roles changed to accommodate or "take advantage" of the changes in technology.

Currently in 2018, the technical writer is the content analyst and the audience is "involved" as the audience is participating with the Web technologies and with the writer (content analyst). I predict that in 2020 that as the Web becomes Web 4.0, technology will be full augmented and assistive. We are already seeing the evidence of augmented and assistive technologies in the various wearable technologies. The audience will become "interactive" with the technology and the technical writer, who will be in a role as a writer analyst. I predict the role of a writer analyst because the audience or user will require the help from the writer analyst to assess, analyze, and interpret biometric data they will gather from their wearable devices. I further predict that in 2030 in Web 5.0, the technology will advance to devices that are "intuitive" to the user's needs, and the audience will become "immersed" with the technology and will require the assistance from the technical writer, who will have to become the "cognitive" writer to be able to help the audience use the intuitive devices.

Future studies and new research questions.

As this is a pilot study for answering the framing question of "How are new technologies affecting the technical writer/audience relationship?", it is quite feasible that a more detailed study that involves the inclusion of the audience's perspective concerning the technical writer/audience relationship will be insightful for answering the main question. In addition, the study could be extended to answer some of the following questions: What is the role of the technical writer in 2030? Who owns the biometric data acquired via wearable devices? What is the role of the technical writer for the "interactive" and "immersed" audiences?

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