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Technical Communication's Importance to Change

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A Final Portfolio

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Dr. Gary Heba, First Reader
Dr. William Albertini, Second Reader

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Analytical Narrative

When I began my bachelor's program at Minot State University in 2004, I quickly realized my love for English slanted towards writing over literature. I enjoyed time as a tutor in the university's writing center. As I graduated and attempted to find work, it was difficult. The financial crisis of 2008 did not help matters and I struggled to find steady work online. I found myself back in school opting for a second degree in education. Teaching is another passion of mine, but it is not a career I see myself following full time.

My decision to pursue an MA comes from the need to move beyond teaching at a high school level. My passion has always been writing. My pursuit came into being when I decided I needed to complete an MA in Writing instead of Education. It was where my interests remained, and it allowed me to expand into other fields beyond teaching. When I perused online programs, I found that Bowling Green offered exactly what I needed. I chose Professional Writing and Rhetoric because I wanted to develop a stronger understanding for varying types of writing and needed the opportunity to challenge my writing. This program has worked best for me.

As a student in the program, I appreciated the variety offered despite the courses being online. As an undergraduate, I did not take many online courses because they were not valuable. I never felt challenged. Bowling Green's professors showed their experience teaching online and created courses that allowed for additional development and interesting challenges.

In my time as a graduate student, I developed appreciation for changes occurring in the realm of technical communication. I have always considered myself a decent writer, but my time as an undergraduate was spent exploring literature. My time as a teacher is spent teaching writing, not always having the opportunity to explore it further. My experience as a student allowed me to complete far more writing and exploration of new methods and theories.

One new method that has struck my interest has been human centered design (HCD). I began exploring it in one course Fall 2017 but had read brief discussions of it sooner. This type of design speaks to the teacher in me and the need to find an area that helps people the most. It pushes away from the assumptions made and forces communicators to consider societies when creating document designs. Natasha Jones is an author who has explored this idea and connects it to social justice. My appreciation for writing grows from my frustrations in literature. My school requires literature taught from a very specific culture. To push others to read literature from other cultures and to use that to grow conversation remains a struggle. Often, cultures can be compared to help students see commonality between themselves and others. HCD takes this very notion and says we cannot function in society without some consideration for other groups and use what we know to create the best mode of communication.

Aside from HCD resonating with me, I find myself intrigued by how collaboration works with technical communication. I have enjoyed exploring how technical communicators interact with each other and how they tackle problems or projects when they are a part of a larger collective. While my projects do not show my research in this area, I do find that my writing has improved due to some of my own collaborations. I find the value that comes from it and hope to explore it further in my career.

Many of the pieces in my portfolio comes from my attempts at understanding why technical communication needs ideas like HCD or collaboration.

My projects are included below.

Technical Documents in NASA Astronaut Training

For this course, ENG 6040: Graduate Writing, Dr. Hoy asked us to explore research in an area of interest to us. Given that I took this course in the summer, it was difficult to have an opportunity to conduct research through HSRB. However, Dr. Hoy showed multiple research methods while allowing the opportunity to explore a project of interest. One article that stood out to me in this course was “Why Academic Writing Stinks and How to Fix it” by Steven Pinker. He describes the need to adjust academic writing from some of its dryness and to make it more interesting when teaching it. It made me consider my own approach to writing for the semester.

While the articles enhanced my considerations for how to approach my writing, I knew from the start of the course how I wanted to approach it. I wished to complete more firsthand research and space travel is an area I appreciate and spend time exploring. My curiosity on the choices made in space candidates and the lack of control over documents created my idea to develop research on the manuals.

My exploration of NASA’s technical manuals shows a lack of understanding between scientists and what they assume astronauts know. The lack of consideration with other groups led to manuals being created on assumptions. The lack of understanding may have improved if concepts like HCD was considered by scientists or if technical writers were available to assist in the process. Additionally, my interest in collaboration between departments and the use of technical documents as a necessary component of function in a company.

This paper differs from my other ones since it is not a paper based in theories and instead looks at the issues that stemmed straight from a system when technical communication was in its youth. It worked well as a basis for my research completed and works as a means to see how primary documents affect what is happening within a program. Before I explored the topics, my

curiosity of the selection process for NASA and how that later affects the manuals. When NASA started sending scientists into space, the manuals shifted. My hope in the research was to explore that.

Dr. Hoy allowed students an opportunity to explore new research interests. Her feedback on the documents gave me the chance to reevaluate some sections. Furthermore, she offered to look over my paper again before I turned in the final draft. Her continued suggestions allowed for some adjustments to be made to the overall structure of my paper. I also chose to make some changes when I reread it several months after completing it.

Technical Writing as Advocate for Change

For Dr. Heba's course, ENG 6400: Professional and Technical Writing, our objective was to research a topic area relating to technical communication and build a research report regarding how this topic works within the field of technical communication. In this semester, we explored multiple ways technical communication succeeds and fails. One of the weeks we examined ethics and were asked to discuss problems we have within our own research.

My topic selection is newer to the field and caused a multitude of issues for me when I began research. Dr. Heba allowed me to make some changes and gave suggestions. I fell into Human Centered Design (HCD) on accident as I explored social justice through visuals. A previous course with Dr. Edminster explored visuals and ethics; however, it became increasingly difficult to find articles for research. With Dr. Heba's advice I made the change to HCD and am glad to change the focus. When I shifted focus, I discovered Natasha Jones who was a big advocate for HCD and whom I discussed earlier. Additionally, Rebecca Walton promotes consideration for other cultures and backgrounds when she discusses the principles of HCD. When I read her articles of Rwandan youth and humanitarian practitioners, her in-depth

exploration of youth and the world's effects on them and the need to create documents allowed me to further my research.

My original paper lacked focused due to my issues narrowing a topic. In revising it, I added more sources and spend more time exploring the topic further. By the time I needed to turn in my research report during this course, it was ill-prepared. I took more time and reexamined my sources. My new version included new sources and a deeper exploration to the original ones to help with my examination of HCD. Additionally, I made stronger connections between them and attempted to draw a stronger conclusion and its necessity.

This research report remains one that taught me about the newer realm of technical communication and how difficult it can be to find new ideas and approaches to them that work in our evolving world.

Technical Writing Teacher Resource Guide

My first semester at BGSU consisted of a course, ENG 6470: Teaching Technical Writing, and as an educator, my gratitude for this class remains. As a tenth-grade teacher, one of our main goals is to teach students a wider variety of writing. We spend most of our time writing and revising. Often, our team's conversations revolved around ways to increase the methods students use to complete technical writing.

I remember one of our books for the course was the same as the one used in my English department. This resource guide stemmed from the multiple sources I explored in this course. I needed to include a book I thought was helpful to technical communication. I chose one by Mike Merkel since I had read some of his works previously from Dr. Heba's class and his breakdown of each element of technical communication remained one of the most helpful in my teachings. I have since taken several of his suggestions into account with my own teachings. Also, Thomas

L. Warren's article on self-teaching was an interest to me. Since I never received any coursework on technical writing as an undergrad, I had to figure this out for myself. Warren's article spoke of similar reasons for himself.

I came away from this course with more resources for my collaborative unit. As a part of Professional Learning Communities (PLC) unit in my district, we are required to collaborate and consider how we teach ALL students. Again, this ties back to my methods of interest: collaboration and HCD.

I no longer had a copy of this with Dr. Heba's remarks from the first time I completed it. Instead, I adjusted based on what my PLC group selected and wish to continue teaching. We incorporated some of the writings and made other changes based on standards and new initiatives to my district. This resource guide has assisted my other teachers but is also a concept I can expand on and incorporate with other courses in the future.

Google for Educators Manual

Another major project from ENG 6400 with Dr. Heba was the manual we created. In preparation of the project, we read an article titled: "Planning & Tracking a Project, by James A. Prekeges. The article remained one of the most helpful tools in my creation of the manual. His step by step guide to working on a project allowed me to gain a sense of how I should approach mine. Some of the events were ones I never considered, and I worked many of them into the planning of my manual. This project was one I looked forward to the most since it consisted of completing a technical document of my own as it related to my own work.

As an educator, I utilize technology as often as I can. One of my frustrations from starting a career as a teacher came from the lack of teaching in technology. I decided to create a manual that would allow teachers who are new to teaching or new to technology to have the chance to

learn new tools. Along with the manual, we needed to create a usability test. The results from that test presented me the opportunity to make changes and to see what the teachers found valuable. It also verified what I thought: that many teachers need help to learn technology for themselves and their classroom.

My revisions consisted of looking at the survey other teachers completed and determined what was not working well. Also, Google updated in the middle of it which caused confusion and an update to screenshots. Dr. Heba's comments for revision included some basic ways to make the layout more user friendly and easy to read.

Working on this manual taught me the many ins and outs involved in creating a valuable piece of user friendly information. Additionally, I discovered how easy it can be to cause confusion with a manual that appeared (to me) to be easy to follow. Overall, my manual was easy to implement in my school since Google tends to create easy to follow concepts. Furthermore, teachers tend to listen to directions well which is helpful. I have created similar manuals for my students and those have not ended on such a positive note.

From the Google for Educators manual to my paper on HCD, my spectrum of work has relied on the theme of collaboration and consideration for multiple parties. My experiences with these documents remains with the idea that, for technical communication to maintain success, collaboration and teams are necessary. Many do not naturally gravitate towards this and it can be hard to admit faults, but as these pieces showed me, when you take time to explore your ideas with others, you grow. Two of my projects were shared with others (aside from the professors) and the feedback they gave me remained useful and valuable to my own professional life.

Finally, all the skills from this program will remain helpful to me in the future. For the moment, I am a teacher and the skills I learned will help me grow as an educator. I took three

education-based courses and found them all containing applicable skills that I have already been using in my own classroom. Learning how to approach writing skills from a variety of angles and methods forced me to recreate the way I teach research. My students are no longer as overwhelmed, and I do not strain myself as a teacher. ENG 6200: Teaching of Writing pushed me to not only consider the methods in which I taught, but also asked me to examine cultures and representation in my ways of teaching. It helped me reexamine how I view my students.

While the value of the education side to my program assisted me now, I do not plan to remain an educator. Instead, I wish to pursue writing in other aspects. I want to explore freelance work to begin and to search for companies who need writers. This remains a large part of why I chose Professional Writing and Rhetoric. My pursuits will require the need to know more beyond how to teach writing. ENG 6400 showed me what to expect when I enter this work force. My skills grew with each of the other courses I attended.

Overall, the skills I learned include the value in writing. Writing is more than simply creating a piece that is well received. As professionals, we need to work through all tiers and share those with others. Communication is a separate branch, but still a necessary component to this field. It is necessary to keep communication in all modes open to others.

When I began the program, I was worried that my years in education might hinder my chances at following along or staying relevant in the field. However, through the multiple prompts, discussions, and projects I realized that my skills are applicable. I have learned how to replicate them into something tangible for technical communication. My skills will carry over into the professional field. I can combine what I learned in the program with what I already know to be able to remain relevant in the professional field.

“Technical Documents in NASA Astronaut Training”

From Jules Verne’s novel in 1865, *From Earth to the Moon*, western culture dreamed of sending themselves out among the stars. Humankind’s quest for space travel led them from sending satellites in orbit around Earth to men on the moon to the future and possibilities of Mars or outer orbit travel. When the space program began in the 1950s, the entire concept required building from the ground up. Training an astronaut meant a need for non-existent manuals to teach explorations never attempted in the United States. The manuals changed frequently due to changes from the scientists and engineers while needing understanding from someone with minimal scientific training. Requirements for early astronauts excluded the need for additional scientific training. Therefore, information required breaking down before the astronauts trained. NASA's initial goal intended to send someone into space; once there, new goals became necessary. The dynamics of astronaut training shifts constantly in its history and today. The beginnings of the program encouraged all pilots to apply while today the program requires more scientific or engineering backgrounds. The manuals created for space preparation evolved over the years based on who needed to be trained.

Training for the Project Mercury led to a discussion of necessities include conversation that “the human on board was more a passenger than a pilot, even though he was supposed to attempt to carry out his tasks […] One of the most difficult tasks was defining the physiological and psychological loads and tolerances of the passenger" (Reichl 20). The focus remained on finding a man who could handle being in space: simply put. No need for astronauts to perform many other tasks. If they stayed in radio contact, they could simply ask ground control and follow their guidance.

Robert Voas, part of the NASA Space Task Group during Project Mercury, discusses in length the learning curves of the program. He mentions the selection process for the astronauts to include: 1. Age – less than 40. / 2. Height – less than five ft. 11 in. / 3. Excellent physical condition. / 4. Bachelor's degree (or equivalent). / 5. Graduate of test-pilot school. / 6. 1,500 hours flying time. / 7. Qualified jet pilot. (23). Because of these qualifications, multiple people faced a lack of acceptance from the program. Due to segregation laws, no person of color could apply. Women were not allowed to be pilots, so they were excluded. Any applicant was automatically a white male, and since they needed to be a jet pilot, from the military. Citizens could not apply. Eventually, seven men made it into the initial astronaut group.

These men became part of a program with no formal training available. Due to this, Voas discusses how the men began their training looking over design drawings and traveling to the various facilities and how "the order in which topics presented were, to a great extent, dictated by the resources available at the time the program was initiated" (24). Voas argued that while this seems unprofessional and perhaps even unnecessary for individuals such as the selected astronauts, this training remained necessary for the good of the group. Once the program became more solid with the creation of the Indoctrination Manual, followed closely by the Familiarization Manual, astronauts' training maintained a higher purpose. The main purpose to remain in space as long as possible with science and trajectories secondary. Voas clarifies how their "primary requirement, of course, is to train the astronaut to operate the vehicle. In addition, it is desirable that he have a good background knowledge of such scientific areas related to space flight as propulsion, trajectories, astronomy, and astrophysics" (25). Becoming a part of the program only required minor knowledge of the sciences around how they get into space. Much of the focus continued creating astronauts who could handle the pressures of being in a vessel,

alone, above Earth. Focused remained on them being physically able and to stay in shape. It worked and eventually led to John Glenn becoming the first United States man in space. His knowledge of flight certainly helped since he had to fly the craft manually for a majority of time. However, his observations decreased. He was unable to complete the few scientific tasks since he had to contend with other issues. The mission remained a success because he removed in space.

After Glenn's flight and five others who followed with minimal issues, the Mercury program ended, and Project Gemini took its place. Gemini's astronauts received more thorough training and scientific ideas became more prevalent. Already, NASA moved away from simply sending a man to space. Now, they wanted to gather more information. New regulations for astronauts applying for training occurred and science backgrounds started quickly, however,

> [t]o be chosen, the applicant must (1) be an experienced jet test pilot and preferably be presently engaged in flying high-performance aircraft; (2) have attained experimental flight test status through military service, aircraft industry, or NASA, or must have graduated from a military test pilot school; (3) have earned a degree in the physical or biological sciences or in engineering; (4) be a United States citizen under 35 years of age at the time of selection, six feet or less in height; and (5) be recommended by his parent organization ("Gemini" 6).

Astronauts still needed to be experienced jet pilots. Any astronauts who remained from the Mercury program maintained their status despite no longer meeting requirements. They were not removed due to lack of experience, instead, the intent was to augment the current team. The transition into Gemini meant a two-person team could head into space. The astronauts would rendezvous and even attempt an EVA (extravehicular activity). For this to maintain success, they

need to understand mechanics and could think on their feet. The first manned Gemini mission consisted of one new astronaut and one who flew a Mercury mission. The experience paid off when issues occurred; however, for Gemini missions 5 to 12, the new class of astronauts became the only crew members on board. No one from the original pool took part in these missions. After the success of the EVA during the Gemini missions, the United States set its sights on the moon. NASA moved to create extensive science training for astronauts since astronauts needed to be relied upon to know what to examine in space and on the moon. As William C. Phinney describes in his book on the history of science training for the Apollo missions, originally:

> assignment of astronauts to the newly formed NASA had nothing to do with the development of scientific exploration of space […] when the Soviets became the first nation to put a man in space […] President Kennedy was forced to look for a dramatic even that would spur the US space program […] calling for a manned lunar landing by the end of the decade (1).

Due to the urgency and change in requirements of the program, it quickly became evident that the astronauts required a more thorough scale of scientific training. If the expedition expected to send them far out into space with little opportunity to maintain communications, the astronauts needed to find samples and to take photos without consulting headquarters. This shift in training created multiple complexities. Scientists determined which experiments should be performed and many of them would be relatively complex. Experiments began with Gemini, but the training of the astronauts took part during Apollo's training. Throughout the 1960s, the rate of scientific training varied with geology as a major portion of the training (see fig. 1). Astronauts remained in science training for roughly five to six months.

The science training of the Apollo astronauts slowly increased over time. Eventually, as we moved away from the moon and focused on the International Space Station, the need for a variety of scientific exploration and experiments became necessary. Once again, requirements increased. Astronauts who wish to explore science via the International Space Station must have a bachelor's degree "in engineering, biological science, physical science, or mathematics […] followed by 3 years of related, progressively responsible, professional experience [further degrees count towards these years] or at least 1,000 hours of pilot-in-command time in jet aircraft" ("Astronaut" 2). Astronauts require additional training before they apply. Once they pass the first step, astronaut candidates still need to endure physical and mental endurance tests to obtain their selection. Once selection is complete, "astronauts are trained to operate each system, to recognize malfunctions, and to perform corrective actions if needed" ("Astronauts" 3). Their training expands over two or three years generally since they will remain

Science Training Schedule for the first 3 Groups of Astronauts (29)

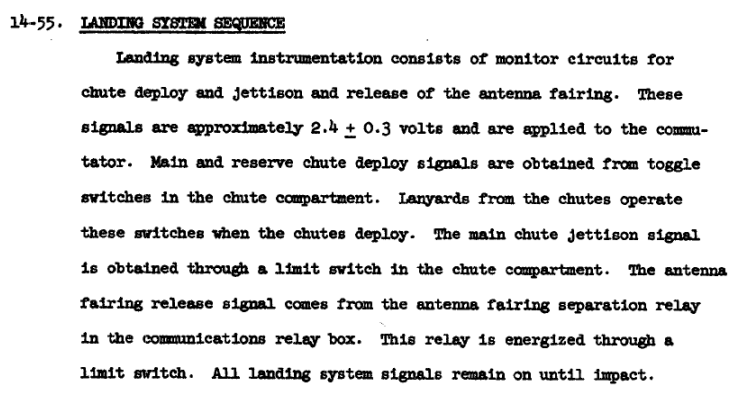
Includes Series I of Geology Program and Gemini Computers for all 3 groups (29). Other courses are for the 3rd group (14) and whoever else might want to sit in.

Date	Expected Attendance	Topic & Instructor
Feb. 3, 1964	All astronauts	2 hrs: **Geology I**: introduction to geology and geologic processes by Dale Jackson (USGS) 2 hrs: **Mineralogy & Petrology I:** minerals, crystal systems, and abundance of elements in the Earth by Uel Clanton (MSC)
Feb. 10, 1964	All astronauts	2 hrs: **Geology II**: comparison of lunar and terrestrial processes including volcanoes, impact craters and erosion by Don Wilhelms (USGS). 2 hrs: **Mineralogy & Petrology II**: classification of minerals by physical properties by Uel Clanton (MSC).
Feb. 17, 1964	All astronauts	2 hrs: **Flight Mechanics I**: math of vector dot products by Dave Lang (MSC) 3 hrs: **Geology III**: geologic laws, mapping, time scales and a movie, "The Grand Canyon Story" by Dale Jackson (USGS) 1hr: **Geology IV**: lunar crater photos and interpretation of lunar processes by Wilhelms (USGS)
Feb. 18, 1964	All astronauts	4 hrs: **Mineralogy & Petrology III & IV**: mineralogy including bonding, coordination numbers, definitions, and formation of solids by Elbert King (MSC) 3 hrs: **Astronomy I**: the known universe, the Earth's position in it, and celestial coordinate system by I. J. Prouse (U of TX)
Feb. 19, 1964	3rd group	2 hrs **Flight Mechanics II**: vector cross products by Dave Lang (MSC)
Feb. 24, 1964	3rd group All astronauts All astronauts	2 hrs **Flight Mechanics III**: vector cross and dot products and rules of vector differentiation by Dave Lang (MSC) 2 hrs: **Mineralogy & Petrology V**: classification of rocks plus lab study of rocks by Ted Foss (MSC) 2 hrs: **Geology V**: clastic and chemical sediments in stratigraphy by Dale Jackson (USGS).
Feb. 25, 1964	3rd group	3 hrs: **Astronomy II**: planet orientation, astronomical properties of Earth, rotation, revolution, spherical trig, and time by I. J. Prouse (U of TX) 2 hrs: **Flight Mechanics IV**: vector differentiation and coordinate systems by Dave Lang (MSC)

Figure 1: A one-month portion schedule of science training for the first group of Apollo astronauts from Phinney, William C. "Science Training History of the Apollo Astronauts." *National Aeronautics and Space Administration*, November 2015, http://www.lpi.usra.edu/lunar/strategies/Phinney_NASA-SP-2015-626.pdf.

on the space station for three to six months. Due to the extended time, astronauts can complete a wider variety of scientific technics.

Beyond obtaining an understanding of the programs themselves, technical training manuals help tell the full story. Project Mercury holds its place as the guinea pig for the space program. When the program began, no manual existed; however, the astronauts needed a manual to familiarize themselves with the program and the systems within. Since the first group of astronauts needed to handle flight in sketchy situations, the manual broke down each system in very simplistic terms. The Familiarization Manual (created second for the program), informed astronauts of the instrument panel and controls: "left hand console is located at the left side of the main panel and is accessible and visible to the astronaut when in the fully restrained position" (2-9). Statements like these appear throughout the document and seem to ridicule and be a bit obvious. Scientists used "the astronaut" as if others will be reading this manual, not the ones who will run the craft. When moving into some of the system checks, the creators of this manual did not move away from that language. When describing each step needed in the navigational systems which, in theory, should have been easy for pilots, continued simplistically and most stayed in the definition range. The landing system sequence (see fig. 2) includes one of the most important steps of the process but stays at seven sentences. The astronaut rarely understands what they need to do or why. Astronauts used their instinct with some of the



14-55. LANDING SYSTEM SEQUENCE

Landing system instrumentation consists of monitor circuits for chute deploy and jettison and release of the antenna fairing. These signals are approximately 2.4 ± 0.3 volts and are applied to the commutator. Main and reserve chute deploy signals are obtained from toggle switches in the chute compartment. Lanyards from the chutes operate these switches when the chutes deploy. The main chute jettison signal is obtained through a limit switch in the chute compartment. The antenna fairing release signal comes from the antenna fairing separation relay in the communications relay box. This relay is energized through a limit switch. All landing system signals remain on until impact.

Figure 2: Landing System Sequence from "Project Gemini Familiarization Manual: Rendezvous and Docking Configurations." *McDonnell*. 31 May 1965, https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20160009472.pdf

maneuvers or waited to hear back from ground control as to what their next move should be. Part of the reason Mercury ended was due to multiple mechanical issues with the aircraft and since major changes occurred with each landing. The manuals given to the astronauts never stayed updated often given the frequent changes for the vessel which likely contributed to its program ending.

With the exit of the Mercury shuttle, the Gemini project shifted into existence. Given that two astronauts rode the craft, two roles became necessary and new training manuals created. These manuals stayed at the level of familiarizing and still did not dive into deeper details. However, scientists created more sections of the manual to help explain some of the methods since astronauts would spend days in space instead of mere hours. Another addition in the Gemini manual contained more formulas and inputs for the system. Astronauts needed to adjust flight the longer they were in space and needed to complete more complicated maneuvers; equations and diagrams were added to assist. Like the Mercury program, the astronauts on the craft are referred to as "the crew" and not given direct instruction in that regard. Explanations are still relevant, but the language is not as obvious as Mercury's. Gemini's Familiarization Manual discusses using the "Manual Data Insertion Unit (MDIU)" to be used for "updating certain data stored in the computer" the process is discussed merely by labeling the parts, not telling the astronaut directly where to find it, but including a figure to assist with finding it. To describe placing the data, the manual describes it as, "the pilot always depressing seven Data Insert push - button switches; the first two set up the address of the computer memory location in which data is to be stored, and the last five set up the actual data" (8: 123). The process is described with more assumptions of understanding but continues to explain the "why" it is needed. Additionally, it describes what appears when it does not work, "[i]f the pilot attempts to insert

data in an invalid address, attempts to read data out of an invalid address, […] the seven digits displayed are all zero indicating a pilot error" (8: 123). This manual assumes the pilot and crew maintain better understanding of the processes, but still need reminders of errors. Furthermore, they each have their own tasks. The pilot is responsible for this specific task and would have been trained for it, not his crewmate.

As NASA moved into deeper space exploration, Apollo came into sight. Apollo missions added a third crew member and maintained specific training for each man on the flight. Apollo missions needed to involve more complex procedures since they traveled to the moon and needed to land a lunar module. Apollo astronauts began receiving the intensive training mentioned earlier in addition to their pilot training. The number of manuals for the Apollo missions stayed in the dozen range, far more than previous missions, and gave specifics on each proponent of the shuttle and mission. Crew members learned which manual needed to be referenced for which task. They still maintained contact with ground control but became more reliant on themselves to complete certain tasks. Given that all astronauts who became part of the program had specific bachelor's degrees, it became obvious that the level of math and operations of the computers grew in complexity ("Apollo"). The crew members could understand many of the formulas discussed, so a need to overexplain disappears. Furthermore, the removal of "the astronaut" and "crew" proves that the manuals created became what the astronauts needed. Charts appear throughout the manual like in Figure 3. The chart deals with possible CSI (Computer Systems Initiative). The abbreviations within the chart alone are unknowable to anyone outside this crew, however, when searching the document, no key is given to explain them. It is either elsewhere or assumed to be irrelevant and already known. Figure 3 itself describes a multitude of complex formulas regarding various maneuvers. The crew member in

charge of this would need to understand these and know either where to view them otherwise or need to react accordingly.

With the Apollo, gone are the days of overexplaining. Some discussions and explanation did happen, but the language changes. Looking at the CSI maneuvers one explanation is how it "is a burn performed along the local horizontal parallel to the CSM orbit plane for the normal in-plane option […] purpose of the maneuver is to create the correct phasing between the LM and CSM such that following the coelliptic maneuver the desired line of sight angle […] will be achieved" (Mendelsberg 23-5). As noted, these discussions did not overexplain. Instead, it explains the process as to why it will help and includes other possible scenarios. The astronauts become colleagues with an understanding of the computers and the science behind them. These astronauts needed to know every task of their jobs since they are no longer in Earth's orbit; they needed to react in case contact is lost or an emergency happens. When they are trained in better means, their missions persisted successfully, even when they have equipment failure or other emergencies.

Equation Symbol	Quantization		Units	Address	Description
	Lunar Mission	Earth Mission			
ΔV_G	0.1	1.0	fps	267	Total velocity-to-be-gained magnitude in CSI maneuver (will not contain out-of-plane velocity component until 28J2 is entered.)
28J1	0.1	1.0	fps	450	Downrange velocity-to-be-gained in CSI maneuver
Δr	0.1	0.1	nmi	402	Differential altitude in coelliptic orbit
T_{A0}	0.1	0.1	min	372	Time from CSI to CDH
θ_f	0.01	0.01	deg	303	LM to CSM Phase Angle at CSI time
V_{p0}	0.1	1.0	fps	371	Velocity-to-be-gained in CDH maneuver
$\dot{r}_A$	0.1	1.0	fps	477	LM altitude rate at CSI time
δr	0.1	0.1	nmi	314	Differential orbital altitude along LM radial at CSI time

Figure 3: Chart of CSI Solution Check from "Apollo CSM Logistics Training: Study Material for Crew Equipment Course." Space Division, *North American Rockwell Corporation*, May 1969, https://history.nasa.gov/afj/pdf/study-material-crew-equipment-course-csm-19690501.pdf.

Upon the closure of the Apollo missions in 1972 with Apollo 17 which included a geologist on board, and NASA shifted into their plan for a space station. After several short lived solo attempts, NASA worked with other countries to complete the International Space Stations. NASA opened the admissions requirements to more than white males. An influx of new and more experienced astronauts flooded the system. The changes in training comes from these new applicants. Crew members exhibited in the manual remain neutral. No “he” is riddled within the manual like the previous ones. The training increased in intensity and the 1161 pages training manual proves that. Astronauts spent one year reading the manual before they are even selected for the program and complete rigorous training and unlike previous space missions learn to handle multiple maneuvers because of shift changes and in case of problems. The flight training manual describes reasons throughout especially when describing various duties, “orbit tasks are usually less time critical and responsibilities are redistributed as necessary. It is important that more than one crew member is trained for each flight task to protect from the occasion when the prime crew member might be ill or busy with another task” (“Shuttle” 8.1-1). Due to the length of their missions, many non-critical portions can be handled by anyone on board.

Astronauts for the shuttle read this manual first, so some description remain, but the descriptions remain knowing that the crew will have a background in mathematics and science. When describing the various tracking systems mathematical assumptions becomes evident when describing the “star tracking system consists of the negative Y axis tracker and the negative Z axis tracker. They are located just forward and to the left of the commander’s plus X window in a well outside the crew compartment […] the negative Z star tracker is pointed approximately along the negative Z axis of the orbiter, and the optical axis of the negative Y star tracker is pointed approximately along the negative Y axis of the orbiter” (“Shuttle” 2.13-11). Given the

language, readers should understand Y and X axis and where to find the X window without needing a thorough explanation. A chart is included (see fig. 4); however, much of it still does not explain more than what is necessary. Jargon and other complex language implies needing a more thorough background to understand the manual.

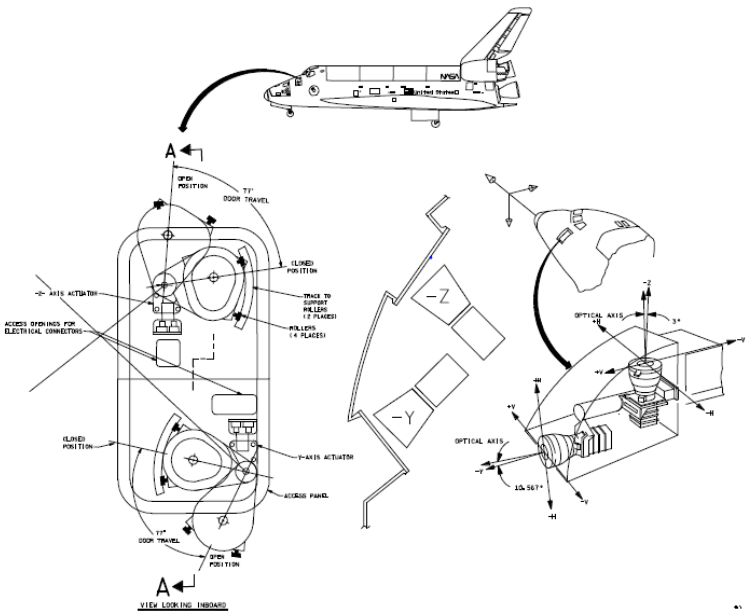


Figure 4: Chart showing location of Star Tracker System with the shuttle from "Shuttle Crew Operations Manual: OI-33." Space Program Operations Contract. *United States Alliance,* December 2008, https://www.nasa.gov/centers/johnson/pdf/390651main_shuttle_crew_operations_manual.pdf.

The shifts in language is only one portion of training that changed frequently during the larger portion of space travel. Astronauts moved from being a body on board to analytical scientists who spend hours studying various forms of space science. The manuals show the history and change within the program without difficulty. With the potential to begin exploring outer atmospheres again, hopes arise that NASA will soon create a new manual available for astronauts headed to Mars.

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"Technical Writing as Advocate for Change"

Throughout its course of existence, technical writing remains a large part of society. The documents created remain vital to changes and, at times, components of change. To explore these, the need to look at what changes occur in our ever-shrinking world and what steps people are taking to be sure the adjustments help advocates for change and understanding become necessary. Colton and Holmes (2018) suggest the need to move beyond passivity as technical communicators. Instead, technical communicators can no longer be "passive object of distribution" and instead must become "subjects of action" to promote change in the treatment of certain populations. Much of the focus for this remains in the direction of how to design documents that assist many who may be unable to help themselves. The need to create technical communication that can either bring the change or show change is needed and necessary. A large focus of this change comes from implementing human-centered design (HCD).

An understanding of human-centered design remains necessary before exploring its successes and problems. Basically, as Johnson describe: "human-centered design (HCD) philosophy proposes that end users be at the center of technical system designs" (as cited in Putnam et al., 2016). Zachry and Spyridakis (2016) discuss what is needed when exploring Rouse's definitions of the three most important objectives when creating pieces from the HCD viewpoint: "As he contends, work that is guided by HCD should:

1. 'enhance human abilities'
2. 'help overcome human limitations'; and
3. 'foster human acceptance'"

It is necessary to create design that is meaningful and relevant to users; therefore, human-centered design warrants examination as an option. Putnam et al. (2016) conducted a study with

information and communication technology workers to determine how they conduct research and ways they relate to the principles of HCD. After thorough and varying surveys, the research concluded the group found value in this approach. Some of the more positive claims included the helpfulness in understanding users; its usefulness to the design teams and its ability to fix conflicts and other problems; the research was an overall good experience; the teams had more buy-in and felt supported; and overall this study concluded that confidence grew due to communication. Negative claims occurred as well including a lack of organizational support and acceptance of implementation; some inaccuracies occurred; and it was too abstract or unclear to understand. Overall, when working with Information and Communication Technologies workers, the use of pushing HCD in research and practice maintained a positive outlook for the groups.

One group's research may not be enough to warrant shifting gears in design, but it proves that technical communicators need to pay closer attention to their design. When discussing a need for a shift in design, Emma J. Rose (2016) argues that the new approach of "human-centered design [as] an approach that focuses on the needs, contexts, desires, and input of the people who are the audience, or users, of the design." This approach moves away from being technology focused and how people's relationship with the technology is affected. Instead, it becomes an approach that considers the needs of those involved in the design. In considering what others need, technical communicators can become agents of advocacy. One method to activate change comes from determining how changes to varying forms of technical communication can prevent a particular group of people's way of living. It can pull resources away from them and make problems larger for an already vulnerable population. A population such as homeless people would be especially vulnerable to certain changes. Rose (2016) explores homeless bus riders as her argument that creating design to fit their needs, as a vulnerable

population, can assist them. Rose describes the term as “resource-constrained contexts” (433) and uses that to proves tensions and to further examine what needs could help an underserved portion of our society. She interviewed groups who lived in shelters and others who were transient. They were interviewed regarding their experience on the bus systems. Rose’s focus on the bus system came as a result to changes occurring within the system’s designs and policies. Overall, she discovered that many homeless people find privacy in a public scope like the bus system. Additionally, the people shared difficulties since they had limited funds and did not understand some of the rules regarding transfers or some of the other policies for riding.

Furthermore, this vulnerable population held community wide beliefs in utilizing ways to transport like the use of free rides. When digitization occurred on many bus systems, the homeless population became severely affected. Rose describes the dissolvement of paper transfer passes and how they became part of an online system. When a homeless population does not have access, they cannot use free public transport. Rose uses this, and other points, as an argument for cities to take their vulnerable populations into consideration when creating new designs. Cities need to use reports like hers to find alternative ways to assist all members of the population who ride the bus. The technical communication being created such as going paperless or the policies created in city hall need to come with careful deliberation of all members who ride the public transport. The questions that come into action come from the human-centered design aspect. By creating documents and policies that consider the limitation of its human users and consider it from another angle, those who do not always have a voice, suddenly have advocates.

For an expanded understanding of other cultures, modern approaches should be taken into consideration only when necessary. Godwin Agboka (2014) analyzes the importance of

expanding cultural understanding with post-colonial sites. He stresses the need to use research approaches for maintaining a shifting pace within the realm of technical communication and that recent approaches remain tied to modernist ideologies and the need to shift away from the history tied into the colonization is necessary. Instead, the current social justice challenges need to be addressed. By taking into consideration the ways of these cultural sites now, researchers of technical communication can present ideas that gather understanding and promote a change of thinking regarding these post-colonialized groups. Instead, Agoboka recommends utilizing decolonial methods when conducting intercultural research thus allowing for a proper knowledgeable background that warrants understanding of the long terms effects of colonization on technical communication. Using HCD to implement a simple change like including instructions for medical products being imported can help save lives. Secondly, if the instructions came with the products, they should be carefully examined and considered regarding the culture of these countries. These instructions should be clear and not bias. Many of the products attempt to lure patrons instead of educating them. Instead of assuming colonized ideas work best, as Agoboka argues occurs, companies and manufacturers need to remove any attempts that assume the consumer are unintelligent or dependent upon others to tell them what to do. This new method could create a successful campaign for utilizing HCD with regards to human rights and advocating for changes to societal regards of colonized areas.

Human-centered design is gaining ground among technical communicators as more research is pursed with this design type in mind. Another angle to advocacy that HCD can be used for is social justice. Instead of simple exploring how people experience and change the design, designers can move into creating a space for user input and appreciating information given by users and all of this follows the vein of social justice (Jones, 2016). By considering

social justice when designing, the dignity of those around persist in consideration. Keeping with this approach becomes necessary to work as both a technical communicator and an advocate. One aspect to approach human-centered design is to conduct research using narrative inquiry. Jones (2016) explores this form of data collection and describes it as a way to give "voice and agency" to people who possibly remain oppressed and othered. Keeping in mind that one designer cannot "fully understand how all users will employ the use mediating technologies, texts, and interfaces as tools used to complete communicative tasks." However, they can use narrative inquiries to understand experiences and needs while allowing users to feel valued and heard. Jones (2016) emphasizes how necessary it becomes to collaborate around the ideals of advocacy and social change to be implemented in all domains, communities, or disciplines as well as constantly engaging outside academia through tools like the narrative inquiries. By utilizing these approaches, positive changes will happen.

An expansion of human-centered design comes from images and using communities' knowledge to assist in implementing public policy. Patricia Sullivan (2016) examines the need for and challenges of using images of users when advocating for environmental policy changes. When communities share their knowledge, they push changes; however, their participation can be difficult since they are not experts. The need for experts remain, but the balance becomes how do researchers best utilize the human participants. The need to remain human-centered when designing components of change is necessary but should be carefully examined and controlled by experts. By doing so, in the case discussed by Sullivan (2016), environmental policy changes occur, but not without criticism. It is a fine line to balance users in discussion of technical communication changes. The only way to make whole changes when using images from others is to allow voices to be heard without needing a researcher to interpret feelings. It can grow the

validity of the research and make the participants a part of the decisions being made within their own community.

Another challenge when dealing in your audience and HCD comes from determine who that audience should be. Rebecca Walton (2016) concluded that “the field of technical and professional communication is beginning to engage more explicitly with human dignity and human rights” and conducted a survey to assist in this determination. Walton explored the need for products that can adapt to the needs of the users and that technical and professional communication works on creating communication for the users. The confusion comes in the cross between the two. Richard Buchanan determines that in design, it should first support human rights and dignity (as qtd. In Walton, 2016). To explore this idea, Walton studied the orphans from the Rwandan genocide to understand the usage of information and communication technology as a coping mechanism. The study conducted looked to see if these children were aware of the changes with their coping and, if they could be included in decisions of these technical items, they felt more vested in their world. Conclusions from this study shows that Rwandan youth have important viewpoints on the tools given to them. To ignore them is not only ridiculous, but also a poor use of resources. Rwanda youth need to feel valued to cope and offer invaluable information that can assist in the creation of technology-training materials. In the end, by showing value in their opinion, the youth of Rwanda could assist their government.

From its base, human-centered design remains a helpful tool for nations like Rwanda who need to rebuild after a terrible genocide. However, its helpfulness appears to be relevant beyond devastating events. In an effort to examine problems beyond the realm of business, Walton et al. (2016) describes the need to explore humanitarian organizations in order to enhance the practices of technical communication. In needing to preserve human dignity, as so many of these cases

explored, humanitarian culture becomes an important aspect to HCD. Walton et al explored how a large international organization supports disaster preparedness work and how they standardized their procedures. Some of the hurtles included the need to localize speaking for each audience and carrying the information over in the ways that seemed to work best at each location. Additionally, they stressed the importance of collaboration between the organization and the local community members. With these humanitarian efforts in full force, it becomes easy to see how humanitarian organizations create HCD whenever they expand into communities. This form of work seems a natural component of humanitarian efforts. Also, it is a fascinating study in an area beyond the normal business industry. In gaining an understanding of both, HCD becomes valid to every person involved in technical communication

Humanitarian organizations use HCD every time they communicate their message, but for employees in the for-profit sector looking for value in a workplace worth in HCD is available, if there is buy in. Without an investment from the technical communicators of the higher ups, HCD cannot remain important or relevant. Despite the struggles to determine the proper audience and use them alongside, instead of replacing, the experts may prove difficult, but in a world, that increasingly wants to see value in what they are working on, human-centered design is an idea that will remain, and not disappear with the next new trend.

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“Resource Guide to Teaching Technical Writing”

Table of Contents

Teaching Philosophy

Education should mean a rich and fulfilling experience for all children. School should be a place to learn subject matter alongside life skills. Given children an education allows them to become independent and successful in life. Students should be able to think analytically when they are done with their education. They should have confidence in themselves to make decisions that will lead to success in their own lives.

One of the ways students gain confidence is for them to be able to write for life. Students need to know what genre of writing works for what situation. Students need to understand different types of writing, structure, organization, and skills. Students can learn to convey their thoughts through writing. Writing is used in all careers and it will help students. Additionally, students should see the value in their writing as it relates to the real world. Students will be able to learn and make mistakes within my classroom to learn. I believe in allowing them the opportunity to redo as many assignments as necessary to learn their skills.

Beyond the curriculum, students should remain the focus in every day classrooms. My role as the teacher consists of making my classroom an open learning place. I want a classroom that is a safe zone, free from prejudices, discriminations, and another negativity. Students cannot come to school and not have to worry about how they might be treated, but about what they are going to learn. Students' opinions are welcome, but intolerance towards others will not be accepted.

My style for teaching in the classroom will consist of working every day towards a goal. I want the students to know what they are reaching towards every day to help them remain focused and on task. I want my students to feel they can achieve the expectations set out for them. To do so, I need to work closely with them to set these goals. I also want to have group

work and discussions in my classroom to help students understand how to work with others in life, as they will over and over again in life beyond school.

If a student struggles with schools, I will investigate the services available for them and assist them. I will advocate for students' rights. Also, I will always be willing to assist students outside of class time when they need it. I will take into consideration all students' individual needs and work towards building goals for improvement with them.

Finally, with all these goals being set with all my students, it is important to get the parents involved. Not just twice a year at parent-teacher conferences, but with other correspondence throughout the school term. Using technology to create a webpage or other notifications to update the parents and students about important dates and information. I will post daily work and long-term assignments in this media. Parents will see more about their children's schooling and be more active participants of the education.

To properly teach our children, the community, parents, schools, and teachers need to develop core values which will work with the education of our children. These values will allow students to transition into their lives feeling fulfilled and able to succeed in their society. I feel like the only way I can do all this is to listen, pay attention to the environment around me, and focus on the individual student. If I can handle the problem on my own, I will, otherwise, I will not be afraid to use my resources. The point of being an educator, to me, is to connect with my students as I move them through the world towards becoming thoughtful, innovative people.

Position for Teaching Technical Writing

Technical writing is one of the most helpful forms of writing for students. My approach with technical writing is to, first, show students the practically of understanding technical writing. They need to see the real-world value of technical writing. For them to see that, my teachings would involve completing various case studies, role-playing, and various hands on methods. Students need to be involved in their learning and in order to have a full understanding of technical writing. The more involved they are in the planning and doing of technical writing, the easier it will be for them to understand the genre. Secondly, the idea of the different genres is an area students need to work on. They will, at some time in their careers, work with at least one of these genres. They need to have a full scale understanding of them. Finally, students should see technical writing incorporated with other areas. By allowing students to see its intermingling with other genres, like literature, they can see how intermixed technical writing is within the world. Additionally, this should help to keep students' attention more with the activities. It helps break their units up into more manageable chunks.

Curricular Objectives

1. Students will be able to maintain an understanding of various genres of technical writing.
2. Students will show understanding of the 5 traits of technical writing and be able to implement them.
3. Students will analyze pieces of technical writing for different audiences and determine best practices.
4. Students will develop complex texts to convey ideas, concepts, and information clearly.
5. Students will produce clear and coherent writing and will strengthen writing through revisions, editing, or trying new approaches.

Syllabus

Ms. Crystal Michels
Fall 2016
Email: crystaldmmichels@srt.com
Office Hours: MWF 8-850 AM

Welcome to Introduction to Technical Writing. I look forward to the next 16 weeks with you.

This course is intended to be an introduction. It is assumed that none of you have had experience with technical writing before and this course will be your starting point. I am available via email and generally will reply to you within 12 hours. Also, I use the app REMIND to send quick class announcements and to send quick messages. I will have the sign-up information for you on the board the first day. Remember, I am here for you, but only if you communicate with me. I am available to meet face-to-face or Skype if needed.

Required Book:

Practical Strategies for Technical Communication by Mike Markel
Bedford/St. Martin's, 2013
ISBN: 978-1-4576-0940-4

Course Description
This course will introduce you to the fundamentals of writing, designing, and communicating technical information to a variety of audiences. This course studies technical writing conventions such as organization, style, and tone. Additionally, you will learn the creation of graphics and the layout of documents. Practice of the writing process will consist of producing a variety of common technical documents. Upon successful completion of this course, you will be able to:

•Identify and target appropriate audiences for specific communication contexts;
•Create technical documents based on an understanding of the genre and to maneuver the structure of the documents based on this;
•Integrate text and graphic elements into documents that effectively communicates the technical information;
•To work both on your own and with others to complete research, analysis, and debates;
•To use the elements of technical writing for successful practice
•Edit documents for content, organization, clarity, grammar, tone, and style.

By the end of the course, you will have an understanding of how to use writing to communicate different forms of complicated information to a variety of audiences. Your writing will assist you to develop a communication style to convey your knowledge of the information necessary.

Expectations for the course

This course will serve you for future courses, but to have success, you must remember the following expectations:

- **Meet deadlines:** Deadlines are added for a reason and you need to meet them. If an issue arises in your personal life, you need to let me know immediately and they will need my consideration.
- **Formal Writing Rewrites:** You have the chance to revise all formal writing, with communication to me, so I would suggest utilizing this. My policy remains that you may revise them. Remember, unless it is a major crisis, I do not accept late papers.
- **Communicate:** To have your questions answered, you need to communicate. If you do not, it is assumed you understand.
- **Enjoy:** This course is intended to teach you a new material, enjoy the educational chance, and remember this is a chance for you to learn and make mistakes. When you start working, you will have this knowledge available for you.

Assignments: Each of the following assignments are considered your formal assignments. Each of them will come with a more specific set of instructions and a rubric as we approach them. Combined they will be worth a total of 85% of your final grade.

- Informational Brochure
- Proposal
- Memo
- Recommendation Report
- Job-Application Materials – Resume/Cover Letter
- Definition/Description
- Web Sites
- Oral Presentation

Informal Writing Assignments and Group Participation will be worth 15%.

-Informal Writing Assignments consist of responses to the chapters and other discussions presented. Group Participation will consist of being an active member of your group when you research, plan, and create your oral presentations.

Honor System
This course follows the school's policy on academic honesty and plagiarism. See Student Information or your handbook for full information.

Schedule for the Course – The expectation is that we will discuss these chapters on the dates stated. You will be responsible for having them read before the days they are discussed. If you have the reading complete, you will be prepared for group discussions and the studies that we complete together in class.

Week One	**Day 1:** Introduction to course **Day 2:** Chapter 1: "Introduction to Technical Communication" Complete Exercise 2 on pg. 15 in class **Day 3:** Chapter 2, "Understanding Ethical and Legal Considerations" Complete Exercise 1 on pg. 31 in class
Week Two	**Day 1:** Chapter 2, "Understanding Ethical and Legal Considerations" Complete Exercise 2 on pg. 31 before class **Day 2:** Complete Chapter 2, "Understanding Ethical and Legal Considerations" Begin Chapter 3, "Writing Collaboratively and Using Social Media" **Day 3:** Continue Chapter 3, "Writing Collaboratively and Using Social Media" Complete Exercise 6 on pg. 53
Week Three	**Day 1:** Chapter 4, "Analyzing Your Audience and Purpose" Complete Exercise 1 on page 77. **Day 2:** Chapter 4, "Analyzing Your Audience and Purpose" Complete Exercise 2 on page 77. **Day 3:** Chapter 4, "Analyzing Your Audience and Purpose" Complete Exercise 4 on page 77.
Week Four	**Day 1:** Chapter 5, "Researching Your Subject" Complete Exercise 1 on page 103. **Day 2:** Chapter 5, "Researching Your Subject" Complete Exercise 3 on page 103. **Day 3:** Chapter 5, "Researching Your Subject" Complete Exercise 5 on page 103. **Informational Brochure is due at the end of this week.**
Week Five	**Day 1:** Chapter 6, "Writing for Your Readers" Complete Exercise 3 on page 136. **Day 2:** Chapter 6, "Writing for Your Readers" Complete Exercise 5 on page 137. **Day 3:** Chapter 6, "Writing for Your Readers" Complete Exercise 6a on page 138.
Week Six	**Day 1:** Chapter 7, "Designing Documents and Web Sites" Complete Exercise 1 on page 175. **Day 2:** Chapter 7, "Designing Documents and Web Sites" Complete Exercise 4 on page 176. **Day 3:** Chapter 7, "Designing Documents and Web Sites" Complete Exercise 5 on page 176.

Week Seven	**Day 1:** Chapter 8, "Creating Graphics" Complete Exercise 1 on page 213. **Day 2:** Chapter 8, "Creating Graphics" Complete Exercise 4 on page 214. **Day 3:** Chapter 8, "Creating Graphics" Complete Exercise 7 on page 215. **Website Design due at beginning of next week.**
Week Eight	**Day 1:** Chapter 9, "Writing Correspondence" **Memo Draft due on Day 2** **Day 2:** Chapter 9, "Writing Correspondence" **Day 3:** Chapter 9, "Writing Correspondence" Complete Exercise 6 on page 241. **Revise Memo for next week.**
Week Nine	**Day 1:** Chapter 10, "Writing Job-Application Materials" **Cover Letter/Resume rough draft due today.** **Day 2:** Chapter 10, "Writing Job-Application Materials" Complete Exercise 6 on page 273. **Day 3:** Chapter 10, "Writing Job-Application Materials" **Cover Letter/Resume is due at the beginning of next week.**
Week Ten	**Day 1:** Chapter 11, "Writing Proposals" Complete Exercise 3 on page 296. **Day 2:** Chapter 11, "Writing Proposals" **Proposal Rough Draft due.** **Day 3:** Chapter 11, "Writing Proposals" **Revised Proposal due next Monday.**
Week Eleven	**Day 1:** Chapter 12, "Writing Informational Reports" Complete Exercise 2 on page 313. **Day 2:** Chapter 12, "Writing Informational Reports" **Select Case Study for Recommendation Report** **Day 3:** Chapter 12, "Writing Informational Reports"
Week Twelve	**Day 1:** Chapter 13, "Writing Recommendation Reports" **Find Recommendation Report to Analyze** **Day 2:** Chapter 13, "Writing Recommendation Reports" **Day 3:** Chapter 13, "Writing Recommendation Reports" **Submit rough draft of Recommendation Report**
Week Thirteen	**Day 1:** Chapter 14, "Writing Definitions, Descriptions, and Instructions" Search for 5 different sets of directions/instructions/descriptions **Day 2:** Chapter 14, "Writing Definitions, Descriptions, and Instructions" Complete Exercise 8 on page 389. **Day 3:** Chapter 14, "Writing Definitions, Descriptions, and Instructions" **Rough Draft of Directions from your field.**
Week Fourteen	**Day 1:** Chapter 15, "Making Oral Presentations" **Meet with groups to outline presentation**. **Day 2:** Chapter 15, "Making Oral Presentations" Complete Exercise 1 on page 412. **Day 3:** Chapter 15, "Making Oral Presentations"

	Submit proposal for group's oral presentation.
Week Fifteen	**Day 1:** Oral Presentations **Day 2:** Oral Presentations **Day 3:** Oral Presentations
Week Sixteen	**Finals –** Schedule TBA

5-day Lesson Plans

Day 1:

Bell work: Students take list of mock instructions. One example I could use is here.

Discuss the students' issue with these directions. Mention that they will be working on creating directions for their peers over the next few days.

Discuss the five traits of technical writing with this PowerPoint.

Day 2:

Bell work: Students find a partner and obtain a Ziploc bag. They will write each person's name on this bag.

Discuss the task for today.

1. Students will create a home for a gummy bear using the supplies given to them.
2. They will be handed the directions (which are terrible on purpose) and their first task is to determine how many toothpicks and marshmallows they need.
3. Once they have their supplies, they will need to work with their partner to build the house.
4. When students think they have it complete, they will bring it up for comparison to the model home already made. It will not match. They will have to perform the task again and again until it matches. Do not let them see the house until they have made at least two attempts.
5. Once the house matches, they are given their gummy bears for the house. They may also eat the house. While they are eating their house, with their partner, they will create a list of at least five ways the instructions can be improved.
6. This whole activity takes most students at least thirty minutes to complete. Once there are fifteen minutes left stop everyone and make sure they are working on their lists.
7. Share their lists with the whole class and compile a class list of issues. If one is missing, add it. List should contain at least the following: A supplies list, graphics, steps that are broken up more, steps that are labeled correctly.
8. Tell students that they will be creating their own houses tomorrow with their partner.

Day 3:

Bell work: Students will take their Ziploc bags and grab no more than 35 toothpicks and 30 marshmallows for their house.

Discuss that today students will be creating their own marshmallow houses. They will design them with the idea that they will need to write instructions for them as well.

Rules for instructions consist of the problems they had with my instructions (like needing graphics) and need to have at least ten steps.

1. Students will build their houses.
2. Students will write their instructions keeping in mind the five traits of technical writing. Remind them that their audience is their peers.
3. Once students are complete, they will see me to have a picture taken for comparison tomorrow.
4. Students will create a second supply bag for their marshmallow houses for use tomorrow.
5. Students are allowed to eat their marshmallow houses.

Day 4:

Bell work: Students will exchange directions and supply bags with another group.

Tell the students that it is their task to complete the building of this house. They are not allowed to ask the other group for pointers and the other group cannot look at what they are doing.

1. Students build the houses based on the instructions.
2. Students have me show them the picture of the other house to compare.
3. Students will receive their gummy bears.
4. Groups exchange built houses and have pictures taken again.
5. Students are again allowed to eat houses.
6. Students will complete evaluations of their peers' homes following the prompt- first page.

Day 5:

Bell work: Students grab reflection sheet- page two.

1. Students will complete reflection – timed writing for ten minutes.
2. Students will take their original instructions and, with partner, make corrections.
3. Groups will exchange and determine if the new instructions would be more helpful. They will work together to make the adjustments.
4. Students will spend the last ten minutes brainstorming new ways to consider for creating better instructions.

Overall, for this activity, students are graded on their willingness to participate. Their own abilities to follow my directions come into this as well. Also, they are graded on their ability to be constructive critics and their reflections.

Instructional Brochure Assignment

Students have performed research in preparation for their narrative writing piece they will begin. To help them condense the information they read into usable portions, they will create a "How to Survive…" informational brochure. In other words, their narrative consists of a character who is trying to survive in some sort of natural event – like a tornado or a shark attack. By creating this brochure, it allows them the chance to learn more about how people really do survive these events. By condensing down their information in this matter, they are taking notes from their reading in a more interesting manner. With this information, they will have their narrative's characters carry out these steps. With this brochure, they begin the brainstorming process.

Outcomes: Students will…. (ELA Standards: W.2, W.4, W.6, W.8; Proficiency of Scale W.2)

1. Be able to find citations to support the main idea of "How to Survive"
2. Write an explanatory text that conveys a main idea and has appropriate, sufficient facts
3. Produce clear and coherent writing that is appropriate for the task at hand
4. Use technology to produce and publish their product
5. Have conducted a short research project to answer the question "How to Survive …"
6. Properly cite their information found in MLA format

Before beginning this assignment, students will need to complete research in which they will find at least one article and one website (credible) that provides tips on surviving the natural disaster of their choice. Additionally, they are responsible for finding an article or news interview or a video with a person who survived such this natural disaster. Once the research is complete, they will begin compiling their brochure. The following are required (reference to Gerson text for formatting):

1. A set brochure format (found online)
2. A title page that contains a title, at least 1 graphic, and contact info (made up, but must make sense – like a local park service or the city of….)
3. Back panel with their sources set up in MLA format with hyperlinks. It will be under the headings: For more information, see:
4. The body panels must consist of headings and subheadings. The steps should be set up in a consistent manner (1,2,3 or using subheadings)

5. At least 3 more graphics within the body panels
6. Should include at least one quote from a survivor
7. Should remain helpful and positive
8. Should explain terms that would be necessary for their audience (general public)
9. Needs to be clear and concise – steps should not contain long sentences
10. Should be mostly error free (appropriate for a ninth-grade level)

Once their brochure is complete, they are required to publish it within our classroom website. They will be expected to share their brochure in small groups and the group members will be given brief quizzes to determine if they remember what to do to survive said natural disaster. The quizzes consist basic questions like “Name 3 steps you should take in the event of this disaster.”; “Name one supply item that would help you with this disaster.”; “What is one new idea you can take from hearing about this disaster?”

Instructional Brochure Rubric

	4-Exemplar	3-Proficient	2-Paritially Proficient	1-Novice
Graphics	Student had all of the graphics necessary; they were above expectations and matched the information on the brochure.	Student had all the graphics and they were dispersed throughout the brochure well.	Student was missing one graphic or did not disperse them throughout the brochure.	Student was missing more than one graphic and/or did not disperse them throughout the brochure.
Title Page/Back Page	Title page contains all three elements. Back page- MLA citations are done correctly.	Title page contains all three elements. MLA citations are mostly correct.	Title page is correct or missing one item and/or MLA citations have several errors.	Title page is missing one or more items and/or MLA citations are missing or several incorrect.
Body Panels	Headings and subheadings are provided and match brochure. Quote from survivor work with the brochure.	Headings and subheadings are provided. Quote is posted.	Headings and subheadings are missing elements or do not work and/or quote is missing or lacking quality.	Headings and/or subheadings are missing/lacking and no quote.

Positive Tone/Clear /Concise	Tone remains positive and informative. Information is conveyed well and easy for audience to understand.	Tone is mostly positive and/or little errors with information	Tone does not stay positive. Multiple errors.	Tone does not stay positive. Too wordy of sentences.
Audience	Considered audience and used evidence that best suits them	Audience is obviously considered.	Does not take audience into consideration in moments.	Never seems to consider audience

Multicultural Technical Writing Assignment

Markel, Mike. *Practical Strategies for Technical Communicators.* Boston: Bedford/St. Martin's, 2013. Print. – The pages referenced in this activity are from this book.

5 Minutes: Students will get into groups and quickly select one of the following culture groups they must choose from are: France, Italy, Mexico, China, Iran, Saudi Arabia, India, Brazil, Canadians, and Native Americans. Students will begin this section by studying the seven cultural variables that lie "on the surface" (political; economic; social; religious; educational; technological; linguistic) (from Markel) within one culture of their group's choice.

10 Minutes: After this, the group will determine the six cultural variables that lie "beneath the surface" (focus on individual or groups; distance between business life and private life; distance between ranks; nature of truth; need to spell out details; attitudes toward uncertainty (from Markel). They will take notes on this and look for possible examples.

10 Minutes: Once they have completed this task. They will be handed a business letter that is written for a customer in the United States (taken from pages 70 & 71 in Markel). Their group's task will be to adjust the letter, so that it is appropriate for the culture they have studied. Before they begin, have them note the comparisons between the letter on page 70 (for United States audience) and on page 71 (for Japanese audience). The group should note the difference between the two letters before they begin working on their letter. This will help them determine areas they could change for their letter.

20 Minutes: Groups will work to rewrite the business letter using the variables they have studied. Once the letter is done, they will write a response for it justifying why they made the changes they did and using the research they found to help with this. If time remains or the next day, the groups will present their changes to the class. Discussion on the differences will follow.

Multicultural Activity Rubric

	4-Exemplar	3-Proficient	2-Paritially Proficient	1-Novice
Research	Students complete finding information on all of the cultural variables with thorough notes.	Students find all of the cultural variables.	Students find most of the cultural variables.	Students missing many of the variables in their research.
Comparisons	Comparison between the U.S. letter and Japanese one is thorough and references several of the variables.	Comparison references several of the variables.	Comparison references some of the variables.	Comparison is lacking variables and does not contain much of a variable.
Business Letter Revised	Students completed a new letter and adjusted all of the variables, plus more.	Students completed a new letter and adjusted all of the variables.	Students completed a new letter and most of the variables.	Students completed letter with few variables or students did not complete the letter.
Discussion	Students are able to explain and lead discussion on their choices.	Students can explain and discuss their choices.	Students do not fully explain their choices or do not discuss all aspects.	Students do not lead or explain. Unable to participate.
Format	Letter follows the format and continues to exceed format expectations	Letter meets the format guidelines and expectations.	Letter meets most of the format for a business letter.	Letter does not meet the format.

5 Additional Online Assignment Examples

1. Product Description and Memo: This one covers two major types of technical writing and incorporates it with literature being read in class. Students are asked to write a product description based on an item from the novel they are reading. Second, they are asked to

create a memo in which they compare and contrast two characters from their novel. It is intended to make connections to reading and to prepare them for a complaint letter later.

https://docs.google.com/document/d/1LgYjynfXSKT9G4vcAQgBRniFc8r61pCut4MeFJVv1o/edit?usp=sharing

2. Definition Assignment: This assignment has students draft several different definitions in multiple ways and it pertains to their area of study.

https://www.englishonline.net/mywriting/technical/assign/S1L3.html

3. Memo Revision Exercise: This one is the second one on the page. It looks into how to fix a memo that is lacking clarity and coherence.

http://www.collier.sts.vt.edu/3764/assign/exercises.htm

4. Recommendation Report Assignment: This assignment helps students create a recommendation report. It sets everything up for them in terms of their audiences and the organization.

http://www.kristisiegel.com/RecommendationReport.doc.

5. Audience Analysis Assignment: This assignment is interesting. It uses cereal boxes to help students determine audience. They are to determine who the cereal's demographic audience is and why. I also added a chart that might be helpful to have them complete with it.

http://www.etsca.com/tscjonline/1206-cereal/
http://www.cengage.com/resource_uploads/downloads/1413001890_32910.pdf

15 Article Summaries

1. Eble, Michelle F. "Content Vs. Product: The Effects of Single Sourcing On the Teaching of Technical Communication." *Technical Communication: Journal of The Society for Technical Communication* 50.3 (2003): 344-49. *ERIC*. Web. 21 May 2016.

In the article, “Content Vs. Product: The Effects of Single Sourcing On the Teaching of Technical Communication,” Michelle Eble makes the argument that single sourcing allows technical communicators to become more involved with their writing. She advocates for it by discussing some of its advantages, such as the cost effectiveness since less time is necessary to edit and adjust the end result. She continues by discussing how the classroom teachings of technical writing must change as well. Eble further explains that, in order to best approach single sourcing, it helps to understand the process. She describes how single sourcing allows someone to create the information in one area and it can be used in any form of documentation. Eble describes the process of teaching single sourcing as “information modeling” and “structured authoring.” She further explains that students who learn this process are of greater value because their written content holds more value. Eble further describes “informational modeling” as identifying how writers work with the content to create it and manufacture it. With “structured authoring,” students simply write and add labels that describe their content and allow them to use it with variety. Eble concludes with a push towards implementing single sourcing because it is what the students need.

2. Ford, Julie Dyke, and Tie Wei. "Quad Charts in The Classroom to Reinforce Technical Communication Fundamentals." *Journal of Technical Writing & Communication* 45.3 (2015): 275-284. *Communication & Mass Media Complete*. Web. 21 May 2016.

In the article, “Quad Charts in the Classroom to Reinforce Technical Communication Fundamentals,” Julie Dyke Ford and Tie Wei discuss why quad charts are important especially in the classroom. They begin by explain what a quad chart consists of and how technical writing benefits with the use of quad charts. Ford and Wei present a background on quad charts that discuss not only their history but the benefits and application of this genre. They dive into discussing how quad charts were not discussed frequently within the higher academia setting. Further, Ford and Weis emphasize the value of introducing quad charts to students and the importance of allowing them the time to apply their knowledge of quad charts to their own writing. They additionally discuss how important quad charts are within the realm of engineering and how quad charts help engineering students understand different concepts in fluid mechanics. Through the use of quad charts, Ford and Wei further argue that students are able to replicate something they will be performing within their future work. They include examples of student feedback regarding the use of quad charts within an engineering classroom. Finally, they ended with specific lessons learned and suggestions for implementation.

3. Soria, Krista M., and Brad Weiner. "A 'Virtual Fieldtrip': Service Learning in Distance Education Technical Writing Courses." *Journal of Technical Writing and Communication* 43.2 (2013): 181-200. *MLA International Bibliography*. Web. 21 May 2016.

In the article, “A ‘Virtual Fieldtrip’: Service Learning in Distance Education Technical Writing Course,” Krista Soria and Brad Weiner discuss the study their performed on the effects of service learning on a distance education writing course. Their study looked into distance education because the need to see how traditional education carries over distance education was important to them. To begin, they explained why they chose service learning. To the authors, service learning has multiple benefits to the students and can motivate students to develop certain skills. This has been proven in several past studies discussed in the article. Soria and Weiner

discuss how they felt that service learning was an experimental form of learning for online education. Their experiment consisted of asking students to participate in a course that offered service learning and one without. Students in the service learning groups were given projects with non-profits and complete a reflective journal. Thirty-six total students participate and Soria and Weiner provide data regarding the students as well as the questions used to analyze their reflections. Their results show a 54% increase in learning outcomes. They emphasized the importance of service learning because it connects to the "real world" since students feel grounded to the community now and see a purpose to their learning. They ended by discussing some of the themes the students mentioned in their service learning and how these themes have the potential to assist them in the "real world."

4. Warren, Thomas L. "Learning to Teach and Do." *Journal of Technical Writing and Communication* 45.4 (2015): 392-401. *ERIC*. Web. 28 May 2016.

In his article, "Learning to Teach and Do," Thomas L. Warren discusses some resources and approaches to teaching technical writing without any formal training. Warren begins by explaining his start in the realm of technical writing. Warren discussed his self-teachings to prepare for a letter writing workshop as well as how he needed to teach himself again when he was a public relations officer. Warren moves into talking about his work towards his PhD and how, despite his lack of formal training, he was offered a position teaching technical writing. Once he spent some time in South Dakota teaching at a 2 year college Warren was offered a job as the director of a technical writing program at OSU. Warren emphasized that he accomplished all of this without proper academic training. He moved into the problems he discovered as his built his program and offered advice. His advice included the need to pay attention to the politics around the technical writing program and make sure others understand its validity, understanding the community in which a program is a part of, and to seek help from other professional sources. Finally, he concludes by reminding teachers of technical communication to remember the cross-cultural communities and to explore that aspect more when learning about technical communication.

5. Amare, Nicole. "To Slideware or Not to Slideware: Students' Experiences with PowerPoint Vs. Lecture." *Journal of Technical Writing and Communication* 36.3 (0001): 297-308. *FRANCIS*. Web. 28 May 2016.

In the article, "To Slideware or Not to Slideware: Students' Experiences with PowerPoint vs; Lecture," Nicole Amare discusses a study in which she compares how well students perform in a traditional class setting versus one in which the materials are presented in PowerPoint format. The conclusion with this particular study discovered how the students who used traditional means like lecture, notes on the board, and handouts performed better on the posttest when compared to the students who learned with PowerPoint. Amare begins by describing past thoughts on PowerPoint and how people thought PowerPoint makes people stupid and how other researchers even blamed PowerPoint for the Challenger explosion. Additionally, Amare discusses how narrative helps people remember materials versus bullets or lists. PowerPoint was created to assist poor speakers to improve their abilities and it does, but it also hinders great speakers. After setting up the background, Amare moves into her own study again. She describes how many students prefer PowerPoint in terms of learning materials, yet they did not perform as well as their traditional counterparts. Amare admits to some of her own faults in regards to the PowerPoint. She admits that students might have done better with traditional since that is her

stronger part of teaching. She ends with discussing how students' attitudes were mostly positive, but that perhaps PowerPoint belongs in a business world and not academia.

6. Lemanski, Steve. "Proposal Pitfalls Plaguing Researchers: Can Technical Communicators Make a Difference?" *Journal of Technical Writing & Communication* 44.2 (2014): 211-222. *Communication & Mass Media Complete*. Web. 28 May 2016.

In the article, "Proposal Pitfalls Plaguing Researchers: Can Technical Communicators Make a Difference?" by Steve Lemanski, the problems with grant writing and proposals is presented. Lemanski discussed how the biggest shortcomings to grant writing comes from a significant lack of planning on the part of the grant writer. He determines the terminology that will be used for grant seekers is researchers and adds terminology about high and low differentiators. He emphasizes how low differentiators do not look at the differences between people and thus cannot write proper grant proposals because of the inability to notice these differences. Lemanski moves into discussing how grant proposals are similar to business proposals and that the habits formed from scholarly journals are bad in regards to grant writing. He also emphasizes three areas in which major errors are made in regards to grant proposals. They fall into three categories: 1. Failure to speak to an audience; 2. Failure to recognize and adapt to a genre; 3. Failure to due diligence. Lemanski examines each in further detail. The biggest assistance he offers grant writers is that they need to recruit the help of a technical communicator. He cites some reasons like the use of an objective tone, how others do when technical communicators are employed to help, and how they can engage any type of audience given their experience. Lemanski shares his validity in recruiting technical communicators assistance and utilizing them. He concludes with some final advice in the separate areas of grant writing and how to properly set up each section.

7. Frith, Jordan. "Social Network Analysis and Professional Practice: Exploring New Methods for Researching Technical Communication." *Technical Communication Quarterly* 23.4 (2014): 288-302. *Education Research Complete*. Web. 3 June 2016.

In the article, "Social Network Analysis and Professional Practice: Exploring New Methods for Researching Technical Communication," by Jordan Frith, the idea of Social Network Analysis (SNA) and its ability to assist in the realm of researching technical communication is discussed. Frith begins by sharing the background to SNA and how it relates to other theories – Activity Theory and Actor-Network Theory. Frith describes how SNA would be an improvement over the other two theories because it works more as a map of individuals when they work in a social site. He moves into describing the history of SNA and how research has moved from qualitative to quantitative. Once, he completes the background of SNA, Frith tells readers how useful it will be for technical communicators. He describes the idea of technical communicators working within organizations more and more and the need for them to know how to approach and make connections within this organization. SNA can assist with that. Frith shares that SNA "approaches can be used to map the positions of technical communicators in organizations and possibly to explore the interplay between structure and individual agency" (297). When technical communicators work together, Frith believes it shows how collaboration plays out, practice wise. He concludes by mentioning how technical communicators take theories from other areas anyway, so they can easily start using SNA.

8. Johnson-Sheehan, Richard, and Larry Morgan. "Conservation Writing: An Emerging Field in Technical Communication." *Technical Communication Quarterly* 18.1 (2008): 9-27. *Education Research Complete*. Web. 3 June 2016.

The article, "Conservation Writing: An Emerging Field in Technical Communication, " by Richard Johnson-Sheehan and Larry Morgan discuss the issues within biotechnology and the environment is creating a demand for technical communicators. Their article discusses the need for conservation writing in three ways: 1) the history of conservation writing; 2) the most common genres and conventions; and 3) the strategies educators can take to prepare their students to write in this field. Johnson-Sheehan and Morgan begin by exploring the history of conservation writing. They begin by discussing the precursors: Emerson, Thoreau, and Audubon. These three men did not necessarily write directly about conservation, but they started the conversation. Next, they discuss George Perkins Marsh, John Burroughs, and John Muir who all began writing about conservation in various books and essays. Next, the movement began in which conservation clubs were formed and Theodore Roosevelt signed the Antiquities' Act in 1906, which protected federal park lands. Johnson-Sheehan and Morgan mention that with the signing of the Antiquities' Act, the need to recruit conservation writers erupted. Finally, to modern times, where writers like Aldo Leopold and Rachel Carson set standards for bureaucracy and conservation writing. As the federal government move into conservation, with the EPA act being passed by Nixon, among others, Johnson-Sheehan and Morgan mention that with the government involvement the need for conservation technical writers is wide open with plenty of opportunities. They moved into genres next and listed Natural Histories, Feature Articles (like how to guides), Analytical Reports (that allow readers to see how ecosystems are impacted by human behavior), Technical Descriptions (which describes artifacts on sites and their care), and how brochures, newsletters, and handouts can explain the benefits of conservation to the general public. Johnson-Sheehan and Morgan stress the importance of students knowing NRI, EMP, and EMS reports to assist them with understanding the standards set and how to work with the government. Finally, the authors explore suggestions for pedagogy. They mention the importance of knowing the genres, along with getting practice with them, even if they are mini practices. Also, having an understanding of the laws related to conservation is important for technical writing and knowing what political issues are in debate. Finally, Johnson-Sheehan and Morgan conclude by emphasizing how the demand for these type of writers will only increase as more problems in conservation emerge.

9. Verzosa Hurley, Elise, and Amy C. Kimme Hea. "The Rhetoric of Reach: Preparing Students for Technical Communication in The Age of Social Media." *Technical Communication Quarterly* 23.1 (2014): 55-68. *Communication & Mass Media Complete*. Web. 3 June 2016.

In Elise Verzosa Hurley and Amy C. Kimme Hea's article, "The Rhetoric of Reach: Preparing Students for Technical Communication in The Age of Social Media," the idea that technical communication instructors are in the perfect position to teach social media as a key to the lives of technical communication professionals is presented. They begin by discussing the problems social media presents for professionals, citing examples like Anthony Weiner and Alec Baldwin. Seeing very public examples of people faced with issues due to social media, the authors share concerns students have regarding the use of social media in a professional setting. Verzosa Hurley and Kimme Hea transition into the idea that instructors can teach social media

and help "demystify the current rhetoric of fear and illegitimacy about social media (56). The authors show how much social media is used within our society and how it is necessary to look at how assumptions with technology penetrates the classroom and what can be done to resist this. To begin, Verzosa Hurley and Kimmie Hea suggest studying the complexities of media and how it functions. They move into the specific course they both teach and have collaborated on: ENGL 313, which is a junior-level technical communications course. They described how they asked students to reflect on social media in relation to writers and writing. Many students' responses involved the idea that social media harms writing in a variety of ways. Verzosa Hurley and Kimme Hea point out that many of the students in this class never had prior experience writing to a broad audience and felt the challenge. They mention that the use of these surveys are important because they help create assignments that allow students to interact with social media and to think critically of the ways social media relates to the professionalism of technical writing. Additionally, the authors discussed other projects in which the students utilized online services such as LinkedIn, Instructables, and various Google apps. With each assignment, they had the students post links on social media and other places in attempts to earn feedback. In addition, they asked their students to send the links on professional listservs and via the school email system. Verzosa Hurley and Kimme Hea's point in this activity was for students to see the validity of social media presence for people within the professional realm. To conclude, the authors reiterated the idea that students need to see social media work in a different manner, like crowdsourcing, to establish their online technical communicator status.

10. Batorsky, Barry, and Laura Renick-Butera. "Using Role-Plays to Teach Technical Communication." *Innovative Approaches to Teaching Technical Communication.* Eds. Tracy Bridgeford, Karla Saari Kitalong, and Dickie Selfe. Logan, UT: Utah State University Press, 2004. 148-167. Print.

In the article, "Using Role-Plays to Teach Technical Communication," Batorsky and Renick-Butera discuss the importance of teaching technical communication students how to handle personal incidents of failed communication. They determined that these role-play exercises become rehearsals for success. Batorsky and Renick-Butera mention that, through this role-play, they, as instructors, become facilitators of learning instead of lecturers. They begin by describing how to create a classroom for role-play. Batorsky and Renick-Butera introduce rhetorical analysis and emphasize that students need to have power over their language skills to improve communication. Their process varies based on the class and the semester. They determine which rhetorical situations each of their classes need and are often willing to start a role play at any moment. Batorsky and Renick-Butera emphasize the importance of having students attempt to write their own scenarios and they place them into groups based on these scenarios. This helps the instructors determine what issues students need to work through and discuss. Additionally, they discussed the need to keep the time within a half an hour because too much time is counterproductive and students need less time to get into the role-play and to stay engaged. Batorsky and Renick-Butera mention that every role-play group begin by reacting in the same ways. The leader "lectured and punished" … "the delinquent student-actor naturally pulled away" (160). Through discussion, students are able to see these behaviors and recognize what to do. After the role-plays are complete, Batorsky and Renick-Butera mention that this role-play assists with more traditional academic assignments later because it builds their confidence to succeed. Another part that assists students' writing is when they have the students determine a solution to a problem through both external resources and their own determination. Finally, the

authors discussed what it does for the teacher. “Role-plays create a classroom environment that engages us equally as it engages students allowing us to reflect on the questions we find essential to our lives” (165). They, also, mention how this type of exercise assist in ideas like writing across curriculums and allows students to work with their textbooks in a completely different way.

11. Bourelle, Tiffany. "Bridging the Gap Between the Technical Communication Classroom and the Internship: Teaching Social Consciousness and Real World Writing." *Journal of Technical Writing and Communication* 42.2: 183-197. *FRANCIS*. Web. 09 June 2016.

The article, "Bridging the Gap Between the Technical Communication Classroom and the Internship: Teaching Social Consciousness and Real-World Writing” by Tiffany Bourelle determines that in order for students to learn lessons that a classroom cannot provide, they need to spend time doing something that stimulates the workforce. She says that students should participate in internships. However, she argues that an area which is lacking for internships is “the lack of interaction from teachers” (185). She discusses how instead of shying away from being too involved in the workforce, teachers should build a relationship with the intern supervisor. Also, teachers should spend more time designing the internship. Moving beyond the teacher’s role, Bourelle states that students also learn how to become members of a community and how a person’s behavior affects their environment. They are able to see this in action as interns. Bourelle mentions how her own students helped create a model by working within the nonprofit realm. They can be a great help with writing proposals. Letters for donations, create website content, and other documents. The students learn more about this process in real time. The interns would be given experience in this and Bourelle developed ways for them to work towards being hired and building portfolios before being selected for the internships. Some of the challenges faced were to determine that students who were in groups could work well together and to assure that the agencies who were involved in the internships had the time needed to meet with students and assist them. Overall, Bourelle argues this experience is positive for students because they get outside of the “dominant culture of schooling” (195) and see what factors affect and limit them directly.

12. Moore, Kristen. "Exposing Hidden Relations: Storytelling, Pedagogy, And The Study of Policy." *Journal of Technical Writing and Communication* 43.1 (2013): 63-78. *ERIC*. Web. 11 June 2016.

In the article, “Exposing Hidden Relations: Storytelling, Pedagogy, And the Study of Policy” by Kristen Moore, the idea of using storytelling as a curricular tool is discussed. Moore begins by discussing why” using policy work as arhetorical context for the classroom” is a great idea. Then she moves into mentioning how storytelling as a pedagogical tool works. Moore describes the roots of storytelling and how Western culture has moved away from it, but that many other cultures, especially Africa still use it as an important tool. Her study determines its usefulness because: 1) many of the communities at VCC (a public engagement firm) are racially and culturally diverse and that seven of eight of the women who work there are of African descent. She begins by discussing how students must focus on stakeholders first when looking at policies then they needed to consider the places affected, the purpose of the policy, and the people involved. Once they developed their theories, students needed to investigate their own experiences with the policy and write a personal narrative about it. Once they had their own

stories, students were able to find stories from others who were affected and to use the stories in determining if the policy could still work. They are told to listen as technical writers, then to emplace the story, and finally to retell it, briefly, but with the details needed. Moore concludes that when students use storytelling they are encouraged to move beyond their own realm of how knowledge is made and to make their understanding of learning technical projects diverse.

13. Hayhoe, George. "Boom, Bust, And Beyond." *Journal of Technical Writing & Communication* 45.4 (2015): 342-353. *Communication & Mass Media Complete*. Web. 16 June 2016.

In his article, George Hayhoe reflects on his time as a technical communicator and what ways the field has evolved. Hayhoe begins by discussing how he began by pursuing academia and studied literature as a graduate student. However, after several years in academia, he abandoned it for technical communication and worked in the industry for several years. His article begins by explaining that his reflections are entirely U.S.-centric and that despite that he has been involved in the technical communication evolution within the U.S. and that might make up for his cultural limitations. Hayhoe moves into discussing how technical communication started roughly around the beginning of the Second World War. The field arose from the need for accessible training materials due to, possibly, the fact that less people completed high school and they need easy to read and clear training materials. Hayhoe also mentions that after the war more people became active in the field and three journals in the field emerged between 1954 and 1971. Right before he began in the field, Hayhoe discusses how the desktop revolution caused the need for more hardware and software information. Next, Hayhoe discusses his time in the profession, from 1981-2015. During this time, the way technical communicators worked changed enormously. Technical communicators became experts on technology and turned to training. Hayhoe mentions that the industry was at a high during this time, but with a lack of diversity, and this continued until the 21st century. With some of the changes in the economy and the learning curve declining, Hayhoe mentions that fewer technical communicators are needed. Hayhoe expresses the problems in technical communication and how less are need, but also, they need to change how they approach it. Hayhoe offers some ideas, like how students do not need to learn as much tech, and how students can learn more without formal instruction. A second part to his solution means that students could focus on areas where they are weakest and students could also examine current professionals and how they work. These professionals would act like mentors. Additionally, Hayhoe says that methods of teaching are needed to foster interest in the technology of language.

14. Cardenas, Diana L. "Challenges and Rewards of Teaching Intercultural Communication in A Technical Writing Course: A Case Study." *Journal of Technical Writing and Communication* 42.2 (2012):143-158. *ERIC*. Web. 16 June 2016.

In the article, "Challenges and Rewards of Teaching Intercultural Communication in A Technical Writing Course: A Case Study" by Diana Cardenas, one community-based project her students performed with their local community led the author and her students to learn more about the need to enhance cultural awareness. She begins by discussing the Baby Moses law that was passed by Texas legislatures. Basically, this law "offers anonymity and immunity from persecution to new mothers who leave babies in specified safe havens within 60 days of their births" (144). This law, however issues because of the lack of communication with those safe havens. Instead, mothers abandon infants in remote locations or dumpsters and the babies are left

to perish. Cardenas' students examined the city-county health department in Nueces County and attempted to disseminate information regarding the law. Before describing the case study, Cardenas describes the importance of intercultural communication because of its ability to look into what a certain culture needs and how to interact without perpetuating stereotypes or disregard individuality. One must understand that culture is dynamic and fluid. Moving this to her course, Cardenas urged her students to take abstract legislation into significant human activity. They chose Baby Moses law. They conducted interviews with the county health department and decided to look for female clients as their subjects. They ran into issues with their IRB committee because of a lack of communication regarding their subjects. Instead of being able to conduct the survey, instead the students chose to create flyers and brochures that would convey the information to the community. Cardenas explains that through class discussions and critiques, they were able to build an understanding of the culture they needed to reach and to build a culturally-sensitive flyer and brochure for disbursement. Cardenas reflects on how her students' efforts to convey this information was helpful, but that part of the problem is that the law enforcement does not track the number of cases and so it is difficult to know the success her students had. However, at the end, she reflected on her decision to make changes to her system with exploring this law with future students.

15. Finseth, Carly. "Theorycrafting The Classroom: Constructing The Introductory Technical Communication Course as A Game." *Journal of Technical Writing and Communication* 45.3 (2015): 243-260. *ERIC*. Web. 16 June 2016.

In Carly Finseth's article, "Theorycrafting The Classroom," Finseth discusses the role of gaming in the classroom. She begins by identifying what games mean for the pedagogy of the classroom and how it can "inform sound technical-communication pedagogy" (244). However, Finseth emphasizes that games should not simply be added to the curriculum without serious considerations. She references this idea as "theorycrafting the classroom" and describes it as a way to explore and reflect on teaching methods within a curriculum that is based in game play. Finseth continues to explain the main principles with creating this concept. The first is reflective teaching. Through the use of "theorycrafting" instructors of technical communication can respond to the ever-changing elements in a course and adjust to students' learning. Finseth describes how teachers can reflect and change the game continuously through the course of the year. Next, she moves into the second principle which is user-centered and facilitator-led learning. She compares the ideas of how technical communicators need to focus on audience and how it is essential in "theorycrafting" because instructors will consider how important their users are and become more facilitators instead of the experts. Finally, her third principles: collective learning. Basically, Finseth says that the people within each role collaborate with others and try to combat strategies together. After this set up and description, Finseth moves into creating this gaming system within an intro to technical communication class. She discusses the need for goals, rules, a feedback system, and voluntary participation in order to maintain success. Finseth describes how the course objectives help outline the construction of a course as a game. Additionally, through the use of portfolios, constant feedback, practice, and various activities, the gaming course becomes more personalized and in the long term mean more. Finseth emphasizes that this article is intended to be more of a guideline to change instructors' approaches to teaching technical communication.

10 Additional Resource Links

1. References to several avenues of education for the Society of Technical Communication
   http://stc.org/education
2. This site includes tons of links to outside sources and other resources for teachers.
   https://technicalwritingtoolbox.com/technical-writing-resources/
3. Interesting set of instruction writing lessons and several helpful resources
   http://www.readwritethink.org/classroom-resources/lesson-plans/writing-technical-instructions-1101.html
4. Great site that explains several terms with technical writing
   https://owl.english.purdue.edu/owl/section/4/16/
5. This is sort of cheesy, but has some decent information about teaching TW.
   http://www.wikihow.com/Teach-Technical-Writing
6. I found several aspects of this link helpful for our case study assignment.
   https://www.prismnet.com/~hcexres/textbook/feas.html#defined
7. This is a helpful article on ideas to think of when creating a brochure.
   http://www.technical-communicators.com/articles/writingbrochures.pdf
8. Helpful resource for writing memos
   http://www.des.ucdavis.edu/faculty/handy/ESP171/Writing_Memos.pdf
9. Great handout for explaining audience and writing
   http://writingcenter.unc.edu/handouts/audience/
10. Helpful resource for determining style and form for scientific technical writing
    http://writing.engr.psu.edu/handbook/exercises.html

"Google for Educators"

Google for Educators
Technology How to Guide

Submitted by:
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Bowling Green State University
ENG 6400

Submitted to:
Dr. Heba
Bowling Green State University

Table of Contents

Introduction

Welcome to the Google for Educators manual! If you need to use this system, but remain rather overwhelmed by the prospect of it, this manual can be your guide. The intent behind this guide is to help you learn how to quickly and effectively use a variety of aspects of the Google for Educators programs.

Definition

Google for Educators was created by Google to help teachers and school systems fit their needs for students. Google for Educators is a large system of programs set in place with templates and other add ons specifically geared towards schools and education.

Who Can Use

New teachers or teachers new to technology can be overwhelmed if their school offers Google for Educators as its basic system.

How to Use

With this manual, you have two options available for use. If you are completely at a loss to begin, you can start from the beginning and work your way through it. If you have an idea of where you need to go, you can move to each module separately as you need them. Additionally, after you read through this, you can reference back to the manual at a future date in whichever section you want to use.

Module No: 1

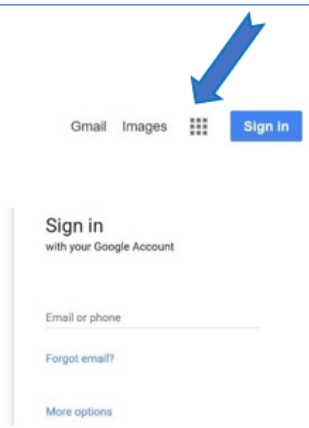
GOOGLE DRIVE

SUMMARY

Google Drive is the center of everything Google. Any document you create is housed in Google. It can replace the binders on your shelves or the folders on your computer. As you find your way through Google Suite, use Drive as the force to assist with your materials.

Additionally, Google Drive allows for ease of collaboration among teachers and staff. Learning the basics eases teachers into going digital and making the most of Google for Education

1. To begin, you need a Google account. If you work for a school, they have access to all of Google Suites for free. Be sure you sign in with your school account, otherwise, you will not have access to everything.



2. Once you have signed into Google, you can find Drive by clicking the 9-square box in the upper righthand side (Fig.1). Once you have found your way into Drive, take time to familiarize yourself with its layout.

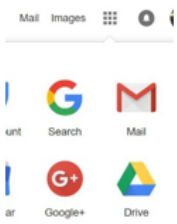


Fig. 1: Google Drive Icon: Found on the top right side of Google

3. One of the best places to start is to create new folders. In creating new folders, you can organize the materials you create.
   a. Head to the left side
   b. Click the large, blue, "New" button.
   c. Select "Folder"
   d. Name it. (Fig. 2)

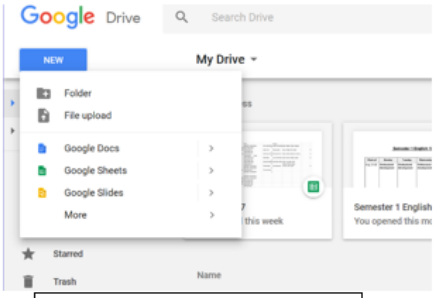


Fig. 2: Google Drive Folder: Found on the left; Under "New"

4. Now, you are ready to begin creating new documents (more on working through those later). Once you have documents created, you can move them into your folders as needed.
   a. In Drive, right click on the document
   b. Scroll down the pop up window to "Move to…"
   c. Once that pops up select your folder
   d. Click "Move" (Fig. 3)

If you would prefer to avoid having to move your documents each time you create, you can open the folder you wish to add to, then create a new document within that folder.

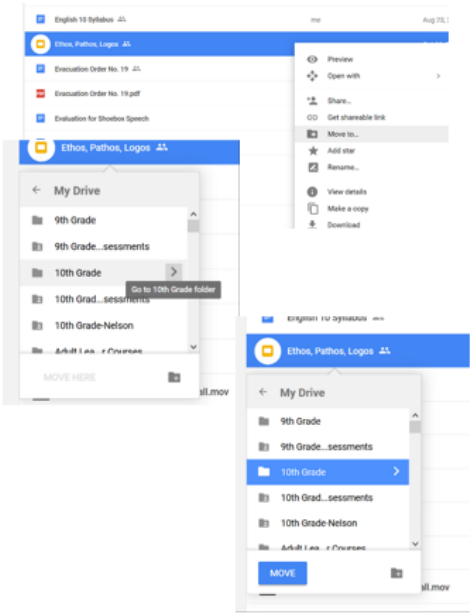


Fig. 3: Google Drive: Moving documents into folders

5. If you are only needing to share a document once, it is a simple process.

   a. Right click on the document you wish to share. Under the options, you have two to pick from: (Fig. 4)
      - "Share…" which allows you to type in an email address and share with a specific person
      - "Get Shareable Link" which allows you to obtain a link and share with a multitude of people.

If you are within any of the programs for Google Suites, you can share in the program as well. Simply click the "Share" button on the top right of the page and follow the steps. It offers the same two options of obtaining a link or typing in email address. (Fig. 5)

One helpful side note: if you are in a network for your school, you should be able to type in people's names and have their emails appear.

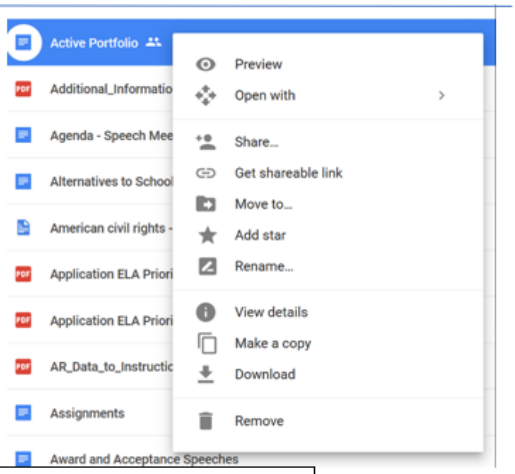


Fig. 4: Google Drive Document Share: Right click and find "Share" or "Shareable Link"

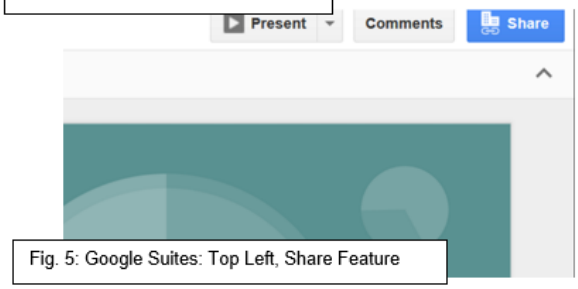


Fig. 5: Google Suites: Top Left, Share Feature

6. The final important part of Google Drive is understanding how to make a copy and rename. The easiest way to do this is if you again right click. (Fig. 6)

When the options appear, select "Make a copy" if you are duplicating.

Select "Rename…" if you are choosing to change the name. This is helpful because when you make copies of documents, they always begin with "Copy of…"

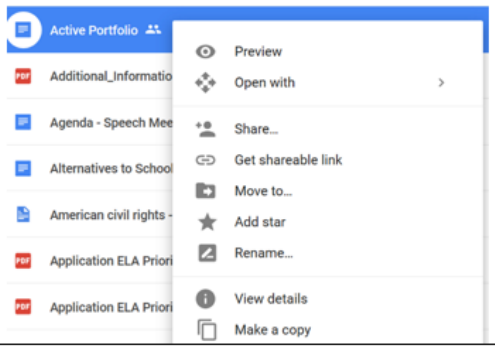


Fig. 6: Google Drive: Right Click to "Make a copy" or to "Rename"

ADDITIONAL NOTES:

Google Drive has a multitude of features. These are the basics. For more information, you can explore their help section under Settings or click here for the link.

Module No: 2

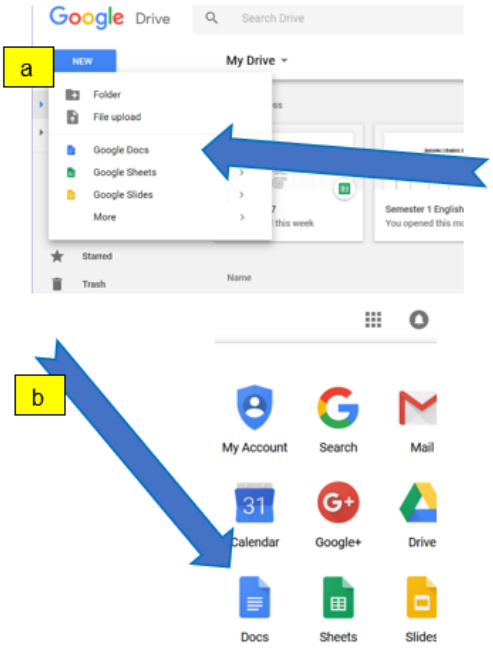
GOOGLE DOCS

SUMMARY

Google Docs is likely to be the most used feature of Google for Educators you will find. With Google Docs, you can create your classroom handouts, plan your semester, track student learning, and much more.

With the features shown here, you can jump into Docs and find new ways to input information with the stress of feeling overwhelmed.

1. One of the best ways to start in Google Docs is to simply get started. You can get to Google Docs through two avenues.
    a. In Google Drive, select "New" on the left and go to "Google Docs."
    b. Go the nine-squared icon in the top right and select "Docs."



Using a blank template works just fine. However, you can utilize the templates available.

2. Using a blank template works just fine. Most of the time it makes sense to start from scratch. You can easily add the features you need without stress. Remember one downside to Google Docs is that it does not hold as many features as Word or Pages. It will work for most items you need to work on for your classroom though.

Also, you can utilize the templates available if you are looking for some assistance on features or to expand on what you are working on. (Fig. 7)

Fig. 7: Google Docs: Sample of Templates Page

3. One of the best features for Docs is the table. Tables can be used to separate points, create calendars, and to add boxes for various reasons.

a. To add a table, go to "Insert" along the top, scroll down to "Table," and select the number of boxes you wish to use. '
b. Once it is created, you can adjust the layout of each box and they do not need to be the same size.
c. Additionally, you can include color in the boxes by selecting the box, clicking "More," pick your color, and you can color code varying boxes.

This is helpful for creating units in your semester, a schedule, or to show variety in various tasks.

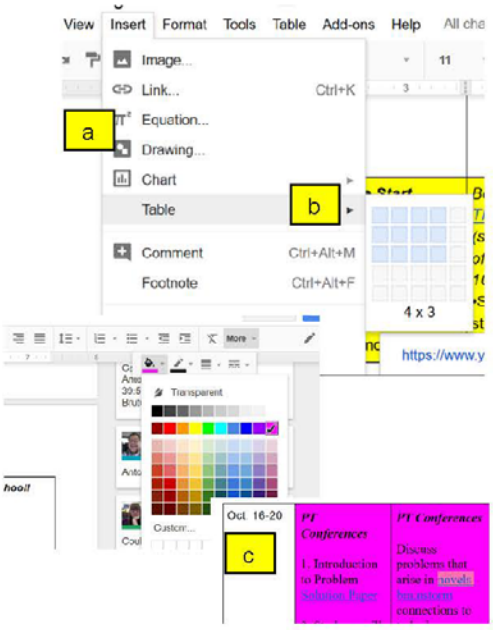


Fig. 8: Google Docs: Creating and Formatting Tables

4. Another feature that comes in handy with Docs is linking. (Fig. 9)

a. To find the feature, highlight the word necessary to be linked.
b. Under Insert, select "Link" or for a shortcut, use "Ctrl + K."
c. When the box appears, paste the link and click "Apply."

After it is applied, the linked word will appear in blue for easy accessibility.

Adding a link allows a person viewing the doc to click a word and move to another website. It helps if you create a calendar and wish to link assignments to lesson plans.

On the student end, if you are having students work on an assignment, you can include the links for them to travel to websites to assist with tasks.

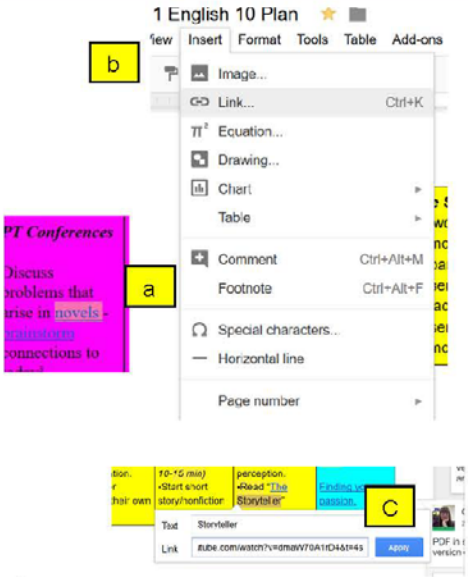


Fig. 9: Google Docs: Adding links to words for accessibility.

5. Inserting a drawing is another helpful feature in Docs.

a. Go to "Insert"
b. Scroll down to "Drawing"

You can add a photo, image, or drawing of your choice.

Once it is created, you can add it anywhere within the Doc.

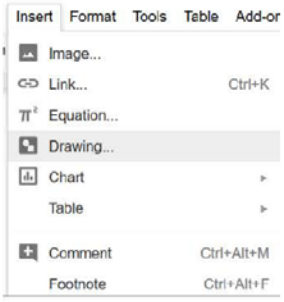


Fig. 10: Google Docs: Adding Drawings to documents for varying additions

6. If you need to have more than one column for your work, (Fig. 11)

a. Go to "Format"
b. scroll to "Columns"
c. Pick the number of columns you need.

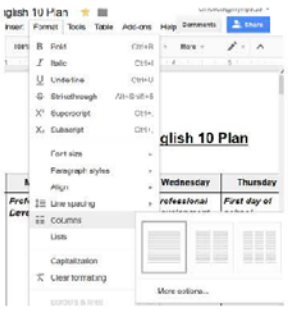


Fig. 11: Google Docs: Adding Columns to documents

7. Finally, pay attention to your page setup (Fig. 12). It is easy to change.

a. Go to under "File"
b. Select "Page Setup."

This will allow you to change the orientation, paper size, color of page, and margins.

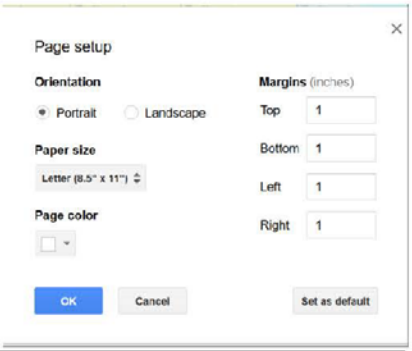


Fig. 12: Google Docs: Making Changes to Page Setup

ADDITIONAL NOTES:

Google Docs has a multitude of features. It is not as extensive as Microsoft Word or Pages, but it still has many features and can be easier if you are prone to being overwhelming by too much. If you want to look into more features, click here or look for the "?" symbol on the top left bar of Google under "Settings."

Module No: 3

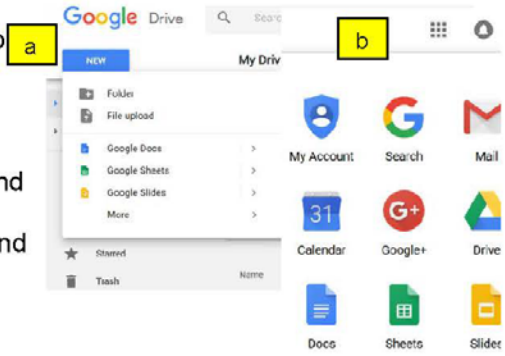
GOOGLE SLIDES

SUMMARY

Google Slides allows for presentations to be created without issue. With Google Slides, you can create your slides and incorporate many features. You can even present straight from the slides; no need to download or worry if you switch between Macs and Windows.

1. One of the best ways to start in Google Slides is to simply get started. You can get to Google Slides through two avenues.

   a. In Google Drive, select "New" on the left and go to "Google Slides."
   b. Go the nine-squared icon in the top right and select "Slides."



Using a blank template works just fine. However, you can utilize the templates available. (Fig. 13)

Fig. 13: Google Slides: Sample Template Selection

2. Once you are in Slides, you have options. You can select different themes, backgrounds, or layouts by selecting from the bar across the top. (Fig. 14) These options allow for variety with your slides.

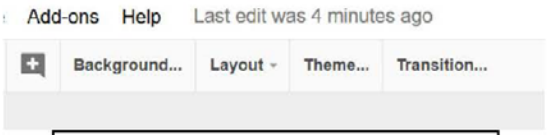


Fig. 14: Google Slides: Options for Slides

3. One great addition is to add transitions. (Fig. 15) Transitions allow movement between slides or for information on your slides move in at varying times.

   a. Select "Transition…" on the right side.
   b. Browse your options for slides and lines.

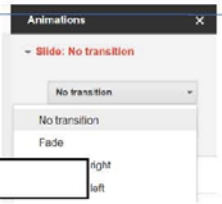


Fig. 15: Google Slides: Adding Transitions

4. With Slides, you can insert many helpful elements. For starters, you will need text boxes. But you can also add images by finding "Insert" at the top and going to "Image…" You have options from there (Fig.16):

a. Upload – select from your computer
b. Take a snapshot – take a picture to include
c. By URL – include the image's url
d. Your albums – select from albums in Google
e. Google Drive – find images straight from your job
f. Search – allows you to search certain sites online and add directly from the web – this is the most helpful tool

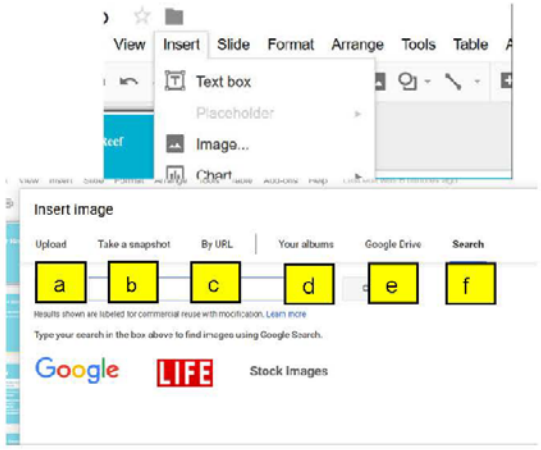


Fig. 16: Google Slides: Adding Image

5. To add videos (helpful in adding timers or videos relevant to your lesson), your options include (Fig. 17):

a. Search – find videos from YouTube
b. URL – include the URL if known
c. Google Drive – if the video is there, you can add it.

Fig. 17: Google Slides: Adding Videos

6. You have finished creating and are ready to present.

a. Add notes at the bottom of each slide.
b. When you click the down arrow on the "Present" button in the top right.
c. Select Presenter view, your notes will appear on a separate window for you to look over on your computer. (Fig. 18)

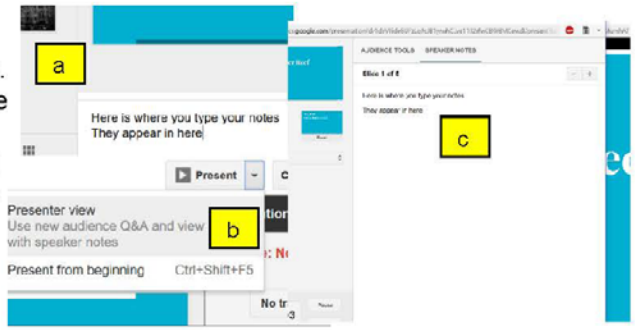


Fig. 18: Google Slides: Presenter's Notes

ADDITIONAL NOTES:

If you want to look into more features, click here or look for the "?" symbol on the top left bar of Google under "Settings."

Google for Educators Technology How To Guide

Module No: 4

GOOGLE FORMS

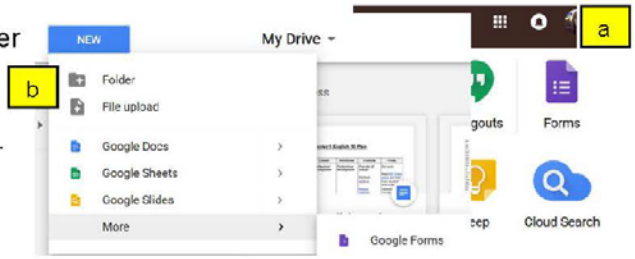
SUMMARY

Google Forms allows teachers to create quizzes, tests, quick surveys, and exit tickets for your classroom. It holds many features, but you can understand just a few to get started.

1. For Google Forms, you will find it under

a. either the 9 square ion on the left and scroll down until you see the purple icon.

b. if you are Google Drive, you Can click "New" and scroll down to "More" and Google Forms.



2. You have options with a variety of layouts to assist with teaching and quick assessments. (Fig. 19)

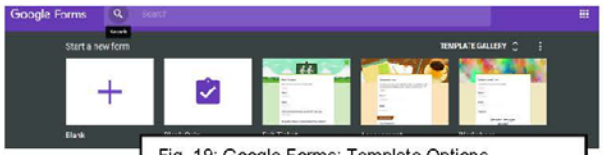


Fig. 19: Google Forms: Template Options

3. Once you are in the form, you can change the question. Click the shaded box to the right of the first "Untitled Question" to see your options.

4. After the form is complete, you can easily view the form's results by clicking "Responses" You can view them three ways. (Fig.21)
   a. "Summary"
   b. "Individual"
   c. "Download into "Sheets"

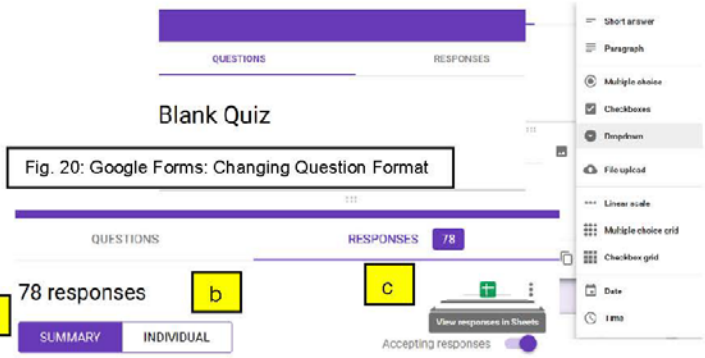


Fig. 20: Google Forms: Changing Question Format

Fig. 21: Google Forms: Viewing Responses

ADDITIONAL NOTES:

If you want to look into more features, click here or look for the "?" symbol on the top left bar of Google under "Settings."

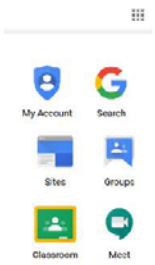
Module No: 5

GOOGLE CLASSROOM

SUMMARY

Google Classroom is an improved replacement to your website. With Classroom, you can post announcements, assignments, and questions. Students have a one point access to your class. Parents can receive emails about assignments. Classroom assists in so many ways with communication and the access point for educators.

1. Google Classroom is easy to start. Under the 9square icon in Google Drive, scroll to the bottom left and click the "Classroom" icon. This will take you to the page itself.



2. Once you are on the Classroom page, you need to click the "+" sign (Fig. 22) on the right side and select "Join class." A box will appear with some questions about the class then you will be able to begin working within a shell of a Classroom.

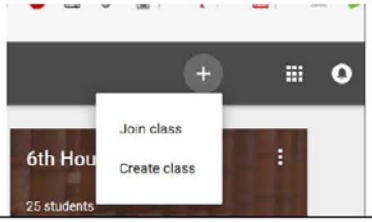


Fig. 21: Google Forms: Viewing Responses

3. After you create the class, one of the best areas to start is in the "About" section (Fig. 22). You can (a) add important information for your class here. Also, if you work with other teachers, you can (b) add them as teachers to your class and allow them to post. Finally, you gain (c) access to your calendars and Drive Folder from this page.

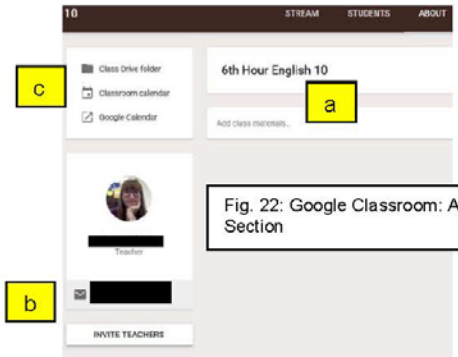


Fig. 22: Google Classroom: About Section

4. Once your classroom is set up, begin adding students. You have two options (Fig. 23):
a. Give your students a code and have them enter it under the same "+" button you used (they click "Join Class" instead).
b. Email students to have them join. Emailing tends to work better for students who struggle with multiple steps.

Additionally, you can contact parents or guardians from this same page. Click the "Invite All Guardians" (c) button and enter their email addresses.

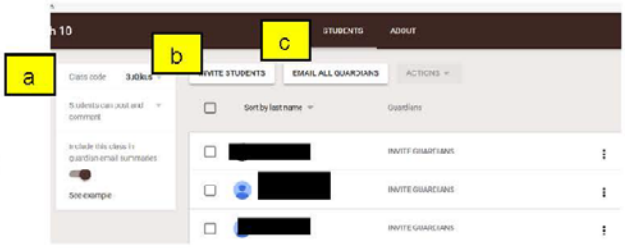


Fig. 23: Google Classroom: Students Section

5. After your class is set with students you can begin posting tasks. (Fig. 24) Classroom automatically brings you to the main page, On the lower left side, another "+" button is there. Click it for your posting options.

a. Creates announcements: These work for adding agendas, reminders, or other short tasks that are an FYI for students.
b. Creates assignments: Use this when you want to create an assignment for your students to complete. They can add work or click done when they have completed it.
c. Creates questions: Use this for a quick assessment for your students. It assists in completing quick checks for your classroom.
d. Reusing posts: Use this to find past posts and reuse them. It works great when needing to repost from previous years.

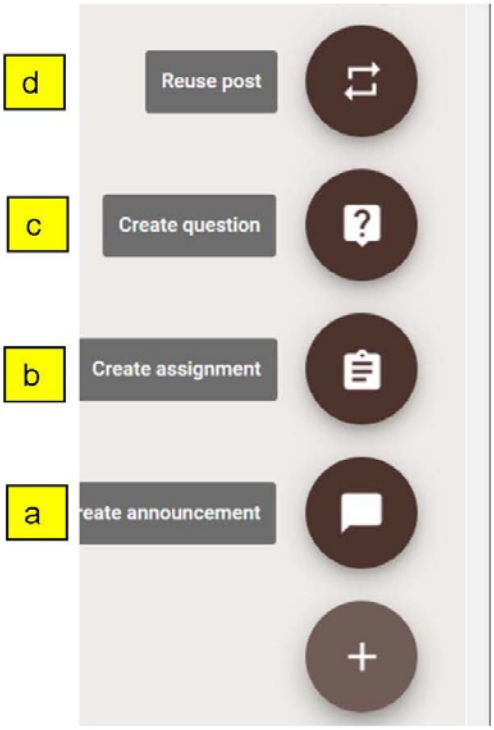


Fig. 24: Google Classroom: Posting Tasks

6. When making an announcement (Fig. 25), you have some options. You can add a topic(a), add files(b), videos(c), and links(d). Once you have completed it, click "Post."

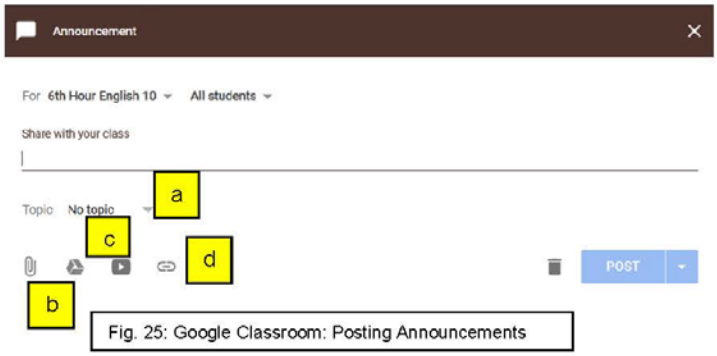


Fig. 25: Google Classroom: Posting Announcements

7. When making an assignment, you have plenty of options. (Fig. 26)
a. You can add a title, instructions, and add any necessary additions like a file, an item from Google Drive, YouTube, and links to other sites.
b. When adding from Google Drive, it is the easiest.
c. Plus you can determine if you want students to view file, edit file, or make your own copy.
d. After you have finished, you need to select a due date. Click where it says "No Due Date" and select your date.
e. Once you have completed it, click "Post." If you do not wish to assign right away, click the down arrow and select "Schedule" for a different date or "Save Draft" if you need to come back to it later.

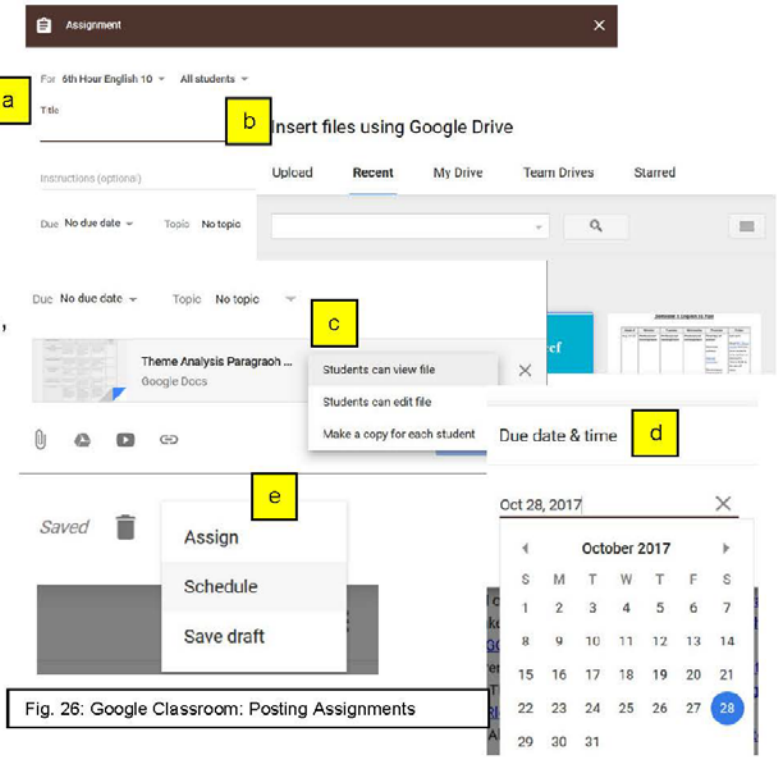


Fig. 26: Google Classroom: Posting Assignments

8. When creating a question (Fig. 27), you have some options. First, make it a short answer or multiple choice (a). Students can also be given the option to comment to each other and correct their own answers (b).

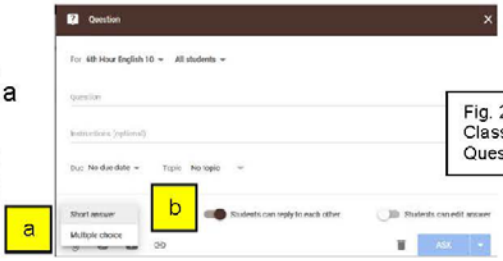


Fig. 27: Google Classroom: Posting Questions

9. When wishing to reuse an old post, you simply find the previous course you had it in and select it (Fig. 28). You can adjust as needed then post.

One final note with posting items: If you have multiple sections of a course, you can select the class in the top left and click on which courses you wish to have the item posted in.

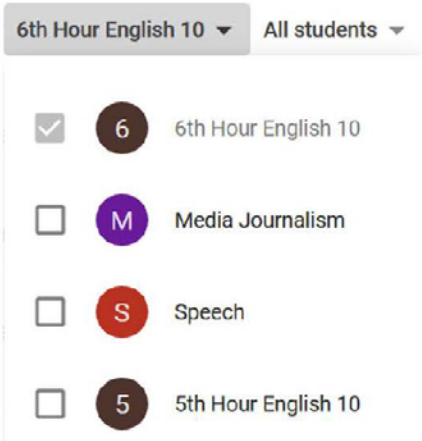


Fig. 28: Google Classroom: Reusing Posts

11. After assignments have been completed and submitted, you can grade in Classroom (Fig. 29). Classroom defaults to 100 points and you can select the number (a) and change it whatever you wish.

Comments can be added for students either privately with each assignment or to the entire class when you return them.

If you add them privately (b), you click the comments section underneath the assignment at the bottom of the page. Students can add comments as well. It assists if they have additional questions or if you have students comment when an item is late or being resubmitted.

After an assignment is graded, you can return to students and add a general comment for the entire class (c).

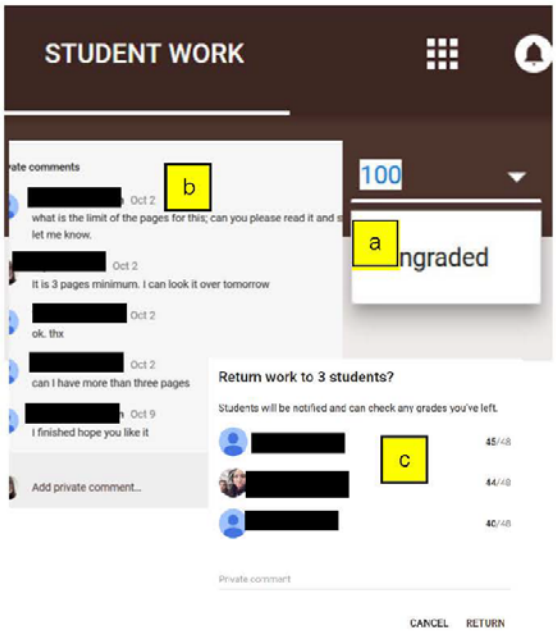


Fig. 29: Google Classroom: Grading and Returning

ADDITIONAL NOTES:

This section hits the basics to get you going with Classroom. You can spend most of your time utilizing these services in Classroom alone. If you wish to explore more of the features, you can click the small "?" symbol on the bottom left corner or go here.