8.1 Design Considerations - Part I

It is imperative that designers tailor their products to those who are going to be using them. When sites are easier to navigate, and enable successful completion of tasks, users are more likely to return to the site, and to tell their friends about their experience. This lead to increased visibility and revenue, and is why user-centered design is imperative.

User-centered design is about putting the user at the center of the development process. In doing so, developers can generate sales and attract customers, while maintaining safer and more culturally appropriate products. This section goes over these concepts and the user-centered design principles that can be used to build a more robust product.

User-centered design is a process that ensures designers incorporate solutions that keep the users and their needs in mind. This usually involves users throughout the design process in various ways. According to the Interaction Design Foundation (2018), "In user-centered design, designers use a mixture of methods and tools, such as surveys, interviews, and brainstorming sessions to develop an understanding of user needs." Within the concept of user-centered design, designers must take into account the entire user experience. This will usually require multi-disciplinary teams mixed with end users to truly create a user-centered solution (Interaction Design Foundation, 2018). The key here is that users are involved in each step of the process.

Why User-Centered Design?

User-centered design is an important concept that can make or break an application. Many argue that user-centered design is not effective because an application cannot be completed with every person's needs, wants, or desires in mind. However, there is much to be said about taking the input from users—positive or negative—and using it to improve the design of a solution. Therefore, user-centered design's primary benefits are customer experience and employee productivity (Foraker Labs, 2016). David Benyon sums up the benefits of user-centered design as such (Interaction Design Foundation, 2018):

- With the user's involvement throughout the process, products are more likely to meet the user's expectations and requirements. This could lead to increased sales and lower costs incurred by customer support.
- Interface designers generally create products for people in specific contexts and with specific tasks. Including users throughout the design process reduces the chance of a situation occurring with a high risk of human error. This means the creation of safer products.
- Putting designers in contact with users allows a more profound sense of empathy to emerge. This is critical in creating ethical designs that respect both privacy and the quality of life.
- By focusing on all users of a product, designers can recognize the diversity of cultures and human values.

User-Centered Design Principles

Principles help guide the focus of an individual or organization. User-centered design also has principles that help designers make the best choices with the end users in mind. These ten principles, written by Ben Obear (2017), include the following:

1. Design for users and their tasks

The developer needs to consider the audience, users, application, and characteristics. Most users adopt various systems to support themselves in performing tasks. Therefore, these tasks should be designed with the user's frame of reference in mind.

2. Maintain consistency

As users navigate through a site, it becomes confusing if buttons begin working differently than expected, or radical changes in the design of the site appear. In other words, the behavior of the site elements should remain consistent. This will make any system more comfortable to learn with minimal and understandable requirements.

3. Use simple and natural dialogue

The application should be simple in that the only information displayed should be relevant and essential to the task. The language itself should be plain English when possible (when the audience is English-speaking) and ensure the vocabulary is relevant to the target audience. Terminology should be consistent throughout the entire site.

4. Reduce unnecessary mental effort by the user

If users are trying to perform a task, they are likely to be less worried about the tool and more concerned about the outcomes. Making an interface too complicated can become frustrating because it distracts the end users. Make the interface as intuitive as possible and provide instructions when something needs to be complex.

5. Provide adequate feedback

Anytime a user completes or does something on the site, there should be some form of feedback. No one likes to buy something or submit a task with no assurance that what they did was successful. If the operation takes a little longer, consider adding a progress bar. Overall, incorporating feedback into the system is very important.

6. Provide adequate navigation mechanisms

Being able to navigate cleanly and with ease is another critical consideration. On smaller sites, this could include ensuring that pages or links are named the same, and on larger sites, this could include a navigation map. It is essential to provide clear routes between different windows and to ensure users can exit a page or return to the beginning if they get lost.

7. Let the users take charge

The user understands what they need the most. The system is there to provide information or perform a task. Constraints invoked by the system should be as minimal as possible.

8. Present information clearly

   How the information is arranged is essential. This is usually accomplished by the way a site is designed. This could include proper boxes, spacing, tables, etc.

9. Offer assistance

   Sometimes the information will be clear and proper navigations will be in place, but the users will still need assistance. It is important to provide informational tips and icon-labeled buttons when possible to provide this assistance. Any instructions that are provided should be self-explanatory to allow the user to keep moving forward.

10. Error-free

    Lastly, ensure the site is free of errors and is navigating users in a way that minimizes errors. This could be accomplished by doing simple things such as incorporating data validation to any type of input. If there is an error, ensure it is in plain language that points to the exact problem.

ESSENTIAL VIDEO

Watch "User-Centered Design Overview" (opens new tab) from LinkedIn Learning. This video goes beyond technical specifications and focuses on how users can be the center of design..

As you watch, consider the following questions:

- What is user interface design?
- What is learned from the example of the farmer?
- What are the three things to remember about user-centered design?

Attributions and References:

Foraker Labs. (n.d.). Benefits of user-centered design. Usability First. https://www.usabilityfirst.com/about-usability/benefits-of-user-centered-design/index.html

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8.2 Design Considerations - Part II

User-Centered Design Process

There are many variations in a user-centered design process. These variations can happen as these processes are being adapted within the context of methodologies such as **Waterfall**, **Agile**, or other kinds of processes. According to the General Services Administration (2017), there are general phases that occur throughout user-centered design processes. These phases include the following:

- Specify the context of use:
  - Identify the product users, what they will be using it for, and under what conditions.
- Specify requirements:
  - Identify any requirements needed for the interface to be successful.
- Create design solutions:
  - This phase creates the interface until there is a complete design.
- Evaluate designs:
  - Actual users should be performing usability testing within this phase

The following is a typical top-level characterization of the most **popular user-centered design methods (Baxevanis, 2006)**:

Table 8.2.1: Popular User-Centered Design Methods

Method	Cost	Output	Sample Size	When to use
Focus groups	Low	Non-statistical	Low	Requirements gathering
Usability testing	High	Statistical and non-statistical	Low	Design and evaluation
Card sorting	High	Statistical	High	Design
Participatory design	Low	Non-statistical	Low	Design
Questionnaires	Low	Statistical	High	Requirements gathering and evaluation

Method	Cost	Output	Sample Size	When to use
Interviews	High	Non-statistical	Low	Requirements gathering and evaluation

ESSENTIAL VIDEO

Video title: "Understanding the Benefits of User-Centered Design" (1:34)

Watch "Understanding the Benefits of User-Centered Design" (opens new tab) from LinkedIn Learning to begin understanding the benefits of a user-centered design mindset. This resource goes into more specifics about leveraging the user-centered design approach with technology. Turning empathy into specifications is difficult but doable.

As you watch, consider the following questions:

- What is the key principle of user-centered design?
- Why is it hard to turn empathy-based concepts into something systematic?
- What are the results of applying user-centered design?

ESSENTIAL READING

Reading title: "User-Centered Design: An Introduction"

Read "User-Centered Design: An Introduction" (opens new tab) from Usability Geek to gain a deeper understanding of user-centered design, as well as the principles and processes behind this design method. This web resource provides an in-depth look at the concepts of user-centered design and helps showcase what the process looks like. As you explore guiding principles, you will discover how to achieve user-centered design.

As you read, consider the following questions:

- What is the difference between user-centered design and human-centered design?
- How do the four essential elements of user-centered design apply to implementing user-centered design?
- What are some of the important questions to consider during the user-centered design process?

PARTICIPATION ACTIVITY 8.2.1: Design Principle

1) A user is populates a form and gets an error that they did not enter their birthday correctly. Which design principle does this exemplify?

- ○ Error-free
- ○ Offer assistance
- ○ Reduce unnecessary mental effort by the user
- ○ Maintain consistency

Attributions and References

Baxevanis, A. (2006, May 1). User-centred design: 6 popular UCD methods. Inviqa. https://inviqa.com/blog/user-centred-design-6-popular-ucd-methods

General Services Administration. (n.d.). User-centered design basics. Usability. https://www.usability.gov/what-and-why/user-centered-design.html

Nodder, C. (2017). *Understanding the benefits of user-centered design.* https://www.linkedin.com/learning/ux-design-1-overview-2/understanding-the-benefits-of-user-centered-design

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8.3 Participatory Design

This section explores the concepts and roles surrounding the participatory design methodology, which is based on user-centered design. **Participatory design** allows users to be engaged and embedded in the research and allows development teams to bring more insight into how to design an application.

One of the key benefits of participatory design is its ability to create an immediate feedback loop by pairing users with designers and developers. This not only creates a stronger bond between users, designers, and developers, it also leads to better outcomes for everyone involved. It leads to higher revenues and ultimately lower costs for the product itself. The only caveat is that this process is mostly suitable for smaller solutions. When thousands or millions of users may use a solution, it is not always easy to implement participatory design with real accuracy.

In participatory design, system users are brought onto the research and development teams to participate in designing and building the interface. This allows users to take an active role in the

design process, including any decisions that are being made. In some cases, having users as a part of the team will make the product more innovative because developers are generally focused on requirements and do not necessarily think outside the box (Moyers, 2018). This is beneficial to development teams because participatory design:

- brings a fresh set of eyes in from the perspective of someone who would be using the product (Moyers, 2018)
- helps designers uncover missed opportunities or design values
- can be set up in very little time

The primary roles within participatory design are the designer, developer, and user. Additional users could be involved depending on the actual project, but these three are generally always included. The designer is the one who helps create the layout for the solution, the developer helps the solution evolve, and the user guides and provides insight into the solution. According to Participate in Design (2020), there are many reasons why a user should participate in a solution that uses the participatory design method, which include:

- reducing the risk of failure and cost
- boosting confidence and self-reliance
- building ownership of the outcome
- enabling realistic expectations
- fostering stronger bonds with end users

There are also many ways for users to be involved in the participatory design process. Some of the tools and techniques that help engage and involve users include:

- interviews
- workshops
- design clinics
- street polling
- role-playing

ESSENTIAL VIDEO

Video title: "A different kind of client: Designing with people, not for them" (5:37)

Watch "A different kind of client: Designing with people, not for them" (opens new tab) from LinkedIn Learning to learn about the concepts of participatory design, which involves designing with people, not for them. This resource will help you understand the benefits behind this concept and provide tools that help facilitate good participatory design.

As you watch, consider the following questions:

- How can developers design with users instead of for them?
- What are the benefits of designing with them?
- What are some of the tools that help facilitate this process?

ESSENTIAL READING

Reading title: "Participatory Design: What is it, and what makes it so great?"

Read "Participatory Design: What is it, and what makes it so great?" (opens new tab) from UX Passion. This website goes through the latest in terms of an introduction to participatory design. It also gives an in-depth view of when you should use participatory design, the various exercises that can be used, and the benefits behind this approach.

As you read, consider the following questions:

- What is participatory design?
- When should you use this design process?
- What are the benefits of this approach?

ESSENTIAL READING

Reading title: "Participatory Design in Practice"

Read "Participatory Design in Practice" (opens new tab) from UX Magazine to learn about multiple case studies incorporating the participatory design concept. This website takes the idea of participatory design and attempts to put it into practice while collecting results. The results are then discussed so that the reader better understands the advantages and disadvantages of participatory design.

As you read, consider the following questions:

- What is participatory design, and what is it not?
- What is the role of participatory design within each use case?
- How did the case studies vary in terms of results?

PARTICIPATION ACTIVITY 8.3.1: Participatory Design

1) What can designers obtain by using participatory design?

- ○ Higher cost
- ○ Uncover missed opportunities
- ○ Longer development time
- ○ Weaker bonds with end users

Attributions and References

Anić, I. (2015, November 4). Participatory design: What is it, and what makes it so great? UX Passion. http://www.uxpassion.com/blog/participatory-design-what-makes-it-great/

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Participate in Design. (n.d.). Why participatory design? http://participateindesign.org/approach/why

8.4 Scenario-Based Design

This section explores the concepts and roles surrounding scenario-based design—which is based on user-centered design—and its background, as well as what it is used for. **Scenario-based design** is about being able to create and define stories. These scenarios can be made in numerous ways, from narrative writing to role-playing. Scenario-based design is a great tool to help designers explore design proposals and to solve problems.

For scenario-based design, the developers create scenarios. The concept of scenarios is used because scenarios were used to describe the outline of a play, but in general, it refers to an event, course of action, or situation (Kurtuldu, 2019). Scenarios are work-oriented design objects, and they describe systems in terms of the work that users will try to do when using those systems. Within interface design, the idea is to create scenarios or stories of how users might interact with the solution. It is also used to solve current problems with the design of a solution.

Scenarios are generated and applied through many methods, which include simple narrative writing, role-playing, board games, and virtual reality. The method that is selected depends on the purpose of the scenario. The scenario-based design framework was first introduced to the software industry by Mary Rossen and John Carroll. This framework includes the following phases: analysis, design, prototype, and evaluation. Each phase breaks down the scenario into root concepts, then into activities, and finally, generates a prototype that can be tested for usability.

In the analysis phase, the goal is to develop a root concept (Rosson & Carroll, 2005). The root concept was developed to help overcome the shortcomings that occur with normal requirements gathering. It helps lay the groundwork for analyzing the current activities. This root concept contains a few basic components that include (Rosson & Carroll, 2005):

- a high-level vision
- the basic rationale
- the stakeholder group
- starting assumptions

The next phases will be covered in the next section.

ESSENTIAL READING

Reading title: "Scenario-Based Design"

Read "Scenario-Based Design" (opens new tab) to learn introductory concepts concerning scenario-based design. These concepts include how it was developed, why people should use it, and how it works.

As you read, consider the following questions:

- Why use scenario-based design?
- How was scenario-based design developed?
- How does scenario-based design work?

Design Phase

At some point, the development team begins to understand enough about the stakeholders' needs to begin building specific design proposals (Rosson & Carroll, 2005). This begins the design phase of the scenario-based design framework. There are multiple design considerations and steps within this phase.

The first part of the design phase is activity design, which involves envisioning how current activities might be enhanced, or even wholly transformed (Rosson & Carroll, 2005). At this point, the primary goals and motivations of the activities are captured. This is usually done through metaphors.

The design phase then continues into **information design**, in which tentative decisions are made about the design (Rosson & Carroll, 2005). In other words, this part of the design phase elaborates upon the underlying activity with information and interaction details. It comprises all aspects regarding how the task information is organized and rendered during user activity.

After information design comes **interaction design,** where the story becomes even more detailed when the concrete exchanges between the users and the system are specified (Rosson & Carroll, 2005). This part of the process focuses on the functionality required to complete tasks.

The final phase in the scenario-based design process is prototype and evaluation. According to Rosson and Carroll (2005), this consists primarily of usability specifications. A **usability specification** is a representative task context that has been analyzed into critical subtasks, with each subtask assigned target usability outcomes. In this phase, when the prototype has enough functionality to be tested with representative users, the specified tasks are tested, and the results are compared to the target outcomes (Rosson & Carroll, 2005).

ESSENTIAL VIDEO

Video title: "Writing Scenarios" (3:16)

Watch "Writing Scenarios" (opens new tab) to start learning about building scenarios. This short video provides greater context around how to create a scenario from beginning to end.

As you watch, consider the following questions:

- Why do you try to write normal day scenarios when first creating situations?
- What type of issues should be included in scenarios?
- What should the finished scenario include?

ESSENTIAL READING

Read "Scenario-Based Design" (opens new tab) to learn more about the concept of scenario-based design and details about what it is and how it works. This resource leads you through an example and discusses the golden path concept to help view problems more holistically, by leveraging scenario-based design.

As you read, consider the following questions:

- What is scenario-based design?
- What is the golden path?
- Why use paper prototypes?

PARTICIPATION ACTIVITY 8.4.1: Scenario-based Design Framework

1) Which is a phase in the scenario-based design framework?

   - ○ Evaluation
   - ○ Metaphor
   - ○ Prototype and evaluate
   - ○ Information specifications

2) Which phase of the scenario-based design framework includes testing specified tasks and comparing the results to the target outcomes?

   - ○ Evaluation
   - ○ Activity design
   - ○ Prototype and evaluate
   - ○ Information specification

LEARNING EXPLORATION

In this learning exploration exercise, you will create a few short scenarios:

Scenarios (opens new tab)

Use one of these tools to create your scenario:

- Microsoft Word (opens new tab)
- Google Docs (opens new tab)
- Open Office (opens new tab)

Scenario:

- You have been asked to create a few scenarios for a new payroll system that your development team has been working on. More specifically, they want to focus on a particular scenario that deals with a user logging into the system to update their direct deposit (banking) information.

Follow these steps to complete the exercise:

1. Write a task-based scenario
    a. Tip: This scenario is short and concisely answers who the user is, what they are trying to accomplish, and why.
2. Write an elaborate scenario
    a. Tip: This scenario still answers the who, what, and why, but it puts much greater emphasis on the user's background.
3. Write a full-scale task scenario
    a. This scenario focuses on writing out the steps the user would take to accomplish the scenario.

Attributions and References:

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8.5 Cognitive Psychology with Design

Cognitive psychology was first introduced in the 1960s and grew in popularity throughout the 1970s, even though the study of human behavior had been occurring for centuries. The psychology of observing human behavior began to make its way into the technology industry in the 1970s. The use of personal computers and computer interfaces began to increase. Technology has evolved into a constant relationship for many people, and designers need to understand how human tendencies correlate to design.

This section introduces some of the principles related to cognitive psychology and how it is applied to design in real life. The principles are focused on how humans perceive and learn, and what attracts their attention. This section provides a short glimpse into the study of psychology and its use in user design—the vast amount of material that has been written on this subject could not be covered in one course. Human behavior should be at the core of a designer's understanding when creating interfaces.

Cognitive psychology is the discipline of psychology that explores humans' mental processes, how humans perceive things, remember things, think, speak, and solve problems (Paschalidis, 2018). This includes how humans take things in and process them. Psychology was being applied in the advertising world long before the internet was used within a business context. Since many businesses now have an online presence, it is only natural that the application of cognitive psychology would expand into web development and other technologies.

Cognitive Psychology Principles

When it comes to learning, research has shown that people hardly ever memorize. Instead, they focus on the generic elements that will remind them of the subject later (Paschalidis, 2018). Donald Norman demonstrated this concept by showing his students a drawing of a penny. Then, Norman exposed the student to 15 different drawings of the same penny and asked them to pick the original one. Less than half the class was able to recognize the correct drawing of the original penny. If anything, humans tend to remember and process shapes and symbols much faster than text.

When it comes to attention, there are multiple things cognitive psychologists have found that help designers (Paschalidis, 2018):

- bigger elements and brighter colors indicate importance
- blue is one of the best colors to use because of the way our eyes are designed
- people most often will approach things in a left to right and up to down way

Other ways that cognitive psychology can be applied to design is based on the way humans perceive things, such as similarity. When items are closer together, or have something in common, humans tend to group them. In other words, humans start to build associations with different items based on specific perceived characteristics. In some instances, humans see what they expect to see, which is also known as **constructive perception**. When humans see an image, shape, or color, their minds are presented with past knowledge. This helps with recognition and processing. Therefore, humans may not always perceive things the same way.

ESSENTIAL VIDEO

Video Title: "What is Cognitive Psychology? - Definition & Theories" (10:54)

Watch "What is Cognitive Psychology? - Definition & Theories" to learn about cognitive psychology and prominent theories.

As you watch, consider the following questions:

- How is cognitive psychology defined?
- What are two prominent theories within this field of study?

- How does cognitive psychology impact the area of web design?

ESSENTIAL VIDEO

Video title: "Cognitive Design Principles" (3:43)

Watch "Cognitive Design Principles" (opens new tab) for more insight into how cognitive principles can apply to design. This video explores various laws—or principles—such as Fitts's law, Hick's law, and the Gutenberg diagram. It includes examples of real-life applications and designs as it applies to the concepts.

As you watch, consider the following questions:

- How can Fitts's law be applied to improve the design?
- How can Hick's law be applied to improve the design?
- How can the Gutenberg diagram be used to improve the design?

Application of Cognitive Psychology Principles and Design

Knowing how humans learn, perceive things, and pay attention, allows designers to create a more aesthetically pleasing and influential website. Many designers attempt to achieve **cognitive ease**, which is reducing the cognitive load of a user to a minimum. This is normally done because users will be more impulsive, more emotional, and more optimistic when they are in a state of cognitive ease (Adamska, 2020). Some of the ways cognitive psychology is applied to design to achieve cognitive ease include (Adamska, 2020):

- Contrast and font weight
  - Users respond better to larger and bolder text.
- Unnecessary elements
  - Due to the way our eyes are designed, it is better not to add additional elements that are unnecessary. Our eyes still process these additional elements.
- Memory
  - Humans can only remember so much—especially concerning short term memory. If there is anything designers want users to remember, then repetition is key.
- Order matters
  - The order of objects matters, especially when these objects are in dropdowns. The order preference should be based on the persona the design is being created for. For example, it may be better to list important items first (or last) in a drop-down list.
- Language
  - Using big words, or unnecessary or confusing language, could cause cognitive strain, negatively impacting the user. Try to stick to common, easy to understand vocabulary when possible.

Hopefully, this helps explain what cognitive psychology is and why it is essential to web design. Understanding how users perceive and respond to things will help the designer create the most effective website possible, which provides better outcomes for both the site owner and the end user. There are many books written on this subject, which continue to evolve as research progresses.

Designers should stay on top of the latest trends and incorporate them into their designs when possible.

ESSENTIAL READING

Read "Why Cognitive Psychology is Fundamental to Stellar Web Design" (opens new tab) to gain an understanding of how cognitive psychology can be used to influence web design. This web page is an excellent resource for understanding how cognitive psychology truly changes web design for the better.

As you read, consider the following questions:

- What is cognitive landscaping?
- How does cognitive therapy relate to web design?
- What are some of the key takeaways on the specific design element considerations?

PARTICIPATION ACTIVITY 8.5.1: Website Design Improvement

1) How does text selection improve the design of a website?

- ○ smaller, lighter text
- ○ bright neon colors
- ○ lengthy words
- ○ clean, uncluttered interface

Attributions and References:

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8.6 Persona and Usability

Use Cases and Usability: Introduction

In order to implement user interface design principles, it is critical that you understand the concepts of persona, use cases, and usability. A **persona** is used to research and report about a type of user but not a specific person (Goltz, 2014). This means that each persona represents a group of people. Once personas have been identified, understanding the use case approach, and engaging users, will become essential to the user interface.

Use cases also help show what a user wants to achieve and what they are expecting the interface to be able to do. Use cases also outline and identify the step-by-step instructions for how something should be performed. This information helps developers ensure that what they are building reflects what is expected.

Use cases are also beneficial because they help with **usability testing**. Usability testing is the validation and verification processes that occur once the developers are done building the solution. This lesson helps illustrate the details of what goes into this type of testing to ensure the product meets the initial requirements and that the final solution is working as intended.

Persona and Usability

In the user interface design process, the creator considers that everyone may have different levels of experience when using a web resource; what is easy for one user may not be easy for all users. Personas take groups of people and condense them into one singular person. By doing this, usability tests are run against this one person as a representative of a larger group of people.

In user interface design, a persona is an integral part of the functionality and usability testing process. Personas help the designers create features and other functions within a website from the persona's perspective (Goltz, 2014). A persona will allow the designer to look at the project they are working on and analyze it to see if this is genuinely functional from this persona's perspective (Goltz, 2014).

Personas are fictional people created to represent a specific group of users to generate tests and models from their perspective (Goltz, 2014). **Usability** is defined as how a user uses a product, how well they can use it, and how easy it is for them to achieve a goal using this product (Foundation, 2017). Personas and usability cases work together to ensure that a design's functionality is working as it should. They also work together to ensure that the overall layout and usability are appropriate and adequate for the persona and the user group that it is representing.

ESSENTIAL VIDEO

Video title: "Using Personas" (4:16)

Watch "Using Personas" (opens new tab) to gain an understanding of what a persona is and why a persona should be used. This video goes through various examples of personas and how they are used to bring a human element to design projects.

As you read, consider the following questions:

- What is a persona?
- Why should personas be used?
- What are some of the best ways to develop personas?

ESSENTIAL READING

Read: "Usability 101: Introduction to Usability" (opens new tab) to learn usability concepts, definitions, and facts.

As you read, consider the following questions:

- How is usability defined?
- What are the quality components of usability?
- How can usability be improved?

ESSENTIAL READING

Read "A Closer Look At Personas: What They Are And How They Work" (opens new tab) to gain an understanding of what a persona is and how it is used.

As you read, consider the following questions:

- Do personas fit in with user interface designs?
- What are personas used for?
- How do personas work?

When creating a persona, a formula is used to decide what kind of persona to create (Goltz, 2014). Interviewing people is the first step; interviews help gain insight into multiple people's perspectives. Similar answers and behaviors from a group indicate a pattern, and as such, these people can be placed in a group. A synthesized person will then become the persona of this group. This persona will embody the beliefs and behaviors of the group. This will allow the interface designers to create a web interface that works for this group. This should be done for multiple user groups to ensure ultimate functionality and usability (Goltz, 2014).

PARTICIPATION ACTIVITY 8.6.1: User Personas

1) Which is an element of a persona?

- ○ Job type
- ○ Fictional name
- ○ Phone number
- ○ Favorite food

LEARNING EXPLORATION

In this learning exploration exercise, you will create a persona:

How to Create a Persona in 7 Steps (opens new tab)

Use one of these tools to create your persona:

- Microsoft Word (opens new tab)
- Google Docs (opens new tab)
- Open Office (opens new tab)

Scenario:

- You have been asked to create a persona for a new website your development team is working on. The website is for a mobile pet grooming business.

Follow these steps to complete the exercise:

1. Research who would generally use a mobile pet grooming business.
2. Once the general population is found, try to pare the audience down even further.
3. Write down the persona's name and some basic demographic information about the persona.
4. In another section titled Goals, write down some of the goals the persona may have that may be useful in relation to the site being developed.
5. In another section titled Motivations and Pain Points, write down some of the motivations and pain points of the user in relation to the site being developed.
6. In another section titled Miscellaneous, write any other information about the persona that is relevant to the site

Attributions and References:

Interaction Design Foundation (2017). Usability. https://www.interaction-design.org/literature/topics/usability

Goltz, S. (2014, August 6). A Closer look at personas: What they are and how they work. Smashing Magazine. https://www.smashingmagazine.com/2014/08/a-closer-look-at-personas-part-1/

McCay, A. (2017, June 22). How to create a persona in 7 steps – A guide with examples. UXPressia. https://uxpressia.com/blog/how-to-create-persona-guide-examples

Nielsen, J. (2012, January 3). Usability 101: Introduction to Usability. Nielsen Norman Group. https://www.nngroup.com/articles/usability-101-introduction-to-usability/

Williams-Ng, S. (2014). *Using personas*. [Video]. https://www.linkedin.com/learning/storytelling-for-designers/using-personas

8.7 Case Approaches

In this section, the use case and scenario-based approaches will be defined and examined to determine their key differences. Both approaches are excellent methods, but the use case approach has more reliability behind it.

A use case is when a group of users are told to try one of the features to see if it works. A scenario-based approach takes an already working system and leads users through the learning process with scenarios and other instructions.

The use case approach is a set of actions to get to the desired goal. A possible use case would be clicking on a sign-in button to have a user sign into a website. According to Brake (2017), the following are guidelines for a use case:

- What are the users trying to accomplish?
- What do the users need to be able to do?

In this instance, the user is trying to sign into the website; they should click on the sign-in button and sign into the website (Brake, 2017).

The scenario-based approach is an environment designed to train employees to use a system (Pandey, 2019). While this is good, the difference between the use case approach and the scenario-based approach is timing. A use case approach needs to be done when something has already been developed, and it needs to be tested (Brake, 2017). A use case allows users to test the system with set instructions to ensure that it does what it is designed to do. The scenario-based approach should be used after all the program issues have been worked out, and it is time to train the rest of the company.

Both approaches are beneficial, however, one needs to happen before the other. There must always be a test group that tests new programs and their features (Pandey, 2019). Without preliminary tests, a scenario-based approach would be challenging to execute if unforeseen errors appeared during the training.

ESSENTIAL READING

Read "The Use Case Approach" (opens new tab) to gain an understanding of what the use case approach is.

As you read, consider the following questions:

- What is a use case?
- What is a use case template?
- Where did the term use case come from?

ESSENTIAL READING

Read "A 5-Step Plan to Create A Captivating Scenario-Based Corporate Training" (opens new tab) to gain an understanding of what scenario-based training is and the benefits it provides. This resource introduces how to embed scenario-based concepts into corporate training and the steps to do so.

As you read, consider the following questions:

- What is a scenario-based approach?
- How is a scenario-based approach different from the use case approach?
- What is the value of scenario-based learning?

ESSENTIAL VIDEO

Video title: "Create Use Cases" (2:14)

Watch "Create Use Cases" (opens new tab) to learn about use cases, how they are created, and key terms. This video shows an example of a use case, and discusses how a use case is diagrammed.

As you read, consider the following questions:

- What are the key terms of a use case?
- What are the ways to communicate a diagram?
- How can use cases be diagrammed?

PARTICIPATION ACTIVITY 8.7.1: Use Case

1) Which is a reasonable use case?

- The user clicks on the Account tab, and it takes them to their cart.
- The user clicks Sign Out, and it takes them to the sign out confirmation page.
- The user clicks on an item, and the website takes you to the login page.
- The users click Sign In, and nothing happens.

2) How does the use case approach differ from scenario-based approach?

- Use cases are employed when trying to train users.
- Scenario-based design uses step-by-step instructions and use cases do not.
- There is no difference.
- When they occur in the process.

Attributions and References:

Brake, T. (2017, October 4). The use case approach. TMAWorld. https://www.tmaworld.com/our-thinking/use-case-approach

Pandey, A. (2019, July 17). A 5-step plan to create a captivating scenario-based corporate training. EI Design. https://www.eidesign.net/5-step-plan-to-create-captivating-scenario-based-corporate-training/

Stanton, D. (2020). *Create use cases*. https://www.linkedin.com/learning/project-management-foundations-requirements-2/create-use-cases

8.8 Usability Testing

Design verification is used to ensure that the output does what it should and meets the project's requirements (Guru99, 2019). **Design validation** comes into play when the final design is submitted. This does the same thing as the design verification but in the final stages of the project (Guru99, 2019).

There are five major parts to the design verification process (Guru99, 2019):

1. Identification and preparation
2. Planning
3. Developing
4. Execution
5. Reporting

While the project is moving forward and the product is being created, a verification plan should be created simultaneously; this helps the creator verify the work as they go (Guru99, 2019). All the necessary tools, information, and requirements are gathered to complete the verification during the planning phase. The different testing methods are determined in the development stage, and the tasks themselves should be based on the initial design process (Guru99, 2019). All issues are identified in the execution phase, the activities are completed, and all results are documented. Finally, the reports section is used to compile all the information to ensure that the tasks were completed successfully. If there were issues, the documentation is used to fix and retest all the failed tests (Guru99, 2019).

In the design validation process, the tests are conducted on the final product (Guru99, 2019). The data from the verification process is used to design tests in the validation phase, and it is used when comparing data from the final tests. Ideally, once the tests are done, the system should meet its needs and requirements (Krüger, 2020). Much of the testing done during the design validation phase is known as a per-user or group test (Krüger, 2020). The entire organization is not necessarily involved in the testing. Finally, the completed design of a product is tested in different environments to ensure that functionality is the same across multiple avenues.

ESSENTIAL READING

Read "Design Validation vs. Verification: 6 Tips for Medical Device Development." (opens new tab)

As you read, consider the following questions:

- What is the difference between design validation and verification?
- What are some examples of design validation?

- How would you, in your own words, explain these two concepts to someone with less knowledge?

ESSENTIAL VIDEO

Video title: "What is a usability test?" (2:46)

Watch "What is a usability test?" (opens new tab) to understand what goes into usability testing.

As you read, consider the following questions:

- What is being tested with usability testing?
- What are the types of usability testing?
- What should be captured during usability testing?

ESSENTIAL READING

Read "Differences between Verification and Validation" (opens new tab) to understand what goes into the design verification and validation processes.

As you read, consider the following questions:

- What are some key differences between verification and validation?
- Why are both processes needed?
- Could a program or web design get by without these processes?

PARTICIPATION ACTIVITY 8.8.1: Verification

1) Which is true about verification?

- It is dynamic testing.
- It is static testing.
- It includes the execution of the code.
- The goal of verification is an actual product.

2) Which is the primary difference between validation and verification techniques?

- Verification techniques do not involve code execution, while validation techniques involve code execution.
- Verification techniques are used against the actual product, whereas validation techniques are not.
- Verification techniques include unit and integration testing while validation techniques include walkthroughs and inspections.
- Verification techniques are used after the product has been validated using validation techniques.

Attributions and References:

GeeksforGeeks. (2020, October 6). Differences between verification and validation. https://www.geeksforgeeks.org/differences-between-verification-and-validation/

Guru99. (n.d.). Design verification & validation process. https://www.guru99.com/design-verification-process.html

Krüger, N. (2020, January 14). Design validation vs. verification: 6 tips for medical device development. Perforce. https://www.perforce.com/blog/alm/design-verification-validation-medical-device

Nodder, C. (2019). *What is a usability test?* https://www.linkedin.com/learning/ux-insights-weekly/what-is-a-usability-test

8.9 Design Improvements

This section will discuss design improvements from the accessibility standpoint and will identify where accessibility can be implemented. Having a website with proper accessibility is essential for all users, regardless of disability or hindrance.

Knowing what kind of accessibility improvements to implement is something that needs to be learned and built upon. People with certain disabilities may have trouble using a website without proper help

and specialized tools. Tools for the vision-impaired, hearing-impaired, and any other disabilities ultimately make the website usable for all people.

When evaluating a website to ensure it is fully accessible, there are a variety of tests that can be utilized to ensure compliance. Validating the HTML, testing with a keyboard, and having the users test the website are all good ways to ensure everything is working (UW, 2020). Validating the HTML ensures that all functions and headings are working correctly. If something is not working, this can lead to issues when a user tries to navigate the site with a keyboard, mouse, or other hardware-based devices (UW, 2020). Testing with a keyboard is another way to ensure full accessibility is met. With the Windows operating system, everything can be done using a keyboard; this ensures that the operating system can be used if a mouse is not available. The same should be true on a website; a user should be able to perform all required and desired functions from their keyboard (UW, 2020). If this is not possible, something is lacking with the site's accessibility. Finally, having users test the website is probably the best way to ensure that the site is properly accessible. It is a good idea to have users with different levels of technical and social skill test a site (UW, 2020). This ensures that if accessibility is working correctly, different types of people can use the site without trouble; this also documents the site's usability.

ESSENTIAL VIDEO

Video Title: "An ecommerce purchase" (4:06)

Watch "An ecommerce purchase" (opens new tab) to learn about why accessibility is important to websites such as an e-commerce site. This video goes through multiple website examples and how those websites can, and should, be more focused on individuals with disabilities. It also goes through how designers can be more conscious of users with disabilities.

As you watch, consider the following questions:

- Why is accessibility important?
- How could the examples provided become more accessible?
- How can designers ensure those with disabilities are considered?

Creating Tools

When creating tools to help those that have additional needs, it is essential to know what tools are available. For an individual with a visual impairment, having a text-to-speech tool that reads the web page's contents is essential (UW, 2020). People with dyslexia may also utilize the text-to-speech function. Tools such as magnification, highlighting, and zoom-in capabilities are also options when dealing with vision impairment (UW, 2020). Accessibility is essential for people who cannot physically use their hands to execute actions on a website. As stated earlier, a website should be accessible solely with a keyboard; this capability would allow an individual with a physical disability to navigate the website (UW, 2020).

Along with a keyboard, other tools such as speech commands, tracking systems, and head pointers can be used. These are only effective if the site's accessibility is functioning correctly. Finally, our websites need to work for those people with hearing challenges. In this instance, they will still be able to read and browse the website usually; however, videos and other audio content become the most

significant issue (UW, 2020). In terms of accessibility, a video needs to include closed captioning or subtitles, which allows those with a hearing challenge to read the spoken content (UW, 2020).

ESSENTIAL READING

Read "12 Essential Tips for Improving Your Web Design" (opens new tab) for additional improvement tips for web design upgrades.

As you read, consider the following questions:

- Why are images in web design important for communication?
- What is search engine optimization (SEO)?
- Why is user experience so important to the designer?

ESSENTIAL READING

Read "Accessibility" (opens new tab) to gain a more in-depth understanding of why accessibility is essential. This resource goes through key examples of accessibility and some of the ways accessibility issues can be avoided.

As you read, consider the following questions:

- Why does accessibility matter?
- What are some examples of accessibility?
- How can websites be more accessible?

ESSENTIAL VIDEO

Video Title: "Views of Accessibility" (5:14)

Watch "Views of Accessibility" (opens new tab) for additional discussions on website accessibility. This resource discusses the concept of using color in site design, how maps can be impacted by accessibility, and why auto-start for content may not always be the best idea.

As you watch, consider the following questions:

- Which organization produces standards on accessibility?
- What are some of the accessibility challenges shown in the video?
- Why should colors not be used to convey information?

PARTICIPATION ACTIVITY 8.9.1: Design Improvements

1) Which is an upgrade that was made to a website?

- Adding a search bar to the landing/home page of a website so that products can be searched for.
- Removing the sign out button so that people stay logged in for easier access.
- Removing the cart feature so that people can buy directly from the products page.
- Adding a delete order history option within the users' accounts.

LEARNING EXPLORATION

In this learning exploration exercise, you will use a tool to help examine a website's accessibility and document your findings.

WAVE: Web Accessibility Evaluation Tool (opens new tab)

Follow these steps to complete the exercise:

1. Open the link https://wave.webaim.org/
2. In the "web page address" field, enter "https://www.deque.com/" and press enter
    a. Were any errors or issues found?
3. Go back to the link for the WAVE tool (or hit the back button)
4. Enter a different website this time. If you cannot think of one, then use "https://www.w3.org/WAI/demos/bad/before/home.html"
    a. Were any errors or issues found?
    b. Click on the 'details' view.
        i. How could this website improve their accessibility?

Attributions and References:

Austin, C. (2020, December 23). 12 essential tips for improving your web design in 2021. Impact. https://www.impactplus.com/blog/tips-for-improving-your-web-design

Featherstone, D. (2015). *Views of accessibility*. https://www.linkedin.com/learning/ux-foundations-accessibility/views-of-accessibility

Featherstone, D. (2018). An ecommerce purchase. https://www.linkedin.com/learning/accessibility-for-web-design/an-ecommerce-purchase

University of Washington (UW). (n.d.). Developing accessible websites. https://www.washington.edu/accessibility/web/.

W3C. (n.d.). Accessibility. https://www.w3.org/standards/webdesign/accessibility

Web Aim. (n.d.). WAVE web accessibility evaluation tool. https://wave.webaim.org/

8.10 Improving Site Accessibility

This section will look at development choices and how those choices affect the accessibility of mobile sites. Mobile use has become more popular as smartphones have evolved. Mobile websites are standard for everyone, and each website needs to work as the developers intend.

On a mobile device, if a website is not configured correctly, it may still operate, but the functionality may not work correctly. This would cause people to avoid the site, ultimately resulting in a loss of traffic. Accessibility settings also need to be thought of when considering people with disabilities.

Most people only think of a website's desktop version when a site is being developed. While features and accessibility may be fine on the website, the same may not be true for its mobile version. Increasing potential traffic is one of the biggest reasons to make sure that websites are mobile compatible (Cullipher, 2019).

One of the most significant issues with mobile sites is accessibility for people with disabilities. While most people rely on mobile devices, making websites easier to use for individuals with sight and/or reading issues is crucial (Nasta, 2018). If features for individuals with disabilities are not considered during the design and development stages, that reduces the number of users for the website. It may be less appealing if simple features are not implemented on the mobile website. For more advanced features, some organizations have a downloadable app for smartphones, which typically works better than a mobile website.

When referring to usability, mobile variants offer freedom and independence if appropriately configured (Nasta, 2018). Designing for the future could unlock a vast amount of potential for everyone; regardless of ability, mobile design and browsing is still growing (Cullipher, 2019).

There are disability rights within specific industries that mandate a certain quality for all users. If a user with a visual disability cannot effectively use the website due to certain features, colors, or operations, the website owners could be in trouble (Cullipher, 2019). Legal trouble could be marked as discrimination, and the organization could be sued and/or fined, depending on the actual offense or allegation (Cullipher, 2019). Many organizations have features in place to prevent this; however, there are still websites that do not adhere to these guidelines.

ESSENTIAL READING

Read "Mobile and Accessibility: Why You Should Care and What You Can Do About It" (opens new tab) to get a better understanding of mobile web browsing, and the lack of accessibility users often face when going to mobile sites.

As you read, consider the following questions:

- What is accessibility relating to a website?
- What is mobile browsing?
- How does early development impact mobile sites later?

ESSENTIAL READING

Read "Mobile Applications and Litigation: Why Accessibility is Important and What to Consider before Launching, Part 1 of 2" (opens new tab) to better understand mobile web development and accessibility.

As you read, consider the following questions:

- Is accessibility needed in all forms of web design?
- Is preplanning for accessibility needed?
- What are the impacts of not having accessibility features?

ESSENTIAL READING

Read "3 Important Reasons to Make Your Mobile Website Accessible" (opens new tab) to gain additional information on mobile web development and what makes it accessible and usable.

As you read, consider the following questions:

- Why are mobile websites good to use?
- Why are mobile websites important?
- Are mobile websites easier to use than their desktop version?

PARTICIPATION ACTIVITY 8.10.1: Improving Site Accessibility

1) What is a key difference between mobile websites and desktop websites?

- The colors are different between the two.
- The layout is different between the two.
- The features will be completely different.
- The mobile version does not offer a sign-in option.

2) Why would people prefer to shop on a mobile version, rather than the desktop version, of a mobile shopping website?

- The screen is consolidated, and it is easier to see everything.
- The mobile version offers better prices typically.
- The mobile version offers more items to buy than the desktop version.
- There are not as many issues on the mobile site.

3) How does disabling pinch-to-zoom impact site accessibility for mobile device users?

- It should always be disabled and does not impact a site's accessibility.
- Disabling pinch-to-zoom will allow users to see content better.
- Disabling pinch-to-zoom can't be done on mobile devices.
- Disabling pinch-to-zoom will prevent users from being able to properly view content.

Attributions and References:

Cullipher, V. (2018, January 25). 3 important reasons to make your mobile website accessible. Micro Assist. https://www.microassist.com/digital-accessibility/why-make-your-mobile-website-accessible/

Nasta, S. (2017, July 20). Mobile applications and litigation: Why accessibility is important and what to consider before launching, Part 1 of 2. Micro Assist. https://www.microassist.com/digital-accessibility/mobile-application-accessibility-part-1-of-2/

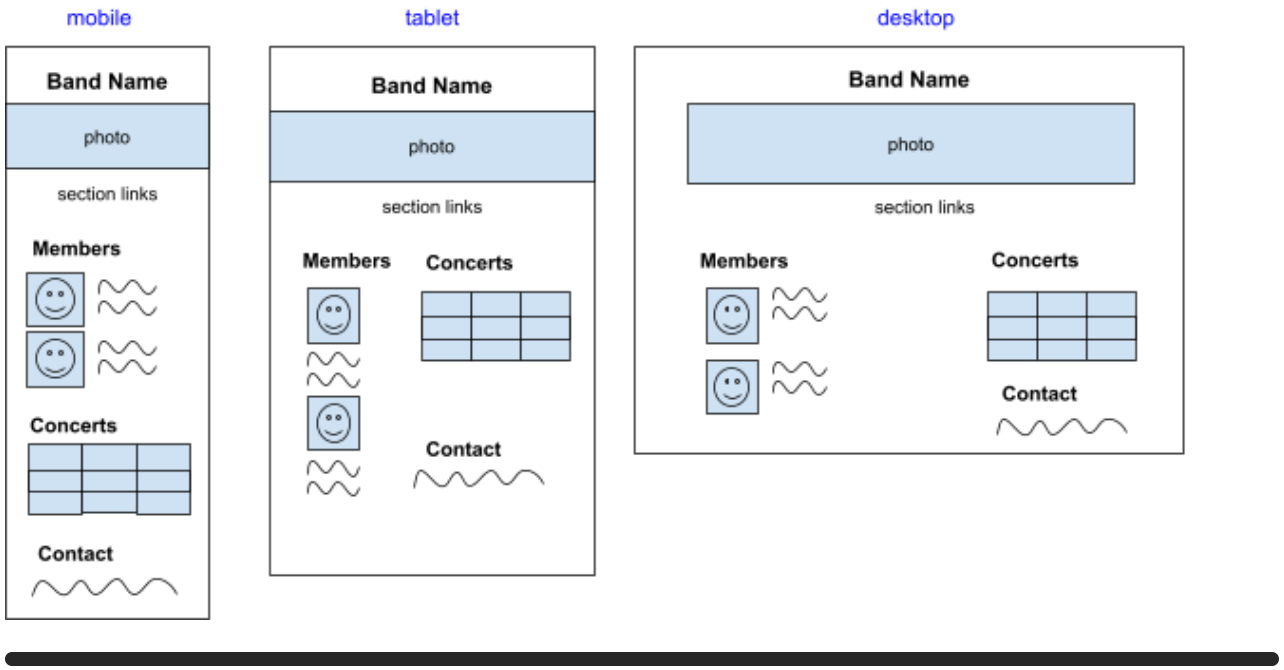
VanToll, T. (2014, May 21). Mobile And Accessibility: Why you should care and what you can do about it. Smashing Magazine. https://www.smashingmagazine.com/2014/05/mobile-accessibility-why-care-what-can-you-do/

8.11 Example: Band webpage

Initial design

The fictional rock band *Reach Out* needs a webpage that promotes the band and shares upcoming concerts. *When creating a new webpage, good practice is to create a wireframe for the webpage first.* A ***wireframe*** is a blueprint, showing where the future content will be arranged.

Figure 8.11.1: Wireframe for the band webpage.



The figure below shows the initial HTML document with comments showing where various content from the wireframe will be added.

Figure 8.11.2: Initial HTML for band.html webpage.

```
<!DOCTYPE html>
<html lang="en">
   <head>
      <meta charset="UTF-8">
      <title>Reach Out</title>
   </head>
   <body>

      <!-- Heading and band photo -->

      <!-- Section links -->

      <!-- List of band members -->

      <!-- Table of upcoming concerts
-->

      <!-- Contact information -->

   </body>
</html>
```


PARTICIPATION ACTIVITY 8.11.1: Initial design.

1) The wireframe shows the HTML needed to create the webpage.
   - ○ True
   - ○ False

2) The wireframe shows that the webpage will have a Contact section for contacting the band.
   - ○ True
   - ○ False

3) The wireframe shows that the webpage will have several images.
   - ○ True
   - ○ False

Photo and navigation links

The webpage starts with the band's name and a large band photo. Immediately under the photo are navigation links to the various sections. Many websites have a different webpage for each section, but *Reach Out* uses a single webpage with links to each section.

HTML for heading, photo, navigation links.

©zyBooks 03/10/25 22:29 1931993
Aaron Ramirez
WGUD277v2

The HTML below displays the heading, photo, navigation links. The links will not work until IDs matching the fragments are placed in the HTML.

Image from Wikimedia.org

```
<!DOCTYPE html>
<html lang="en">
   <head>
      <meta charset="UTF-8">
      <title>Reach Out</title>
   </head>
   <body>

      <!-- Heading and band photo -->
      <h1>Reach Out</h1>
      <img src="https://static-resources.zybooks.com/band.jpg" alt="Ba

      <!-- Section links -->
      <p>
         <a href="#members">Members</a>  
         <a href="#concerts">Concerts</a>  
         <a href="#contact">Contact</a>
      </p>
```


Render webpage Reset code

Your webpage

Reach Out

PARTICIPATION ACTIVITY 8.11.2: Photo and navigation links.

1) Which `<img>` attribute can be used to change the size of the large photo?

   - `width` only
   - `height` only
   - `width` or `height`

2) What is the proper way to get the Members link to link to the Members section?

   - `<section>`
   - `<section id="members">`
   - `<section id="#members">`

Members section

The Members section displays each member's photo and details about each member in an unordered list.

Figure 8.11.3: HTML for Members section.

```
<!-- List of band members -->
<section id="members">
  <h2>Members</h2>
  <img src="singer.jpg" alt="Singer">
  <ul>
     <li><strong>Braden Williamson</strong></li>
     <li>Lead singer from Little Rock, Arkansas</li>
     <li>Powerful vocals and creative lyrics</li>
  </ul>
  <img src="guitar1.jpg" alt="Lead guitarist">
  <ul>
     <li><strong>Ethan Andrews</strong></li>
     <li>Lead guitarist from Norfolk, Virginia</li>
     <li>Blistering soloist</li>
  </ul>
  <img src="guitar2.jpg" alt="Second guitar">
  <ul>
     <li><strong>Colton Davis</strong></li>
     <li>Support guitarist from Denver, Colorado</li>
     <li>The glue that keeps the band together</li>
  </ul>
</section>
```

HTML incorporating the Members section.

The HTML below incorporates the Members section. The band webpage is rather plain without CSS. CSS can be used to change the font, add color, center content, and make other style improvements.

Images from Wikimedia.org


```
<!DOCTYPE html>
<html lang="en">
   <head>
      <meta charset="UTF-8">
      <title>Reach Out</title>
   </head>
   <body>
      <!-- Heading and band photo -->
      <h1>Reach Out</h1>
      <img src="https://static-resources.zybooks.com/band.jpg" alt="Ba

      <!-- Section links -->
      <p>
         <a href="#members">Members</a>  
         <a href="#concerts">Concerts</a>  
         <a href="#contact">Contact</a>
      </p>
```

Render webpage Reset code

Your webpage

Reach Out

PARTICIPATION ACTIVITY 8.11.3: Members section.

1) What change is needed to move the details list to the right of each member's photo?

- Move each list before each photo.
- Put each photo and list into a table row.
- A list cannot be located next to an image.

2) What change is needed to list the members' information with uppercase Roman numerals?

- `<ul type="I">`
- `<ol type="i">`
- `<ol type="I">`

Concert section

The Concert section features a table that lists the date, venue, and location of each concert. Each venue has a link to Google Maps that maps the venue's location.

Figure 8.11.4: HTML for Concert section.

```
<!-- Table of upcoming concerts -->
<section id="concerts">
   <h2>Concerts</h2>
   <table>
      <tr>
         <th>Date</th>
         <th>Venue</th>
         <th>Location</th>
      </tr>
      <tr>
         <td>Oct 10</td>
         <td><a target="_blank" href="https://goo.gl/maps/gjoYjzuAuwr">Red
Rocks Amphitheater</a></td>
         <td>Morrison, CO</td>
      </tr>
      <tr>
         <td>Oct 17</td>
         <td><a target="_blank" href="https://goo.gl/maps/t8jHotrMHXR2">The
Arkansas Music Pavilion</a></td>
         <td>Rogers, AR</td>
      </tr>
      <tr>
         <td>Oct 24</td>
         <td><a target="_blank" href="https://goo.gl/maps/Svm8GARQJAJ2">The
Criterion</a></td>
         <td>Oklahoma City, OK</td>
      </tr>
      <tr>
         <td>Oct 31</td>
         <td><a target="_blank" href="https://goo.gl/maps/VkrEo1Hiwot">The
Madrid Theatre</a></td>
         <td>Kansas City, MO</td>
      </tr>
   </table>
</section>
```


HTML incorporating the Concerts section.

```
<!DOCTYPE html>
<html lang="en">
   <head>
      <meta charset="UTF-8">
      <title>Reach Out</title>
   </head>
   <body>

      <!-- Heading and band photo -->
      <h1>Reach Out</h1>
      <img src="https://static-resources.zybooks.com/band.jpg" alt="Ba


      <!-- Section links -->
      <p>
         <a href="#members">Members</a>  
         <a href="#concerts">Concerts</a>  
         <a href="#contact">Contact</a>
      </p>
```

Render webpage Reset code

Your webpage

Reach Out

PARTICIPATION ACTIVITY 8.11.4: Concerts section.

1) The `<thead>` open and closing tags can be added around the first table row to indicate the row is a table heading.

   - ○ True
   - ○ False

2) The `target` attributes make the venue links open in a different window or tab.

- ○ True
- ○ False

3) Adding a fourth column called "Price" and ticket prices for each venue requires adding only a single `<th>` element listing the prices.

- ○ True
- ○ False

Contact section

The Contact section is the last section in the webpage, and provides links to the band's Twitter account and an email address.

Figure 8.11.5: HTML for contacting the band.

```
<!-- Contact info -->
<section id="contact">
   <h2>Contact</h2>
   <p>
      Reach out to us on
      <a href="https://twitter.com/ReachOut" target="_blank">Twitter</a> or
at
      <a href="mailto:reachout@email.com"
target="_blank">reachout@email.com</a>
   </p>
</section>
```

HTML incorporating the Contact section.

```
<!DOCTYPE html>
<html lang="en">
   <head>
      <meta charset="UTF-8">
      <title>Reach Out</title>
   </head>
   <body>

      <!-- Heading and band photo -->
      <h1>Reach Out</h1>
      <img src="https://static-resources.zybooks.com/band.jpg" alt="Ba


      <!-- Section links -->
      <p>
         <a href="#members">Members</a>  
         <a href="#concerts">Concerts</a>  
         <a href="#contact">Contact</a>
      </p>
```

Render webpage Reset code

Your webpage

Reach Out

PARTICIPATION ACTIVITY 8.11.5: Contact section.

1) Which HTML snippet creates a link to the band's Instagram account?

- `<a href="https://www.instagram.com/reach.out/">Instagram</a>`
- `<a href="www.instagram.com/reach.out/">Instagram</a>`
- `<a href="https://www.instagram.com/reach.out/" link="Instagram">`

2) Browsers treat a link with an empty fragment as a link to the top of the webpage. Which HTML snippet may be added to the Contact section to link to the top of the webpage?

- `<a href="top.html">Top</a>`
- `<a location="top">Top</a>`
- `<a href="#">Top</a>`

CHALLENGE ACTIVITY 8.11.1: HTML fundamentals.

569116.3863986.qx3zqy7

Start

Set the webpage's title to "Colors". SHOW EXPECTED

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4     <meta charset="UTF-8">
5     <!-- Your solution goes here -->
6  </head>
7  <body>
8     <p>Colors in the rainbow</p>
9  </body>
10 </html>
```