# Expectations Mapping: A Cognitive Approach to Teaching Audience in Technical Communication Programs

**Kirk St.Amant**
*Louisiana Tech University*

**Kacie Mennie**
*Louisiana Tech University*

**Abstract:** Usability is central to creating effective technical content. Audience expectations for usable content, however, are neither fixed nor universal. For this reason, technical communication students can benefit from approaches that help them effectively identify the usability expectations an audience has for technical content. This entry presents an approach for teaching audience usability expectations in technical communication classes and across overall technical communication curricula. Known as expectations mapping, the approach focuses on teaching students to identify the cognitive factors that affect an audience's usability expectations. The entry then concludes by providing suggestions on how to integrate expectations into an overall technical communication program.

**Keywords:** Audience usability, cognition, design, expectations, usability

Effective technical communication is often a matter of usability. Specifically, the individuals reviewing technical content, be it text, visuals, multimedia, etc., must use that content to successfully complete a desired objective (Redish, 2010; Redish & Barnum, 2011; Schreiber & Melonçon, 2021). Technical communication students therefore need to understand audiences in terms of who individuals are and how those individuals expect to use certain content to achieve an objective. For this reason, members of the field have increasingly advocated integrating the teaching of usability into technical communication courses and curricula (Kastman Breuch & Spinuzzi, 2001, LaRoche & Traynor, 2010; Cleary & Flammia, 2012; Lauer & Brumberger, 2016; Jacobsen & DeVasto, 2023). Achieving this objective often means acquainting students with psychological factors that guide how individuals identify, understand, and use different content (Albers & Mazur, 2003; Siau & Tan, 2005; Cooke, 2010; Acharya, 2022; St.Amant, 2022).

The psychological factors affecting usability are not random. Rather, many involve cognition – or how individuals' brains have learned to process different kinds of information over time (Tse et al., 2007; Yamada & Itsukushima, 2013). Specifically, the usability of an item, content or otherwise, reflects how an audience has learned to interact with or use that item (Pass, Renkl, & Sweller, 2003; Cook, 2006; van Merrienboer & Sweller, 2010). Accordingly, integrating usability into technical communication classes and curricula involves helping students identify and address cognitive factors affecting an audience's expectations.

Achieving this objective is no simple task. The related concepts are complex, and the teaching of these concepts needs to be somewhat standardized for students to grasp core ideas across classes. Expectations mapping is an approach to identifying the usability expectations of an audience, and it can help address this situation. Based on the cognitive concept of conditioning, the expectations mapping process helps identify the foundational elements individuals associate with using an item. This process also provides technical communication instructors and program administrators with a relatively easy-to-implement and consistent way to teach audience expectations in classes and across a curriculum.

This commentary provides an overview of the expectations mapping process and explains how it can benefit technical communication classes and programs. The article begins by reviewing how individuals' experiences condition them to engage in behaviors that influence t how items are used. The authors then explain how the process of expectations mapping can provide technical communicators with a method for identifying conditioned behaviors affecting how audiences respond to and use different content. The entry then presents an approach for integrating the teaching of expectations mapping into different technical communication classes and across related programs. In so doing, the authors note how combining such mapping with user testing can help students understand conditioning factors that shape an audience's perceptions of usability.

## Foundational Cognitive Dynamics

Cognition, or how the mind processes information, impacts the way humans use items (Eyal, 2014; Acharya, 2019; Verhulsdonck & Shalamova, 2020; Vukasovich & Kostic, 2022). While many cognitive mechanisms are innate (nature), the inputs that shape user behavior reflect an individual's experiences (nurture) (Cooper, 1999; Norman, 2002; St.Amant, 2022). By addressing such nature-nurture factors, courses and curricula can help students understand the usability factors audiences associate with different content. Educators and program administrators can achieve this objective by focusing on how the process of conditioning shapes an audience's usability expectations.

### Conditioning

Humans often learn what an item is and what it does through a process called conditioning. Conditioning influences an individual's criteria for determining:

- What items are (e.g., which features identify an item as a can opener)•
- What items do or are used to do (e.g., what individuals use a can opener to do)
- How to use items to perform a process (e.g., how individuals use a can opener to open a can)
- What results indicate the individual used the item correctly (e.g., what resulting situation indicates individuals correctly used a can opener to access the contents of a can) (Kirsch et al., 2004; Staddon & Cerutti, 2003; De Houwer, 2011).

As such, conditioning often plays an important role in shaping an individual's assumptions of what constitutes a usable design in terms of one's ability to recognize and use different things (Michalco, Simonsen, & Hornbaek, 2015; Hassan & Galal-Edeen, 2017). Per the prior example, an individual's ability to recognize a can opener and use it to open a can reflects that person's prior exposure to and experience with can openers.

The more frequently individuals encounter an object, use it a certain way, and observe a particular result, the stronger these associations become in the minds of those persons (Taylor & Todd, 1995; Barnard et al., 2013). The brain then relies on these repeated experiences to develop patterns (i.e., create expectations) for how to use the related item (Hurtienne & Blessing, 2007; Setchi & Asikhia, 2019). So, the more often individuals observe a can opener used a certain way to open a can, the greater the chances they will use a can opener that same way. These common patterns then become the foundation for how individuals identify and use various items.

Over time, these repeated experiences become seemingly automatic behaviors for using items (Norman, 2002; St.Amant, 2022). Essentially, if individuals encounter the right stimulus (e.g., correct visual, sound, tactile sensation, etc.), they will instantly perform the associated action until the expected results occur. Most if not all of this activity occurs without any conscious thought. Rather, such automatic behavior results from conditioning. Essentially, the presence of the correct stimulus (e.g., design) readily prompts the reflexive performance of a related behavior (Duhigg, 2014; Eyal, 2014). Per the prior example, the moment I encounter a design I recognize as a "can opener," I automatically use that item a particular way to open a can. This is because my prior experiences become the guide I instinctively follow to perform this process.

The experiences that create conditioned behaviors, however, are not universal. Rather, they can vary from person-to-person depending on an individual's experiences and what someone has been exposed to over time. As a result, different usability expectations can arise among individuals based on the stimulus (e.g., visuals, sounds, etc.) each person learns to associate with a process (Duhigg, 2014; Eyal, 2014; St.Amant, 2022). Individuals who have only been exposed to an automatic can opener, for example, might be unable to identify or use manual can openers to open a can.

Such differences in experience-based conditioning dynamics have important implications when designing content to address what an audience considers usable. For example, individuals who have only experienced printed manuals might have no idea of how to use online help systems to access instructional content. (They might not even be able to recognize what such systems are.) Technical writing professionals and students alike can benefit from an understanding of how conditioning factors can shape an audience's perception and use of different technical content. The first step in developing such an understanding involves examining how the connections between conditioning and content affect usability. Little has been said, however, regarding design literacy in TPC.

## Content

In technical communication, the term "content" often refers to the information one shares via different formats including textual, visual, and multimedia (see, for example, Albers & Mazur, 2003; Dubinsky, 2015). Effective content presents concepts in a way that audiences can easily apply to accomplish the objective for which they are using an item/consulting a text (Carliner, 2001; Albers & Mazur, 2003; Dubinsky, 2014). Accordingly, textual/verbal/sonic content needs to address what audiences expect to achieve (and how) for those individuals to consider the related information usable. Similarly, visual content (e.g., images, features, and interfaces) needs to mirror the design factors conditioning has trained individuals to expect when using this kind of content to perform a process.

These content expectations can encompass everything from the design of individual features or parts of an item (e.g., the design of an "On" button on a remote control) to the overall design of objects and products themselves (e.g., the design of the remote control on which the "On" button appears) (Norman, 2002; Acharya, 2019; St.Amant, 2022).They can also determine if individuals can recognize a tool or technology so they can use it in a setting. In these ways, conditioning teaches individuals to associate the usability of certain content with the presence and design of certain elements (e.g., use of headings in a document, configuration of text and visuals on a page, presence of features on a website, etc.) The better students understand the connections between conditioning and content, the more effectively they can create materials an audience can use effectively. Achieving this goal is a matter of teaching students about how condition shapes a groups' usability expectations for content.

## Expectations

Conditioning often accounts for different usability preferences audiences have for content. This is because the conditioning factors affecting an audience's expectations are not universal. Rather, they can vary from person based on each individual's experiences (Mendoza & Novick, 2005; Sonderegger et al., 2012; Kujala & Miron-Shatz, 2015). For example, individuals who have no prior experience using a smart phone similarly lack the conditioning associated with using that phone easily or automatically. As a result, content creators cannot assume individuals will know the dynamics of interacting with such technologies. Rather, they must provide content that provides new users with information on how to use this previously unencountered technology.

Additionally, conditioned behavior is not fixed. Rather, it can change over time as individuals engage in new experiences that reshape prior, conditioned behaviors (i.e., prompt new kinds of conditioning) (Mendoza & Novick, 2005; Sonderegger et al., 2012; Kujala & Miron-Shatz, 2015). Developments, such as moving to a new location, can expose individuals to new stimuli and approaches for using an item or performing a task. The design of kiosks for purchasing train tickets, for example, can vary from country to country. Such variations can impact how usable an item is for long-term residents of an area (e.g., individuals conditioned to use such technology) vs. visitors conditioned to use a different design or kind of device. In such cases, instructions on how to use new designs (e.g., features or products) can help individuals with different experiences modify their conditioned behaviors to include the use of such "new" items. Accordingly, providing visitors with instructions on how to purchase tickets at a kiosk can help them revise their conditioned behavior to use technologies.

Essentially, new experiences can bring new content expectations that affect how items should be designed, or how content should be worded, so individuals can use products or information effectively in new situations. The better technical communicators—and technical communication students—understand these conditioning dynamics, the more effectively they can address them to create usable content for different audiences. Expectations mapping is a process that can facilitate such content creation by helping practitioners and students alike identify the conditioning dynamics that shape an audience's assumptions for usability.

## Implications for Education

Technical communicators can determine how much conditioning influences usability based on how often individuals rely on automatic behavior (i.e., doing without thinking) when using an item. For example, how many times do most individuals stop and actively think about how to use their smart phone to call someone? This is because humans rarely notice how conditioning affects the use of items in everyday life. Technical communicators, however, need to understand such cognitive dynamics in order to identify the usability expectations of different groups (St. Amant, 2017; 2022).  Such an understanding is central to creating communication materials (i.e., content)—documents, visuals, multimedia, etc.—an audience considers "usable." Accordingly, teaching technical communication students to identify and address these conditioning factors represents a core skill instructors should focus on in courses and across programs. The challenge for educators and program administrators involves finding an approach that can 1) effectively identify the conditioning factors affecting usability expectations, and 2) successfully be implemented across a curriculum.

Such an approach should also be easy for students to apply repeatedly and consistently across courses r to reinforce core ideas within a program. Achieving these goals involves identifying the elements central to conditioned behavior—or the stimuli that start and stop the particular actions in an overall process.

The solution comes in the form of *expectations mapping*, an approach that focuses on identifying the stimuli and associated actions behind a conditioned behavior. Such mapping is also adaptive so it can help identify if usability expectations change over time based on experiences (e.g., moving to a new location). As a result, expectations mapping can both account for an audience's current usability behaviors and help identify potential shifts in such behaviors based on changes in an individual's experiences and exposure.

## Teaching the Fundamentals of Expectations Mapping

Familiarizing students with expectations mapping involves teaching them how to identify the conditioning dynamic foundational to what constitutes usability. The metaphor of "on switch" and "off switch" helps students conceptualize the fundamentals of conditioned behavior. Essentially, educators can begin by examining conditioning (i.e., learned, automatic behavior) in terms of three interrelated parts:

- **On switch** = The specific sensory stimulus that prompts a particular action from users when they encounter it

- **Action** = The particular action the specific sensory stimulus (i.e., "on switch") prompts users to perform when they encounter it

- **Off switch** = The specific sensory stimulus (i.e., result) that indicates the action was performed correctly and the user should stop performing that particular action

When introducing students to these concepts, instructors can use the process of making a call with a smart phone as an example that illustrates how this process works in everyday life. The resulting approach might look something like:

- **On switch** = The icon (e.g., telephone receiver) that initiates the "make phone call process" by prompting users to perform a specific action associated with that process

- **Action** = Tapping the "phone call" icon (on switch) in order to begin the process (i.e., use the item) of making a call

- **Off switch** = The new stimulus (e.g., number pad for typing phone number) that appears in response to this action (i.e., tap icon) and indicates the individual correctly performed the process and can stop the related action (i.e., stop tapping "phone call" icon)

By using this familiar process, instructors help students conceptualize conditioning in terms of how certain stimuli can prompt individuals to start or to stop particular actions. This example also helps students understand how quickly the conditioning process can develop a particular, automatic behavior for using an item.

To help students more fully understand how experiences affect conditioning, instructors could ask the class if any of them have ever helped a friend, family member, etc. use a technology—like a smart phone—to perform a process the students considered self-obvious. Instructors could also ask students to discuss how that person's limited experiences using the related item resulted in this need for information (i.e., content) on how to use that item.

Next, instructors could have students perform an in-class activity where they identify or map the "on switch," "action," and "off switch" dynamics for the next step in the process of making a phone call with a smart phone (i.e., typing in a phone number). For this activity, students could work individually or in pairs to identify the conditioning factors at work in this second activity associated with making a call with a smart phone. Each student-pair would then share the results of this mapping with the class, and all members of the class could compare and discuss their findings in terms of similarities and differences.

In the case of this example, the resulting mapping might resemble the following:

- **On switch** = Number pad that appears after tapping the "call phone" app
- **Action** = Type in phone number and click "call" icon/button on the number pad interface
- **Off switch** = Interface changes to a "Calling" screen to indicate the process of typing in the number was successful

As students discuss their findings, instructors could ask them to consider how their own experiences with this process might have resulted in certain similarities and differences noted in the mapping results. Instructors could also have students discuss how the automatic nature of this process can make it difficult for individuals familiar with the process to map it effectively. Instructors could then conclude with a discussion of why students need to research the expectations of their audience, vs. rely on their own experiences, when creating usable content for different groups.

## Extending Expectations Mapping to Overall Processes

Conditioned behavior often involves more than the performance of a single action in response to one set of "on" and "off" stimuli. Rather, such behavior generally encompasses a series of conditioned actions strung together almost seamlessly through a process of overlapping different stimuli. This is called chaining. Per the example of using a mobile phone, the number pad interface that stops the action "tap app" also serves as the "on switch" that prompts the next action in the overall process, typing in a number. Overlap involves almost automatic responses to different stimuli, and individuals remain unaware of how various sensory input initiates different behaviors in a process.

Instructors, in turn, should have students expand upon their initial "on-switch, action, off-switch" analysis of behavior in a way that helps them understand how different conditioning dynamics shape a greater sequence of behaviors. The expansion of these ideas involves students performing more granular expectations mapping of activities to identify the different conditioned behaviors (i.e., on switch, action, off switch) at work in an overall process. These granular mapping activities also help students realize how humans might overlook the nuances of conditioned activities by reducing them to a few inclusive steps. In the call phone situation, for example, individuals often view the "type number and make call" process as one task vs. as multiple tasks with their own on and off switches.

To achieve a deeper understanding of conditioning, instructors should ask students to reflect on how different automatic actions seem to overlap in a greater process associated with using an item (e.g., all stimuli and actual steps involved in making a call with an app). For example, after students discuss their mapping results for tapping a "call phone" app, instructors could note how the "off switch" (i.e., appearance of number pad) that ended one process (i.e., starting to make a call) suddenly became the on switch that automatically started a new process (i.e., typing in phone number). Instructors could then explain this overlapping of "off switch" for one part of process that is also the "on switch" for the next part of the process creates the illusion the overall action (making a call with a cell phone) is one simple task.

In reality, the process of using something often encompasses a series of "on switch," "action," and "off switch" relationships. This situation means that different experiences can lead to different conditioned behaviors for each part of a greater activity. To understand such factors, students need to map the overall process for using something to identify the various conditioning dynamics (on switch, action, off switch) associated with performing that process.

## Teaching Extended Expectations Mapping

Teaching students to extend expectations mapping to overall processes involves having them scrutinize activities to identify the conditioning factors at work across all parts of a process. To do so, instructors can have students build upon their prior expectations mapping activities. For example, instructors can use the "making a call with a cell phone" example to help students conceptualize how to map an overall process according to overlapping conditioning factors. To guide students as they perform this extended mapping, instructors should first ask them to identify the greater process they wish to examine, map.

- *Example:* Making a phone call with a cell phone

Next, instructors need to have students identify the different tasks – or actions – involved in this process. Students could undertake this assignment individually or in pairs, but they should first attempt to map the greater process and then compare and discuss their results with the class. After the *example*, **Process** shows how the related map could look:

- *Example*: Tap "call phone" icon to access keypad, type in number on keypad and press "call" button, respond to resulting input (e.g., person says "Hello," voicemail message provides instruction, etc.)

**Process:** *Make a phone call with a cell phone*

**Task 1:** Tap icon to access "make phone call" app

**Task 2:** Type in phone number and press "call" button

**Task 3:** Respond to input received after call connects

At this point, instructors should ask the student to identify the stimulus that starts each task ("on switch") and the related stimulus that stops each task ("off switch"). The resulting map might look something like the following:

**Process:** *Make a phone call with a cell phone*

**Task 1:** Tap icon to access "make phone call"

- On switch = "Call" icon (and perhaps corresponding sound/sensory stimulus associated with it)
- Action = Tap "Call" icon to access number pad
- Off switch = Number pad (and related sound/sensory input associated with its appearance)

**Task 2:** Type in phone number and press "call" button

- On switch = "Keypad" screen
- Action(s) = Type in number and tap "call" button
- Off switch = "Calling" screen appears

**Task 3:** Respond to input received after call connects

- On switch = Response from other party ("hello?" voicemail message, etc.)
- Action = Respond (state who you are, leave message, etc.)
- Off switch = Confirmation responses from other party (e.g., speaker replies, voicemail message confirms receipt etc.)

During this in-depth mapping process, instructors would have students identify overlap areas – or points where the stimulus that stops one action starts another (e.g., number pad = stop tapping "call phone" app and start typing in phone number). Instructors can also ask students to identify points where multiple actions seem embedded in the same task (e.g., keypad = type in number AND tap “call” button). At this point, instructors can request students try mapping this particular task in a more granular on switch-action-off switch fashion such as:

**Task 2:** Type in phone number

- On switch = Number pad
- Action(s) = Type in number
- Off switch = Each number button changes slightly and/or makes a sound when tapped to indicate it was correctly used (i.e., stop tapping specific number button)

**Task 3:** Tap “call” button on number pad

- On switch = Full phone number appears on screen
- Action = Tap “call” button
- Off switch = Interface changes to “Calling” screen

In this way, students learn how one apparent task (e.g., type in number) can actually contain multiple, connected activities (e.g., type in number and press “call” button) with each task having its own on and off switches, each of which impacts the usability of the item.

From this point, instructors can ask students to further identify the different smaller stimulus-based actions/tasks that occur within a larger process. Per the phone call example: This activity could include noting how the “off switch” for type in number/ on switch for “press “call” button is often the full, typed number appearing on the number pad screen. This realization should then prompt students to do a new level of mapping to account for each of these actions.

Next, instructors could ask students to create a similar expectations map for different, common activities associated with using other items (e.g., logging in to an institutional email account).  Again, students would have to identify the task-related factors (i.e., on switch, action, and off switch) involved in using that item to perform a particular process.  Students could then discuss their resulting expectations maps with the class to understand how conditioning shapes behaviors.

During these discussions, instructors could help identify areas where students overlooked a task entry (i.e., blended two tasks together and overlooked sensory on/off switches and the related action for these switches). Such a guided discussion can help students realize how easily one can overlook, forget, or blend certain elements when communicating about familiar processes.  During these guided discussions, instructors should emphasize the need to work with—and collect mapping information from—the audience for which students will design content. Instructors should also emphasize why students should not rely on their own understanding of a process to create content for others.

## Building on the Basics of Expectations Mapping

The smart phone example mentioned here is one example of how instructors can use a common technology or product to teach the basics of expectations mapping. The key is for students to learn about conditioning by mapping a process very familiar to them. This mapping of familiar processes helps students realize how they have conditioned themselves to respond to different stimuli when using a particular item or performing a given activity. Accordingly, instructors could customize this activity by having students create expectations maps of technologies associated with a specific class or topic (e.g., mapping the use of icons in a visual design program as part of a visual design class). The objective is for students to learn:

- How much stimulus-response conditioning influences the uses of an item
- How different experiences can result in different conditioning that affects usability expectations
- How to map/identify such conditioning factors related to using an item

An understanding of these factors can help students learn they should not assume there is a universal way for doing or using something. Such understanding can also help students realize audiences new to an item need certain instruction (i.e., content) to identify the on switch, action, and off switch factors central to a performing an activity or process. In this way, mapping helps students comprehend how the creation of technical content, such as instructions, should focus on identifying the stimuli and actions associated with using an item.

Once students have analyzed a process, they could use the resulting expectations map to create instructions on how to use the related item to perform the associated process. Students could then test those instructions by having individuals unfamiliar with the item or process use these instructions to perform the related activity. As test subjects use those instructions, students could note if or where usability problems occur and note how some aspect of the "on switch-action-off switch" process affected the usability of those instructions. Students could then share their testing results with the class and discuss how expectations mapping can help identify where different experiences can cause usability issues. Instructors could also have students discuss how usability issues can arise from the assumption an audience's behaviors are similar to those of the student/content creator. Such a discussion could emphasize the importance of working with and collecting information on usability dynamics directly from the members of an audience.

The objectives of these testing activities and related discussions are threefold. First, they help students understand the degree to which experiences shape expectations. Second, they help students understand what these factors mean for how audiences use an item to achieve an objective.

Third, these activities help students understand the role that stimuli—particularly, recognized stimuli in terms of the design of essential features—impacts the actions individuals perform when completing a task. By combining user testing with expectations mapping, students learn to identify user behaviors as well as address potential usability problems.

Expectations mapping and associated user testing can also permit a degree of collaboration as students learn to apply this process to different topics or projects in a class. Instructors, for example, could include an in-class expectations mapping activity every time the class examines a different genre for or approach to sharing information with others. Students could then use expectations mapping to collaboratively determine how to draft a given item/assignment based on the related audience's usability-related behavior. Students could also use the results of this mapping process to develop sample materials they could test with members of the intended audience. By combining expectations mapping with user testing, students learn to identify and address core factors affecting how audiences use different content.

When teaching this topic, instructors could ask students to create an expectations map for how the intended audience might use the related item or access associated content. Instructors could also have students research the intended audience in a relatively standardized way in order to identify associated factors per the on switch-action-off switch factors associated with a process. To collect such information, instructors could have students conduct interviews where they ask members of the intended audience to discuss the process for how they use an item (e.g., "Where and how do you review an instruction manual?"). As audience members describe the process, students could ask them to identify the factors that prompt certain actions (e.g., "When do you start reading the text? What prompts you to start reading it?") Such activities can help students learn how to systematically apply expectations mapping to collect information on an audience's conditioned usability behaviors. Students can also use expectations mapping to identify how an audience uses a certain content (e.g., "How do you know to stop skimming the pages and start reading a particular section of a report?").

## Integrating Expectations Mapping into a Curriculum

While seemingly simplistic, expectations mapping can help teach students about usability factors related to an audience's experiences. Specifically, students can use expectations mapping to analyze different communication situations and determine what information/content an audience needs (identify on switch, identify action, identify off switch) to use texts or technologies based on that audience's experiences. Students can also quickly and easily apply expectations mapping to different communication situation including:

- Writing papers (e.g., what conditioning factors influence how individuals read a report)
- Developing websites (e.g., what conditioning factors affect how users log in to a website)
- Designing infographics (e.g., what conditioning factors affect how audiences review visual content).

Expectations mapping can also help students identify where users might need information or content (e.g., need text to identify the on switch for new users) based on a breakdown of the tasks (stimulus, action, stimulus) associated with a process.

This flexibility means individuals can integrate expectations mapping into classes and across a curriculum relatively easily. Students, moreover, do not need any specialized background or technical skills to map expectations when researching audiences or drafting materials. This factor can be important in situations where students from different disciplines assemble in the same class context, like a service course or a technical communication class required for students from different majors (e.g., a usability class required for computer science majors). In such cases, creating a common foundation for examining audience behavior can allow students with various levels of knowledge and experience to participate relatively easily in class projects. The relative ease of applying expectations mapping also allows individuals from different disciplines to participate effectively in more advanced classes in a program (e.g., bioengineering students interested in a health communication class).

This flexibility allows instructors and program administrators to implement expectations mapping in a class regardless of its relative level (e.g., beginner, intermediate, or advanced) within a curriculum. As a result, expectations mapping can create a common approach for identifying audience/usability behavior across different assignments irrespective of the focus of a class. Instructors of technical communication service courses, for example, could have students use expectations mapping when drafting technical reports for a non-specialist audience (see, for example, Chong, 2018). Likewise, instructors of more advanced classes in media and communication could have students use expectations mapping to identify user expectations when developing apps, infographics, or other kinds of content. This adaptability also allows for the use of a relatively standardized approach for considering audience behavior across a curriculum. Such standardization can help the students in a program better understand and apply a consistent approach to addressing audience across the classes they take in a program.

Additionally, instructors do not need any specialized expertise to teach this expectations mapping process. In fact, the overall process is relatively easy to learn—as well as relatively easy to impart to others. These factors make the teaching and application of expectations mapping something individuals can effectively integrate into different courses and across an overall curriculum regardless of the instructor's background in an area. This factor can help create consistency in situations where programs regularly hire instructors just before the start of given term (see, for example, Bartolotta, Bourelle, & Newmark, 2017; Melonçon, 2018; Schreiber, Carrion, & Lauer, 2018). This ease of application, moreover, can help students understand and apply basic aspects of cognition and usability to different topics and processes based on the related class (e.g., visual communication, web design, technical writing, technical editing etc.).

This ease of application helps create greater consistency across a program in terms of how students approach a topic/project (i.e., through a mapping process). Expectations mapping also provides a consistent framework students can use to assess their work (i.e., how well do assignments map onto the expectations of intended users). Additionally, the ability to apply expectations mapping to different contexts provides students with a methodology they can use to address other kinds of writing projects throughout their careers.

From an assessment perspective, expectations mapping creates a common foundation for evaluating student work in terms of meeting common criteria regardless of the project. This factor could also permit more flexibility in the kinds of projects students need to submit for a class by providing a common approach to grading different products created to achieve a common objective. Such flexibility within classes could allow students from different majors to create projects that best suit their learning styles and backgrounds while also meeting common standards for evaluating work. Situations like these could make individual classes, and the related program, more appealing to a wider range of students (including students from different majors) and increase enrollments in classes and overall programs. Such a perspective also connects to prior discussions of usability-related approaches to assessment (e.g., Salvo & Ren, 2007; Grice et al, 2013; Kowalewski & Williamson, 2016).

## Conclusion

Technical communication materials—including manuals, infographics, and websites—enable users to achieve objectives. An understanding of an audience's usability expectations is thus essential to creating technical content the audience can use effectively. The better students understand such dynamics, the more successful they will be at technical communication activities in and beyond the classroom. The expectations mapping approach helps students comprehend and address such factors. Moreover, instructors and program administrators can easily integrate this mapping approach into individual classes and across an overall curriculum. Additionally, the ease of teaching experience mapping allows for a standardized approach to examining topics within a program. It also provides the flexibility needed for students from different majors to examine ideas while permitting instructors from different backgrounds to teach audience in a more uniform way. For these reasons, the administrators of technical communication programs can benefit from integrating expectations mapping into their curriculum and across their programs.

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# Author Information

**Kirk St.Amant** is a Professor and the Eunice C. Williamson Chair in Technical Communication at Louisiana Tech University where he serves as the Director of Louisiana Tech's Center for Health and Medical Communication (CHMC). He is also a member of the University's Center for Biomedical Engineering and Rehabilitation Science (CBERS) and is an Adjunct Professor of Health and Medical Communication with the University of Limerick in Ireland and a Research Fellow in User Experience Design with the University of Strasbourg in France.

**Kacie Mennie** is an Assistant Professor of Psychology at Louisiana Tech University.