

1 WHO IS THE USER? RESEARCHING AUDIENCES FOR TECHNICAL DOCUMENTS

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When I think about what makes a good technical document, I'm reminded of Janice (Ginny) Redish's explanation.¹ Redish defines a successful document as one that helps the intended audience find what they need, understand what they find, use that information to accomplish a task and do that in the time and effort they are willing to spend. Makes a lot of sense, right? But how do we learn about the needs of our intended audiences and how can we be sure that the information we produce meets their needs? In this chapter, you will learn about how to research your audience and use that information to help create or improve a technical document.

TECHNICAL DOCUMENTS AND THEIR USERS

When you are starting out as a writer, people have lots of advice. If you are a fiction writer, you might get advice like: "Write what you know." When it comes to writing technical information, that advice is dead wrong. Instead, you'll hear "Write for your audience." But you can't just take this advice to heart and then sit in a room by yourself and write. Instead, crafting technical documents always involves others. To learn about others, technical communicators conduct research. You will need to talk with, learn from, and get feedback from the very people who will be using the information that you are creating. At first, this can feel overwhelming, but it's one of my very favorite parts of being a technical communicator.

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A technical document has specialized information to communicate across different genres and modes, and is created by individuals, communities, and organizations, to provide instruction or information. Disparate examples of technical documents include documents, websites, and apps, but also election technologies (Dorpenyo and Agboka), voting policies and procedures (Jones and Williams), hip hop playlists (Hierro), YouTube tutorials (Ledbetter; Edenfield and Ledbetter), or Reddit’s Explain it Like I’m Five (Pflugfelder).

Whether we refer to the people as readers, our audience, or users, one thing they share is that they are often “reading to do,” meaning they engage with a document to accomplish something (Redish). For this chapter, I use the term *user* to refer to a person who is trying to get something done and has a clear objective in mind. Anytime you approach a new technical writing task, you’ll repeat this to yourself: why, what, who, and how which will inform what kind of product or document you will create.

WHY: CLARIFYING YOUR PURPOSE

Every technical document has a reason to exist. You need to clarify what the purpose is before you start writing. Having a clear purpose helps to identify who the audience is for your document. Imagine you work for a county health department, and you have been asked to design a document to show people how to properly wash their hands. To get to the heart of the purpose, try the 5 Whys technique (Ries). Ask yourself or your team “Why” five times. Each Why leads to a deeper understanding of the purpose. For example,

1. Why are we designing this document?
To show people how to properly wash their hands.
2. Why?
So, people can wash their hands correctly.
3. Why?
So, they don’t get sick or get others sick.
4. Why?
To help prevent the spread of disease during a global pandemic.
5. Why?
To save lives.

This is a simple exercise but focusing on purpose helps you connect to the broader implications of a single document and tie it to the broader purpose and mission of the organization.

WHAT: DETERMINING THE KIND OF DOCUMENT YOU WILL CREATE

Different technical documents have different purposes. Some are meant to be references, something that people can quickly look at to get started or complete a task. When you buy a new electronic device, you'll typically see a document called a quick start guide, which is short, includes lots of pictures, and helps you understand the immediate functions of a device, how to power it on, and how to get started. A quick start guide has a focused purpose and is meant to be used early on and then discarded. It doesn't help you learn how to become an expert with your new device. Let's look at another example: a car manual that lives in the glove box of your car. What features of it are dictated by its purpose? Well, most of us don't read it front to back for fun, we also leave it in the car because that is where we will need it. So, it is designed to be small and fit in the glove box. It has an Index, because people reach for it when they have a problem or are stuck, so it needs to help users find different topics quickly and easily.

Technical documents need to support different people with different needs. Take an Electronic Medical Record, which is a software used in many health care settings. The receptionist at a clinic may need to access the scheduling page. They might be interrupted many times but mostly use one or two screens in the system. The nurse may need to primarily access the summary information of a patient that lists their medical history, vitals, and prescriptions. They move from room to room seeing patients quickly and accessing the same screens for different patients. Then, there is the doctor who needs access to reference materials for diagnosing patients and detailed screens to document and capture the nuances of a patient's particular medical conditions. Each of these users is accessing the same technical system, but their relationship to it and their job functions impact their use of the system and their needs for it. Thinking about how technical information is accessed by different users helps us think carefully about who it is we are writing and designing for.

WHO: IDENTIFYING YOUR AUDIENCE

To gain a deeper understanding of audience, you'll need to gather preliminary information about who it is that you are trying to serve. If you are working within an organization, they may already have a clear idea of who their audience is, but there are nuances and considerations for every

technical document. At this stage, it's easy to get overwhelmed with details. So, try and focus on the essential aspects of audience.

We all have assumptions about the people we are writing or designing for. It's helpful first to clarify what you know, or what you think you know, about the audience. Take some time to write down your reflection:

1. Who needs this information?
2. What are the questions they might have?
3. What is their existing knowledge about the subject?
4. Where or how might they access this information?
5. What are the cultural, social, or economic factors that might impact how they access or use this information?
6. What patterns of exclusion exist?

Reflecting on what you know or what you think you know is helpful. However, beginning writers often rely on their intuition or existing experience for understanding audience, which can be risky (Lam and Hannah). When you rely on your own experience, you write from assumptions. One way bias can appear in writing is when you assume other people have similar experiences as you do. There are many examples of forms that ask people to identify their gender and only include choices of men or women, instead of supporting inclusive ideas of gender (Bennett). The people who have designed these forms have a biased view that did not incorporate ideas of non-binary gender expressions. Here is another example: Facebook has a year in review feature designed to celebrate fun memories from the past year. However, user Eric Meyer logged in and was confronted with a picture of his daughter who had died that year (Wachter-Boettcher). The designers of that Facebook feature were biased to think everyone wanted a feature to celebrate their year.

In technical documents, instances of bias arise all the time. I worked at a company that decided to update an older main frame software system to be web-based. The designers of the new system assumed users would appreciate a more modern web-based tool. What they didn't anticipate was that this older system supported very fast data entry for repetitive tasks. The new system, while well designed, required users to click through multiple pages to enter data and it slowed down their work considerably. The designers in that case did not consider how people using this system valued efficiency over other considerations like ease of use.

The best way to prevent bias is to not just think about audience but to meaningfully include users during the design process. Most work in technical communication is collaborative. Ensuring you have a diverse

group of people working together is a good start. People who have different lived experiences and perspectives bring valuable expertise to the design process. Further, to ensure your design is meeting the needs of the people who will use it, you need to go further and get to know who the people are who will use your document through research. Through your research, include a range of diverse people in the process and recognize and address exclusion. One approach is to work with and include people who are exclusion experts (Holmes). An exclusion expert is a person who has in-depth, personal knowledge of what it means to be left out. You need include a community of exclusion experts, people who might be disadvantaged by your product or service and ensure your work does not exclude or marginalize them.

The only way to make sure that something that you have designed will work is by getting input and feedback from users along the way. Audience analysis is an ongoing and iterative process. Users and their needs change over time, so it is important to continuously learn about the people you are designing for. The job of understanding your audience is never done.

HOW: TECHNIQUES FOR RESEARCHING AND UNDERSTANDING AUDIENCE

There are many ways to learn about your audience. We often refer to these ways of understanding audience as user research methods. Redish uses a metaphor of a toolkit when it comes to understanding users (Redish). You have a toolkit that contains lots of different tools, but not every tool is right for the job. As a beginning technical communicator, your job is to learn about the tools you can use to understand your audience and to learn what each tool is good for and how and when to use it. In the following section, I'll explore a few examples of understanding users but there are many more. To learn more about many of the methods you can use to learn about your audience, check out the Usability Body of Knowledge (<https://www.usabilitybok.org/methods>) or IDEO's Design Kit (<http://www.designkit.org/methods.html>).

EXAMINING EXISTING FORMS OF DATA

If you are working in an organization, they probably already have some information about who the users are. Some of this might be in the form of research and it might be based on people's assumptions. Also, even if there is an existing understanding of your audience, it is helpful to remember

that people and contexts change over time. Start with existing data and go further. Here are a variety of methods to help you work with existing forms of data.

- **Interview stakeholders and internal experts** conduct interviews with stakeholders, or people who work inside your organization. This could include product managers or owners, marketing professionals, or people in leadership. Interviewing stakeholders who have deep knowledge of the organization and its goals can help you understand some of the whys related to the document. Additionally, consider interviewing people who have direct interactions with the audience. People who work on the frontlines with your audience such as customer service, helpdesk staff, or people who work in the field. These internal experts tend to be the most knowledgeable about the audience and their needs.
- **Review internal data:** Most organizations have existing data from surveys or market research. There may be reports on customers or people you are designing for. During your stakeholder interviews, ask around and see what additional reports or data might be available that can inform who the audience is. If you are re-designing a website, you can review data analytics which can show you how people currently use the existing site: which pages are the most popular and which search terms people use on the site.
- **Social media:** There are lots of ways to use social media to learn more about your audience. If you are internal to an organization, you can look at Twitter Audience Insights, LinkedIn, or Facebook Audience Insights to learn more about your users' interests, geographies, job titles, demographics, and so on.

These are just a few of the methods you can use to research your audience. They are an effective way to gain an initial understanding of your audience because they leverage information that may already be available. Looking at these existing sources can be a good way to get started familiarizing yourself with your audience's needs, tasks, and concerns.

GATHERING NEW DATA THROUGH RESEARCH

If you've learned all you can about your users from internal sources or don't have access to that information, it's time to directly interact with users to gather more information about who they are and what they need. There are many different research methods you can choose from. Here I will focus on a few of the most common. These methods are especially helpful

early in the process when you are still trying to decide who your users are and what their goals, needs, and motivations are.

For any process where you are gathering information, it is important to follow strong ethical standards and guidelines. If you are working for an organization, you should first check with an Institutional Review Board, the legal department, or other people conducting research to understand how to conduct the research in an ethical and just way. Regardless, you should follow these three basic principles:

- **Research is voluntary.** People should not feel pressured to participate, they can choose to participate or not, and they will not be penalized in any way for not participating. They also should be able to change their mind at any point.
- **Purpose, transparency, and use of data.** Participants in your study should be informed of the purpose of the study. You should also tell them what data will be collected, why it is being collected, and how it will be stored and used. Participants should be given the right to remove their data from the study at any time.
- **Consent and clarity.** All aspects of the study and data should be explained in a clear and plain way to participants. Participants have to give their permission, also called consent, to take part in the research. Participants can give their consent verbally or they can sign their name as a way to provide consent. Participants can withdraw their consent at any time.

These factors are particularly important to researching audiences because as a researcher, you have an obligation to conduct the research in an ethical way that protects the rights and privacy of the people who agree to participate. In my own professional practice, I have had several experiences that have required me to take an individual ethical stance. One organization I was working with wanted to use some of the research results, specifically positive quotes from customers, in their marketing materials. This was clearly outside of the bounds of what participants agreed to. I had to deny this request and explain why that wasn't appropriate and violated trust with participants. While I prevailed in this case, acting ethically requires the actions of individuals, but more importantly policies, guidelines, and a coalition of other people, including leaders, to ensure that we are upholding high ethical standards when it comes to research.

If you are interested in learning more about research ethics in designing technical documents, there are many helpful resources to read that examine this topic in more detail, including Victor Yocco's article "Ethical

Considerations in UX Research” and Alba Villamil’s “The Ethical Researcher’s Checklist.”

In the following sections, we’ll look at some specific types of research methods you can use to learn more about the people who you are designing for.

SURVEYS

Surveys are a good way to gather information from many people in a short amount of time. A survey can help you understand who your users are and what they are trying to do. It can also help identify their attitudes and opinions. When trying to understand your audience, it is helpful to use surveys at different times in the design process. For example, if you are designing something new, or embarking on a redesign, it is helpful to survey users at the very beginning of the project. If you are trying to get a sense of how users are experiencing your product over time or compare results or changes, it is helpful to conduct a survey multiple times, such as before a redesign and after a redesign to compare results.

In terms of how many people to include in a survey, there are two key factors to consider: representativeness and sample size (Sauro). The first factor is *representativeness*, which means that the people you are surveying are representative of the people who you are interested in learning from. For example, if we were trying to understand how students experienced a college website, we could feel confident in our survey if we sent it via a student email list and if we added a question asking respondents if they were students at the institution. We would feel less confident if we just posted the survey link to the website because all kinds of people access a college website: staff, faculty, community members, and so on. The second factor is *sample size*, which looks at how precise your results are compared to the broader population. A sample size of 100%, meaning every person in the population filled out the survey, would be highly unlikely. Working from the previous example, it would be surprising and highly unlikely to have every student at a college fill out a survey about the website. Instead, sample size is really a question of how precise you need to be. The more precise you need to be, the larger sample you will need. Statistician and author Jeff Sauro provides a helpful explanation of sample size by asking yourself what margin of error you are comfortable with and working backwards from there by using confidence intervals. For example, Sauro shows the difference in sample size by showing a table that compares numbers based on what margin of error you are comfortable with (see the full chart at <https://measuringu.com/survey-sample-size/>). If you are asking a question about a rating scale and want to achieve a 1%

margin of error, you would need to survey over 6000 people. But on the other end of the spectrum, you are comfortable with a 20% margin of error, you only need to survey 18 people.

On a final note about surveys and sample sizes, keep in mind that the kinds of surveys we do in writing and designing are different than those that are used for political polling. The precision is often less important in the work we do and a higher margin of error is acceptable. You should think of surveys as one of the many tools you have in your toolkit that you might use to understand people. Using multiple methods (surveys, interviews, and usability studies) can also help you feel more confident in your knowledge and understanding of the people you are designing for.

Surveys are typically delivered online via email or on a website and can include both quantitative and qualitative questions. A survey can ask questions about a person's role, what task they are trying to accomplish, and how they might rate a current product or service. There are lots of helpful tips for designing and writing surveys (Feinstein). For example, you should start with general questions and then move to more detailed ones. It's helpful to write clearly and plainly and provide options that don't overlap. Also, keep it short to ensure more people will complete it. It's important to make sure your survey is clear, so have someone try it out before you send it out more broadly.

Let's imagine we are helping a transit agency design a new website and we want to understand our users. Some questions you could ask in a survey include:

1. How often do you use public transportation?
 - Everyday
 - Several times a week
 - Several times a month
 - Less than once a month
 - Never
2. What are your motivations for using public transportation?
(Check all that apply)
 - It's my only form of transportation
 - To save money
 - To avoid traffic
 - To relax on my commute
 - Other _____
3. When you visited our website today, what information were you looking for? (Check all that apply)
 - Schedules
 - Fares

- Service delays
 - Careers
 - News
 - Other _____
4. How would you rate our current website?
 - Excellent
 - Very good
 - Good
 - Fair
 - Poor
 5. What is your biggest frustration or concern with our existing website? (Open-ended)

Note that, in this example, you are providing individuals with a range of answers to select from (closed questions) vs. allowing them to respond with any response they wish to use (open questions). There are benefits to both. Closed questions give the survey respondents a predefined list which often makes it easy to quickly choose between and provides the data in a form that is easy to compare. Open questions can take a bit longer to complete but allow respondents to use their own words to describe their responses. However, for the researcher, open questions take longer to analyze. It's a good idea to use a mix and be thoughtful about the range of options you are giving a respondent to choose between.

There are a variety of tools you can use to design and distribute a survey. You can send a link to a survey through email or post it on a website or promote it through social media. Keep in mind that how you recruit people might influence your results, so try and be mindful of where you are posting it. Most digital survey tools provide analytics to show you how people are accessing the survey. When your results come back, you can analyze the data and look for patterns. It can be helpful to filter the responses to uncover new patterns. For example, if we looked at the prior survey and focused on people who use transit every day, they might have different needs, tasks, and concerns than people who use it less than once a month. That information can help inform who your audience is and what information they might need.

INTERVIEWS

Interviews are a valuable and informative way to learn more about your audience. Interviews can be quick and informal: you can approach people in public spaces and ask a few questions in five minutes. Alternately, they

can be more in-depth, where you recruit ahead of time and spend 30-60 minutes asking questions. Interviews are conducted one-on-one either in person or remotely. For an interview, you should have a clear list of open-ended questions that helps to start a conversation with a representative member of your audience. Your questions should focus on who they are and what they want to do.

Take for example, this list of questions, developed by Derek Ross to better understand audiences for environment-related communication (Ross). These interviews were designed to be conducted at public sites that drew a lot of visitors.

Questions:

- Where are you visiting from?
- What brought you out here today?
- How did you hear about (dam name/park name)?
- Now, just to change up a bit, when I say the word “environmental,” what is the first thing that comes to mind?
- Where do you stand on environmental issues?
- Based on that, where do you feel that you get your values from? Do you think of yourself as an “environmentalist,” “environmentally active”? Could you explain why or why not?
- Can you think of any environmental arguments that you have heard that are particularly effective?
- Based on what you were just saying, what kind of arguments would be most effective, at least for you personally?
- Looking out over all of this, how would you describe this to someone else?
- And, last but not least, do you mind if I ask how old you are?

As opposed to the closed survey questions we examined earlier, these interview questions are more open. Individuals can respond to the questions using their own words rather than selecting from an existing set of possible responses. Using open questions in interviews is helpful because it provides participants with the ability to choose their own words and language to respond. It also allows the interview to be more conversational in nature which helps create a good rapport between the researcher and the participant.

In terms of how many people you should interview when researching audience, there isn't a clear consensus and it depends on several factors. According to Donna Bonde, you should take into account the following factors: scope of your study, characteristics of the target audience, expertise

of the researchers, resources (budget and time) and research audience, and complexity of the project (Bonde). However, a good guideline is to interview between 5-12 users to reach saturation. Saturation is the term researchers use to identify when you are starting to learn the same things from new participants.

Finally, interviews can be done throughout the writing and design process but are usually conducted early in a project to help you, the researcher, understand the needs of the audience and their existing knowledge. Learning this from users will help you make decisions about what information to include, how to design the information, and what features should be included.

To develop your own interview questions, first think about what you want to learn or clarify about your audience. Focus specifically on information that would be helpful as you make design decisions. Interviews help gather people's opinions, preferences, ideas, and opinions in their own words and language. However, they also have drawbacks. Interviews rely on participants' ability to accurately recall details and they may have a desire to respond to a question in a way that meets the expectations of the person conducting the interview.

For example, I live near Seattle and recycling is a badge of honor. If I wanted to ask people about their recycling habits, I could interview them and I'm sure I would learn a lot about their opinions, beliefs, and preferences around recycling. But if I wanted to understand their behaviors, actions, or habits, then I would need to engage in observational methods and watch how they recycle and what choices they make. What they tell me about their recycling habits might be different from what I observe. The next method, contextual inquiry, is an example of an observational method.

CONTEXTUAL INQUIRY

Similar to an interview, a contextual inquiry is a method where a researcher asks a participant questions (Beyer and Holtzblatt). However, there are some important differences. A contextual inquiry is conducted at the site where the technical information is being used. For example, if we wanted to understand how to design a new billing system for a doctor's office, we would conduct the contextual inquiry at the doctor's office with the person who does the billing while they were doing it. A contextual inquiry includes questions about a person and their preferences, but it also includes watching a person work with an existing system to understand how they do their work and what challenges they face. When doing a contextual inquiry, the interviewer puts themselves in the mindset of an apprentice, trying to learn and understand what a skilled expert does.

You would use this approach to research your audience when you are trying to learn how people currently approach and accomplish a task. It is especially helpful when you are approaching a topic you know very little about or the topic is highly technical or complex in nature. Contextual inquiry also helps show you how people get things done rather than just their recollection or how they do something. Surveys and interviews are helpful to understanding people opinions and their recollections of a task, but contextual inquiry is beneficial to give you a deeper understanding and helps to highlight practices that people might not remember or take for granted. Similar to interviews, there aren't strict guidelines of how many people you should include in a contextual inquiry, but a good rule of thumb is to start with five participants from each unique user group. If you are still learning new things after talking to five people, add five more.

SYNTHESIZING: CAPTURING WHAT YOU LEARN ABOUT YOUR AUDIENCE

When you research your audience, it's helpful to synthesize that information and capture it in a way that helps you articulate who your audience is for your own design and writing practice. It is also helpful for you to share that knowledge with others on your team or in your organization. All the methods described earlier give you different insights into your audience. So, to get a better picture we often engage in what is called triangulation. Triangulation refers to using different methods to understand a single phenomenon (Denzin). Each method provides some insight, but taken together, they can help fill in gaps or shine light on certain aspects of who your users are. Looking across the data from multiple methods, you can capture key insights about your audience and start to get a picture of who they are and what they need.

For example, let's imagine we are redesigning the website for a transit organization, we'll call it Big Bus Org. We may choose to employ several research methods. For data, we could look at existing data to understand how people use the current site, what are the most popular pages, and what search terms do they use. We could also interview customer service representatives and ask them what are the common questions they get when people email or call. We can also look at the social media accounts for Big Bus Org and see what prompts people to reach out for help and when they are frustrated. We could also conduct new research to better understand Big Bus Org customers. We could post a survey on the home page of their existing website to understand people's needs, tasks, and how they currently rate the site. We could also interview existing customers and schedule

these interviews over the phone or remotely to ask people about their experiences with the website and riding the bus. We could also do contextual inquiry by asking people if we could join them on a bus ride or watch them navigate the existing website looking for information.

After collecting this data, we could then organize it in several ways. We could first catalog all the complaints, concerns, and frustrations of the current web site experience, which can help us develop requirements for our new design. We can also synthesize the data from the sources and try and group and conceptualize our audience so we can understand who they are and communicate about our users to others on the team.

Personas are a useful tool for capturing data about your audience's needs, goals, and motivation. You take what you learn across multiple methods and come up with a composite, abstract, portrayal of an imaginary person. You might have 3-5 different personas that represent different aspects of your audience. If we take the example of a transit rider from earlier, we might have three personas: Daily choice rider (someone who has a car, but chooses to commute daily), Transit dependent rider (someone whose doesn't own a car and relies on transit), and an Event rider (someone who rides infrequently because of a special event like a concert). Each of the three personas have different motivations, familiarity with the system, and needs. Segmenting your audiences in this way can be helpful for making decisions about how to design your technical information.

A persona has two functions: empirical, in that they capture data, and rhetorical, in that they communicate that data to others (Rose and Tenenbergh). Once you capture and synthesize your data, you are ready to create a compelling and persuasive communication product that can help educate others about the audience. Personas typically contain information about one fictional user who represents many other users. It can contain a photograph of the person, a summary of who they are and what they are trying to accomplish with your product or service. A persona can also include an emblematic quote from that user and demographic or psychographic information. If you want to learn more, there are lots of excellent resources that can help you learn more about creating personas (Adlin and Pruitt; Mulder and Yaar).

Creating a persona helps you synthesize the information to better understand and articulate the needs of your target audience and communicate who they are to others on the team. They are also helpful when you are drafting, editing, and revising your technical document. Let's go back to our example of a transportation website. For frequent bus riders, here is Craig, a bus rider who owns a car but prefers to take public transportation due to concerns about the environment and wanting to relax on his commute. The

second persona is Louise, she is dependent on public transit to get around as it's her only form of transportation and she is highly knowledgeable about routes and services. As you start working on your website, you might ask: "What information does Craig need to plan a trip?" or "What does Louise need to know about purchasing a monthly pass?" Imagining the specific people who will use your information will help you keep the focus on their needs and avoid thinking of users generically. Alan Cooper refers to this as "the elastic user" (Cooper) when you have a team sitting around thinking of users as generic abstractions, they can stretch to fit any scenarios or situation the design team can think of. Use your personas to focus on specific needs and attributes and communicate those to others on your team. This helps avoid the problem of the elastic user.

Personas also often include details about the user's context or setting that helps make decisions about design. For example, we may have learned through research that Louise's persona accesses the website on a mobile device and has a limited data plan. This will help remind the design team that there needs to be an optimized mobile version of the website that is lightweight and runs quickly. We might also learn that Louise is busy and in a hurry in the morning and so the schedule page should provide information that is easy to read which can help designers think about how to format that information.

EVALUATING YOUR TECHNICAL DOCUMENTS: USABILITY TESTING

Up to this point, we have discussed how to research your audience to help inform the writing and design of technical information. However, if you want to ensure what you have designed works for your readers or users, you also need to conduct usability testing. Usability testing is a method that helps you understand if a person can successfully use what you have designed and what problems arise when they try to use it. Usability testing can and should be used throughout the design process. That means, don't wait until you are done. Gather input by showing early drafts and prototypes to users early in the process. That way it's easier to make changes, decisions, and adjustments as you go. According to Redish, there are six characteristics that all usability tests share:

- **Real issues:** Thinking about what you want to learn, plan your test accordingly.
- **Real people:** People participating in the study who represent the audience you are designing for.

- **Real tasks:** Different stories or scenarios that are realistic for your audience that they will do when using your product.
- **Real data:** Information you collect in the study, when you ask questions, watch, listen, and take notes.
- **Real insights:** Hold off on your assumptions, review the data, and determine what is working and what needs to be improved.
- **Real changes:** Take what you have learned and make meaningful changes.

In the next section, we'll look at an example of an informal usability study you could conduct.

USABILITY TESTING EXAMPLES

Let's look at a usability testing example that you could use to practice. I have also developed a template for a Usability Testing Plan that you can use when planning and conducting your own study. Visit <https://doi.org/10.1145/3548658> and look for the file in the Educational Resources section (Rose, 2023). We'll continue to work on the idea of improving a website about public transportation. For this example, you'll need three people, a computer or mobile phone with access to the internet, your local transit organization. If you don't have one locally, try the closest big city or the Amtrak website. It is also helpful if you can record the session, so you can go back and review what happened. If you are meeting remotely, a tool like Zoom can let you share screens and record the session. If you are meeting in person, you can use a video camera or mobile phone to record. In the following section, you will find an example usability test session, from <http://www.usability.gov>.

Example Usability Test Session

Here is an example test session.

1. The facilitator will welcome the participant and explain the test session, ask the participant to sign the release form, and ask any pre-test or demographic questions.
2. The facilitator explains thinking aloud and asks if the participant has any additional questions. The facilitator explains where to start.
3. The participant reads the task scenario aloud and begins working on the scenario while they think aloud.
4. The note-takers take notes of the participant's behaviors, comments, errors, and completion (success or failure) on each task.
5. The session continues until all task scenarios are completed or time allotted has elapsed.

6. The facilitator either asks the end-of-session subjective questions or sends them to an online survey, thanks the participant, gives the participant the agreed-on incentive, and escorts them from the testing environment.

Example Scenarios

For the study on the transit website, here are five scenarios you can use.

1. Let's imagine you are commuting to school or work. You need to find a way to arrive by 8am next Monday morning. Using this website, find out what route will get you to your destination by 8am.
2. You have a friend visiting from out of town. Find out if there is a route from the airport to your home.
3. You want to buy a monthly pass to use public transportation. Find out how much a monthly pass costs and where you can purchase one.
4. You think your bus or train is delayed. Find out if there are any delays in your area.
5. You have heard the transit agency is thinking about cutting services in your area. Find a way to provide feedback to the agency and voice your concerns about cutting services.

ANALYZING AND REPORTING DATA

After conducting a usability test, the team needs to make sense of the data. Look through the data you have collected, read your notes, and look for patterns or areas where participants struggled. The goal of a usability test is to find problems, so look for examples of problems that people encountered. You may have captured quantitative data such as success rates, task time, error rates, and questionnaire ratings. You have also collected qualitative data about what participants did, what they said, comments, recommendations, or frustrations. For each of the problems you find, make a list of the Finding (what was the problem) and the Evidence (how do you know it was a problem). Evidence can include quantitative and qualitative data, using quotes from participants is a good idea to help demonstrate the problem. For example:

Finding: Users struggle to find information about service delays.

Evidence: Three out of five participants were not able to successfully find the service delay page. The remaining two participants found the page but stated confusion about the information on the page. Participant

3 said “I think I’m in the right place, but I’m just not sure if this answers my question.”

After you have identified your top findings on the site, you can communicate this information in a written report or oral presentation to the rest of your team. It is helpful to include screenshots of the document or information and include quotes or video clips that show participants’ experiences. If you have a large number of findings, consider assigning a severity rating to each one, for example: critical, serious, or minor.

MAKING CHANGES AND IMPROVEMENTS

Once you have gained a clear understanding of what is working well and what needs to be improved, it is time to make the changes to the original technical document. Take what you’ve learned from the test and make improvements in a new iteration. Prioritize the most critical problems and fix those first. Ideally, you should test your document again to make sure the changes have improved the document overall.

In this section, we have just touched on the method of usability testing. There is a lot more to learn and many helpful resources to do so, including how to books like *Usability Testing Essentials* by Carol Barnum and *Don’t Make Me Think* by Steve Krug. You might also consult access resources available on the website of the User Experience Professionals Association (<https://uxpa.org>) or Digital.gov (<https://digital.gov>).

CONCLUDING WITH SOME TIPS FOR RESEARCH

As you have now learned, there are many ways to understand and research your audience for the technical document or design you are creating. It can feel overwhelming when you are starting out, so I’ll conclude with some tips:

1. **Identify and then check your assumptions:** You probably are going to over-estimate what you know about your audience. It will be important to separate out what you think you know about your audience, your assumptions, and what you can back up or verify with data.
2. **Recruit for breadth and depth:** Find participants to give you feedback on your product who are target users, but also be sure that the people who you talk with make up the diversity of the population. Make sure to seek out people from marginalized or underrepresented audiences. To create inclusive technical information, you should engage exclusion experts.

3. **Start small:** As you begin to learn about your audience, start small. Choose one method or one group of users to learn more about. Then build up your knowledge over time by adding additional methods and broader groups.
4. **Follow an iterative process:** Involve representative users early on and throughout the process to ensure you are creating technical documents that meet their needs.

One thing is certain, it's never too early to start learning about your audience. So, try out these methods and learn about new ones so you can create helpful and successful technical documents.

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TEACHER RESOURCES

OVERVIEW AND TEACHING STRATEGIES

Researching audiences can be addressed at several points in a technical communication course. Any document that is being written or designed for an audience beyond the instructor would benefit from activities related to researching audiences. For most assignments in technical communication, the 5 Whys exercise is helpful for students to understand and articulate the exigency for crafting a document. Further, for most assignments, it is helpful to have a research and evaluation phase and to choose methods accordingly.

In the research phase, students can explore how to understand audience by looking at existing data or collecting new data, as explained in the previous chapter. Some examples of assignments and corresponding activities are:

1. **Resume and cover letters:** Interviews with hiring managers within a specific field to understand what they look for and how they read a resume.
2. **Writing for the web:** Looking at social media or existing data about current usage to understand issues or gaps.
3. **Proposal writing:** Conducting a survey to better understand the existing needs of a community or audience.
4. **Instructions:** Conducting a contextual inquiry to learn the steps and technical know-how of how a skilled user does something.

In the evaluation phase, students can conduct usability testing with a think aloud protocol on most documents and artifacts produced in class. The challenge is to access participants who are representative of the target audience. For educational purposes, you can have students conduct usability tests on each others' work, but having representative users is beneficial if possible. Here are some ideas on assignments and how to conduct usability tests:

1. Websites or instructions – create scenarios to identify problems and ask representative users to perform them on a site or page.
2. Proposal writing – ask a professional or a funder to read through an abstract or proposal to identify strengths and weaknesses.

A key item of researching audience is to help students connect what they learned through research to the decisions they have made in their design or document. One strategy to help students make these connections is to include a reflective memo as an addendum to each assignment. Ask students to reflect on one re more of the following:

1. How does the design of the document meet the needs of users?
2. What specific choices did you make in the design or writing of the document to meet users' needs?
3. How are you ensuring that your document or design is not biased? How does it reflect the needs of the diversity of your audience?
4. What aspects of the document or its design are you unsure about? What areas do you need to gather feedback on?
5. What changes did you make to the document or design based on usability testing or feedback?

Finally, being able to have students experience both the research and evaluation phase is beneficial, it is helpful to provide them with an end-to-end design experience which may span the entire term. Clients, campus partners, and community-based organizations are helpful to partner with. For example, partnering with local business to redesign a website, writing a grant for a non-profit, or working with iFixit.com where students can design and usability test instructions for repairing electronic devices. When working on a larger project such as the ones described previously, having students work in teams can also help share the work and strengthen human skills like communication and collaboration.

DISCUSSION QUESTIONS

To help students understand the ideas related to researching audience, consider posing the following discussion questions or activities. Some of these can be explored individually, others are better done in small groups or by a full class.

1. Think of something you have used or read that you felt like wasn't designed for you and you felt excluded. What was it? How did it make you feel? How could you redesign that item, document, or design to make it feel like it was designed for you?
2. Let's imagine we work at a company and we're going to design a new backpack. First, brainstorm all the possible potential users of a backpack. Second, list out all the unique needs of the potential users. Third, in small groups, each group should select one user to design for and list all the features of the backpack they are designing for that one user. Finally, come back together to share out different design ideas. How did the unique group you chose to design for impact the design and features you chose for the backpack your team designed?

3. How are technical documents different from other kinds of documents? Why is this difference important and how does it inform the process we use to design technical documents?
4. In the section that describes the techniques for researching and understanding audience, define each of the techniques and list what are the pros and cons of each method?
5. In the section on usability testing, there is an activity that asks you to conduct your own test. In teams, conduct the usability test on a local transit website. Share your responses to the following questions: What was it like to be in your role (participant, facilitator, notetaker)? What did you learn about the website? What works well? What ideas do you have for changing the site?