

# **Graphic Design Basics: Key Principles to Enhance Designing Slide Presentations**

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## **Abstract**

This project, Graphic Design Basics: Key Principles to Enhance Designing Slide Presentations, aims to develop an online course to equip learners without basic visual design knowledge. The course was designed to improve the overall look and feel of slide presentations created by individuals with limited graphic design knowledge. To evaluate the course, four usability participants (n=4) and twenty-eight learning effectiveness participants (n=28) participated in testing the online course. After the usability study, immediate modifications were enacted to enhance the user experience. Overall, the course received positive feedback from the usability and learning effectiveness participants regarding visual design, ease of navigation, interactivity, quotes, and multimedia. Results suggest that adding more activities to online instruction in the future would enhance learning and encourage participants to apply new skills to their slide presentations.

## **Introduction**

### **Overview**

Over the years, slide presentations have evolved from analog overhead projectors to more sophisticated digital projectors using software applications such as Microsoft PowerPoint, which offer a wide range of templates and visual customization options. Regardless of the delivery platform, good presentations incorporate key design principles and tend to manage content by utilizing typography, a grid system, and design elements. Learners should be cautious when granted excessive freedom to modify each slide's visual style and layout, as this could violate fundamental graphic design principles. Such violations can potentially diminish the presentation's effectiveness and distract an audience

from the content. This study proposes that learners who have a better understanding of graphic design principles and best practices in typography, color, and composition would be able to avoid common design mistakes, thereby conveying information more clearly and effectively to their intended audiences.

### **Problem Statement**

Previous studies have shown that strong design and well-chosen visual aids can improve the effectiveness of presentations and increase viewers' ability to absorb the presented content. According to a study by the Wharton Research Center, well-designed slides can increase the audience's knowledge retention from 10 percent by listening to 50 percent for both hearing about and seeing material presented visually (Alley & Robertshaw, 2004). The downside of utilizing templates for creating designs is the lack of originality in the resulting design (Rahimin, 2022). The originality of your work is more personal and ownership. Well-produced presentations will keep the audience interested in what you are presenting. Research also suggests combining auditory and visual working memory enhances working memory capacity more effectively than separately (D. Sorden, 2005).

In the modern landscape, there is an increase in the number of tools and software applications that learners can choose from, each providing users with varying quality of templates. Templates are readily available, easy to use, and save authors valuable time. Understanding structural knowledge is crucial in deep learning as it involves integrating factual information into practical knowledge, organizing implicit relationships among concepts, and comprehending the operational structure of concepts within themselves and about associated concepts (D. Sorden, 2005). However, templates can be challenging if the style, fonts, or content doesn't correctly fit the provided text boxes, thereby corrupting desirable design elements. When the logic of the presentation is broken, both the content and flow, the audience is likely to focus on the design errors of the presentation (Takahashi et al., 2024). The constraints of working memory significantly influence how we encode new information, highlighting the importance of minimizing cognitive strain caused by unnecessary processing from poorly designed educational materials (Wilson & Wolf, 2009). Poorly designed materials could impede an audience's ability to grasp the presented content fully, limiting their comprehension of the key concepts and messages conveyed during the presentation. For example, poor choice of font and background colors can decrease the readability and legibility of the content. Occasionally, readers also get lost between slides when the same or similar elements are repeated, or when identical elements are repeated when

switching between slides, or when similar titles are used across a sequence of slides (Peng et al., 2023). Going through each slide's content in sequence using presenter mode helps to avoid accidentally editing the slides, allowing for a smooth and uninterrupted presentation experience. (Peng et al., 2023).

Additionally, choosing imagery that is not appropriate to the content can distract viewers, and cramming too much content into one slide can overwhelm readers. Consequently, the intended message may not be communicated effectively to the audience, leading to misinterpretation and a potential failure to deliver the intended message.

### Target Audience

The project's intended audience includes anyone tasked with creating slide presentations for school or work. For this study, college students and professionals with limited experience in graphic design are being specifically targeted. The target audience consists of members who are 18 years old and above, from a variety of socio-economic backgrounds, and with diverse interests and creative preferences. Table 1 provides an overview of the target audience's characteristics within four distinct learning domains: Social, Cognitive, Affective, and Psychological.

**Table 1**

#### *Learner Characteristics*

<b>Social</b>	<b>Cognitive</b>
<ul style="list-style-type: none"> <li>● Ability to work with others</li> <li>● Willingness to share information</li> <li>● Various socio-economic backgrounds</li> <li>● ages 18+ and up</li> <li>● Varied genders</li> <li>● Access to computers</li> </ul>	<ul style="list-style-type: none"> <li>● Ability to recognize technical terminology</li> <li>● Able to organize and retain information</li> <li>● Ability to navigate a website</li> <li>● Limited knowledge using presentation software</li> <li>● High School Diploma</li> <li>● Varied learning needs</li> </ul>
<b>Affective</b>	<b>Physiological</b>
<ul style="list-style-type: none"> <li>● Willingness to learn new</li> </ul>	<ul style="list-style-type: none"> <li>● No serious health concerns</li> </ul>

- 
- technology tools
  - Motivated to apply tools
  - Interest in improving presentation skills

- Visual acuity
  - Motor function
  - Normal auditory threshold
  - Ability to operate a computer, tracking pad or mouse
- 

Essentially, these learners can operate/use a computer, navigate a website, and are motivated to learn new technical skills. However, learners may find technology challenging and feel overwhelmed when learning and applying new tools.

College students or professionals with limited graphic design knowledge may need more skills and/or technical confidence to create effective slide presentations that follow basic design principles. The desired state is for learners to gain basic design skills and confidence to create customized presentations that meet graphic design standards with and without the use of templates.

Learners must develop a basic understanding of graphic design principles (typography, color, and grid/layout) and the ability/motivation to create presentations that meet graphic design standards. Limited knowledge of design elements and principles, resources must be addressed for a better visual presentation. The goal of this project is to design and evaluate original instruction for learners with limited graphic design knowledge and provide them with fundamental strategies to create better presentations that meet graphic design standards.

## **Literature Review**

### **Overview**

To better understand the target audience and gather relevant information to meet the instructional purpose, a literature review was conducted with a focus on three key areas: 1) the effective use of visual aids through the application of design principles, typography, and composition, 2) delving into adult learner theory and motivation, and 3) integrating Gestalt theory, which is closely associated with design principles.

## **Background**

College students or professionals with limited graphic design knowledge may lack graphic design skills and/or technical confidence to create effective slide presentations. Effective slide design for research presentations draws from the principles of effective teaching, considering how your audience processes and retains information (Naegle, 2021). When the slide is not legible, it distracts the audience as they try to figure out what is written (Alley & Robertshaw, 2004). There's often a need to work on failing even when putting forth our best effort, especially when delivering presentations in academic or scientific contexts (Schoenecker, 2023). Dealing with setbacks is an inevitable part of both educational and professional journeys, especially when pouring our heart and soul into tasks like giving presentations. Regardless of how much preparation and effort are invested, unforeseen challenges can arise during the process. Regarding the layout, the objective is to create a slide design that allows the audience to quickly understand the main point of the slide (Alley & Robertshaw, 2004). Chunking information into smaller, digestible pieces that are visually stimulating, a fly chart or infographic is suggested for presentations (Iobst, 2023).

Visual Aids can make or break oral presentations. People remember 65% of information from a visual and oral presentation, 35% from a visual presentation, and 10% from an oral-only presentation (*Designing Effective Presentation Materials | Effective Presentation Skills Tutorial*, n.d.). As suggested by Northern Illinois University in *Designing Effective Presentation Materials*, thoughtfully designed visual aids can enhance the overall effectiveness of a presentation and impact an audience's ability to retain information.

## **Cognitive Load Theory**

Cognitive Load Theory (CLT) proposes that the capacity of working memory is limited. The mind has two types of cognitive loads: intrinsic load, which is essential for learning, and extraneous load, which is unnecessary and can hinder memory retention (Piccirillo, 2023). CLT suggests that instructional techniques that require students to engage in activities not directed at schema acquisition and automation can quickly exceed the limited capacity of working memory and hinder learning objectives (D. Sorden, 2005). Sweller suggests that content knowledge is structured into schemas located in long-term memory. Cognitive load theory highlights the impact of intrinsic and extraneous load on memory capacity, as even beneficial processes can overload working memory (de Jong, 2010). These schemas can be compared to Miller's (1956) idea of chunking

content, and they influence the processing of new information as it is received into working memory (D. Sorden, 2005).

The results of the study show that students were introduced to a new subject using either default-driven slides (Common Practice, CP) or multimedia principle slides (Assertion–Evidence, AE) (Garner & Alley, 2013), with the expectation that participants using assertion–evidence slides would experience reduced mental effort due to the alignment of instructional design techniques aimed at reducing cognitive load (Garner & Alley, 2013). Showing good presentation examples will help the learners create better presentation slides. As suggested in designing educational programs, we must consider concepts like memory leakage and build mechanisms that reduce the negative impact of forgetting current memory (Piccirillo, 2023). The most effective method is teaching—the more you teach and facilitate the learning of others, the more you'll learn yourself (Piccirillo, 2023). Contemporary educational principles advocate for adult learning, emphasizing increased learning, reduced teaching, and learner-centered approaches. This involves personalized learning that addresses the specific needs of the learners (Piccirillo, 2023).

### **Visual Design Principles and Instructional Frameworks**

Instructional presentations facilitate learning beyond remembering information, enabling students to grasp connections between elements or cause-and-effect processes within a system (Garner & Alley, 2013). Research on multimedia learning has provided detailed suggestions for how text, audio narration, graphics, and animations should be temporally and spatially arranged. Six principles of multimedia learning are fundamental when creating instructional slides (Garner & Alley, 2013). Mayer's multimedia learning theory and principles provide an evidence-based framework for shaping and designing slides. Reducing text, removing redundant content, and clarifying diagrams make it easier for students to achieve meaningful learning, including those with neurodivergence (Garner & Alley, 2013).

The first dynamic psychological theory, often misunderstood as only focusing on static visual grouping principles, is the Gestalt theory. Gestalt Theory consists of several components and is more significant or distinct from just the sum of those components. It is meticulously grounded in philosophy, something that is lacking in many modern psychological theories (Mungan, 2023). Gestalt's interface lets users quickly move between a broad view of the slide layout and specific details about the slide groupings and elements. Presentation slides frequently employ visual elements for organizational guidance, including titles, separators, and

animated slides. This functionality allows readers to swiftly access slide information at varying levels of detail, depending on their particular objectives, whether it's quickly browsing, searching, or closely examining the content (Peng et al., 2023).

## **Summary**

The research provides that adults favor multimedia instruction, and it is essential to minimize content for adult learners to prevent cognitive overload and to identify potential instructional strategies. Considering their limited working memory capacity, it emphasizes the importance of understanding adult learners in cognitive load theory. Moreover, it highlights the close relationship between Multimedia Learning Theory and Gestalt Theory, especially in the context of technology and design principles. By applying these learning theories, this project aims to help adult learners achieve proficiency in basic typography, color usage, and grid implementation while adhering to best instructional practices and design techniques.

## **Project Design**

### **Overview**

The goal of this project was to develop and evaluate original educational content that provides learners with basic visual design knowledge to customize and improve slide presentations.

### **Instructional Scope & Sequence**

While the number of potential topics for this module was vast, it specifically covered typography, contrast, design elements, design principles, and layout. These core topics will be taught in separate modules and have many vital components for practical designs. Basic technical instruction will be omitted: essential computer operation, sharing files/documents, understanding of raster/vector, understanding of images, and prints—digital/paper.

The decision-making process for this project encompassed several considerations including: target audience, severity of the problem, constraints related to time, money, and resources. With the target audience being individuals aged 18 and older, there's a likelihood that they may face budget constraints and limited availability. Utilizing affordable resources, like free apps, is ideal for them to test possibilities before committing to any purchase. The format includes a one-hour

lesson or workshop that provides learners with the necessary guidance they can move through at their own pace, without registering for an account, or paying for training.

In Module 1, the following topics are covered in this order: starting with typography, then moving on to understanding accessible contrast, followed by design elements and principles, and finally, layouts. Learners will focus on fundamental typography skills, including adjusting font family, size, weight, style, color, and leading. Learners will grasp the essentials of typography and learn to create a visual hierarchy by manipulating these properties effectively. They will also explore the contrast of complementary colors, which can help learners understand effective contrast in the construction of their slide presentations. It is also worth looking into testing for AAA accessibility standards. Next, visual design elements and principles are introduced, including a brief overview of graphic design, which encompasses the integration of image and text and Gestalt Theory, particularly concepts such as proximity and association. Learners can practice using typography and image selection to adjust leading, allowing for meaningful grouping of list items and selecting appropriate images to enhance their textual content.

A few suggestions emphasized in the course will be to: use simple or no backgrounds in *Presentation Materials*, use colors that provide adequate contrast and make text easier to read, use adequate font size that allows easy reading of text from the last row of the room, use distinct font sizes for titles and section headings, limit bullet points to four to five points per slide, ensure animations or transitions don't distract, show video clips at easily viewable size, proofread, and spell-check, remember your visuals are to enhance and not distract (*Designing Effective Presentation Materials* | *Effective Presentation Skills Tutorial*, n.d.). The tips mentioned above have been curated from other specialists in the field of graphic design. Slide animations can lead to further distraction, content occlusions, or overlapped elements in a thumbnail image, potentially affecting the alignment performance of our correlation matrix (Peng et al., 2023). Every presentation has a story, starting with a good hierarchy and ending with a nice layout; otherwise, you'll lose the audience without one.

Module 2 will cover the layout, which is separated into rows and columns. It will also explain how to use a simple grid system with ample margins and defined columns.

**Table 2**

Performance objectives

<b>Topic</b>	<b>Content (Subtopics)</b>	<b>Performance Objectives</b>
Intro to Visual Design	1.1 Define Typography	1.1.1 Given four definitions, the learner will identify the correct definition of <i>typography</i> .
		1.1.2 Learners will list at least three classification of typefaces associated with <i>typography</i>
		1.1.3 Learners will demonstrate four characteristics of typography associated with <i>typography</i> ,
	1.2 Recognize accessible contrast	1.2.1 Given four multiple-choice options, learners will select the correct definition of accessible <i>contrast</i> .
1.3 List Design Elements & Principles	1.3.1 Learners will define five terms associated with <i>Design Elements &amp; Principles</i> from memory.	
Intro to Layout	2.1 Define Grid System	2.1.2 Given four multiple-choice options, learners will select the correct definition of a <i>grid</i>

system.

### **Instructional Strategy & Methods**

Overall, the instructional strategy will effectively combine direct and indirect approaches. The instructional strategies I used to design the course were direct and indirect methods. The direct instruction consisted of lectures and demonstrations, and the indirect instruction guided learners to practice and apply design knowledge for themselves. Some key concepts covered in the modules were typography and contrast, to make sure everything was readable. Instruction is designed to occur in various settings, whether casual or structured, and can be delivered at local, regional, national, or international levels. And then, most importantly, the learners were exposed to design elements and principles to help make their visual design projects stronger. Participants will benefit from in-person interactions and electronic delivery methods (Kaltenbach & Soetikno, 2016).

The instructional approach includes lectures and demonstrations, as well as activities to help learners remember the tools learned so they can apply and practice using them on their own. This approach ensures engagement in hands-on experiences and allows them to ask questions in real-time when necessary. Plus, using games such as kerning and color from <http://method.ac> makes recalling lessons easier and keeps things fun!

Multimedia elements and activities are included to increase motivation and engagement. Online resources and videos are learning activities that keep learners engaged, including topics related to design, crossword puzzles, and multiple-choice questions. For example, Erik Kennedy's "Learn the Logic of *Great Typography*" is an interactive type tutorial where you can learn and understand basic typography. Consider exploring contrast through complementary colors, which can help learners understand what makes for effective contrast. It's also worth testing for AAA accessibility standards. For example, Mark MacKay and María Munuera's "Color Game" is an experimental color-blind assistance interactive game to test your knowledge and skills of colors. Numerous color picker applications are available to help select a great color combination.

### **Technical Details**

The technical details were designed thoughtfully to integrate direct and indirect learning methodologies. By building a custom multi-page website with Hypertext

Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript (JS), learners gain creative freedom to explore various options. The learning atmosphere was adaptable, tailored to individual needs, and allowed for greater freedom in the learning process (Elmabaredy et al., 2020). It demonstrated the essential tools that learners acquired, applying their knowledge to web and print materials, and helping learners simultaneously develop practical skills and a deeper understanding of design. The choice of slide components, quantity, and delivery method significantly influences the audience's ability to process, structure, and retain information (Naegle, 2021).

The design also focused on providing instructional tools that included original content enhanced by supplementary resources and interactive multimedia elements, such as H5P and YouTube videos. H5P offers a variety of interactive features designed to actively engage learners, making the educational experience more dynamic and enjoyable. However, due to the constraints of limited design time, the researcher may need help to create all the necessary learning materials. Learners are encouraged to utilize free, accessible technology tools before investing in applications like Figma, Miro, and Google Slides. The results may differ slightly when using non-designed applications, such as Google Slides, especially in aspects like kerning in letters and leading in paragraphs. For instance, the initial module was a detailed, step-by-step tutorial on typography and creating stylized content. A sample learning exercise from module 1—an exercise on typography, involved upgrading a type specimen. Learners can apply this lesson to any design, not just their slide presentations. This module covered essential concepts such as contrast and various design elements and principles, all while guiding learners through one of the aforementioned tools. Reducing text, eliminating unnecessary content, and ensuring clear diagrams help learners better understand the material (Leo et al., 2023). Learners skilled at presentations are more comfortable expressing their thoughts in various situations, while others may struggle (Lati et al., 2024).

### **Project Evaluation**

The goal of this evaluation is to understand the usability and learning effectiveness of this project's instruction on foundational principles of graphic design.

Design teaching professionals, graduate students in the Learning Design and Technology program at the University of Hawai'i at Manoa, and 15

students/friends participated in the evaluation of this project's usability and the learning effectiveness of the course.

### **Evaluation Instruments**

The demographic study collects information using Google Forms and was built into your pre-test. Usability was tested with a structured interview on Zoom. Learning effectiveness and attitudinal data were collected on the post-test, also using Google Forms. To gain insights into the participants' prior knowledge and familiarity with the subject matter, a pre-test was administered at the beginning of the website experience. This pre-test served as an essential benchmark, allowing researchers to assess the participants' baseline understanding before they engaged with the instructional material. Participants could access this pre-test seamlessly through the instructional module, as it was made available via button links prominently displayed on the homepage. Website accessibility is crucial as it ensures that participants can easily navigate to essential components of the study without confusion. More detailed insights can be found in [Appendix A](#).

Usability testing for video conferencing took place through Zoom. The protocol for the usability study was based on Steve Krug's (2010) book, *"Rocket Surgery Made Easy: Usability Script"* (see [Appendix B](#)). During the usability tests, participants were encouraged to vocalize their thoughts, feelings, and expectations regarding the instructional design. Learners were tasked with navigating through the website and responding to a variety of scenarios. This interactive component was vital, as it provided insights into the participants' experiences while navigating the website and informed potential design improvements based on user feedback.

Participants' attitudes were assessed through a series of evaluation items derived from post-test instruments. The pre- and post-tests were specifically designed to align with the program's established performance objectives. Upon completion of module 2, the post-test questions were crafted to correspond directly to these performance objectives, enabling an evaluation of the learning outcomes achieved by the participants.

This survey was instrumental in evaluating the effectiveness of learning and the shifts in attitudes resulting from the instructional session, utilizing both pre- and post-test assessment items allowed for a comprehensive analysis of participants' confidence levels and attitudinal shifts before and after the instruction. Moreover, the survey included targeted questions to understand participants'

satisfaction with their learning experience. This information is invaluable, as it highlights areas of success and identifies potential areas for improvement to enhance future instructional designs and delivery methods.

## Results

### Usability

The usability study sessions were held via Zoom, adhering to the protocols indicated in [Appendix B](#). Four participants took part, including a UI/UX designer, a student, an instructor, and an instructional designer, each bringing diverse career experiences. During the usability study, participants evaluated the course's navigation, content, and visual design. Table 3 highlights 65 comments overall, encompassing both positive and negative feedback for each evaluated aspect. Of the total feedback, 80% was positive while 20% was negative. Focusing on visual design, there were 31 comments, with 28 (43%) positive and three (5%) negative. Participants made 21 comments about course content, with 13 (20%) positive and eight (12%) negative, 32% of the total comments. Regarding navigation, out of 13 comments, 11 (17%) were positive and two (3%) were negative.

**Table 3**

*Participants' Positive and Negative Comments By Usability Category (n = 4)*

Category	Total	Positive	Negative
Visual Design	21	28 (43%)	3 (5%)
Content	31	13 (20%)	8 (12%)
Navigation	13	11 (17%)	2 (3%)
Total	65	52 (80%)	13 (20%)

Each usability participant was assigned tasks, all focused on navigating the course. Additionally, tasks directed users to complete the assessments and activities. Table 4 provides a list of the specific tasks to which participants were instructed to respond in order to measure ease of navigation. As a result, the negative comments doubled compared to the visual design and ease of

navigation. A participant reflecting on module 2 remarked, “I’m finding it challenging because the previous pages were more focused on helping them [users] comprehend the material. There were activities linked to it. However, this time, are you expecting them to create it independently?” Another participant said, “Well, it makes sense that I’m going to be learning the basics of design about slides, but I don’t see anything to click on. Like, I don’t know if I’m supposed to scroll or click on anything,” referring to the hero section on the homepage. Most of the negative feedback was from module 2. Overall, participants were pleased with the visual aesthetics of the instructional design website. A participant said, “The visuals just made it more inviting, and just made me want to keep scrolling. Made it more delightful. And even the colors, you know, it was very energetic.”

**Table 4**

*Participants’ ease of navigation (n = 4)*

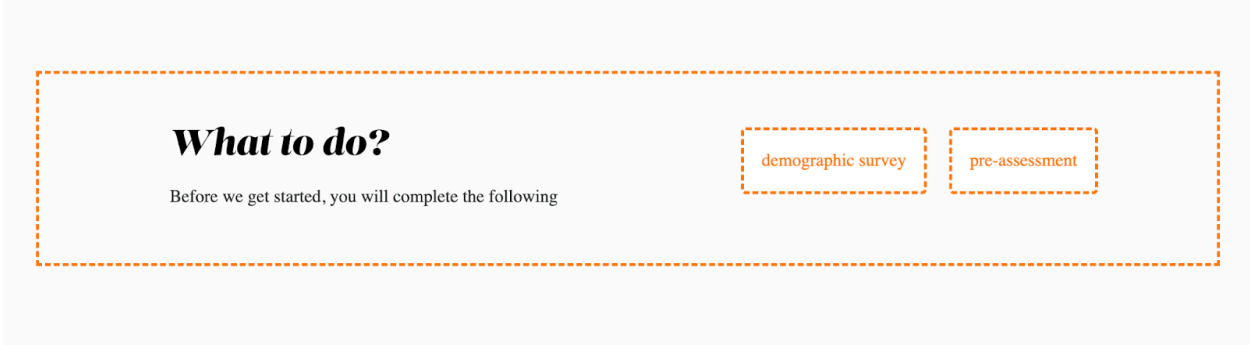
Category	Avg	SD	Min.	Max.
Task 1: How hard would you say that was to find? Why?	5.00	0.00	5.00	5.00
Task 2: How difficult would you say it was to figure out what the activities are asking a student to do? Why?	4.50	1.00	3.00	5.00
Task 3: How do you think students would participate in activities	3.50	1.29	2.00	5.00

Furthermore, an attitudinal survey was integrated after Module 2 to better understand participants’ experiences and perceptions. After analyzing the results of usability tests, immediate modifications were enacted to enhance the user experience. Figures 1 and 2 show changes made during the iterative process, visually comparing the website’s layout and functionality before and after incorporating feedback from the survey. Figure 3 shows that the key enhancements were the addition of a prominent scroll-down indicator in the hero section of the homepage. Figure 4 illustrates adjustments made to address the lowest score in task 3; editing the verbiage enhanced the content’s clarity. This

feature guides users intuitively and encourages more profound engagement with the content. The initial usability test was conducted to ensure that all participants could seamlessly interact with the provided links and complete the forms, affirming the site's functionality and ease of use.

**Figure 1**

*Pre-test Design Before*



**Figure 2**

*Pre-test Design After*



Figure 3

Before and After of Scroll Down Indicator (Right)

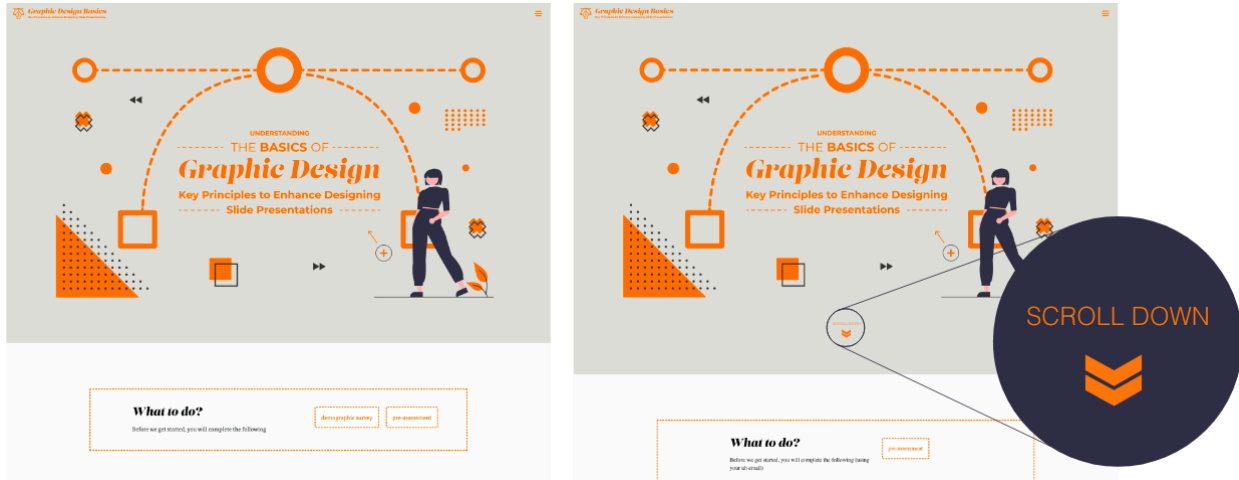
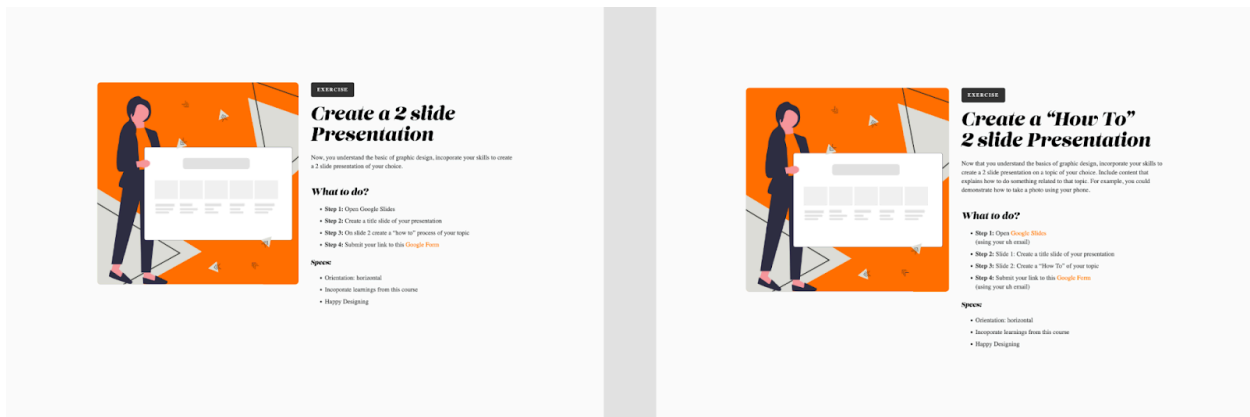


Figure 4:

Modifying the Verbiage



## Learning Effectiveness

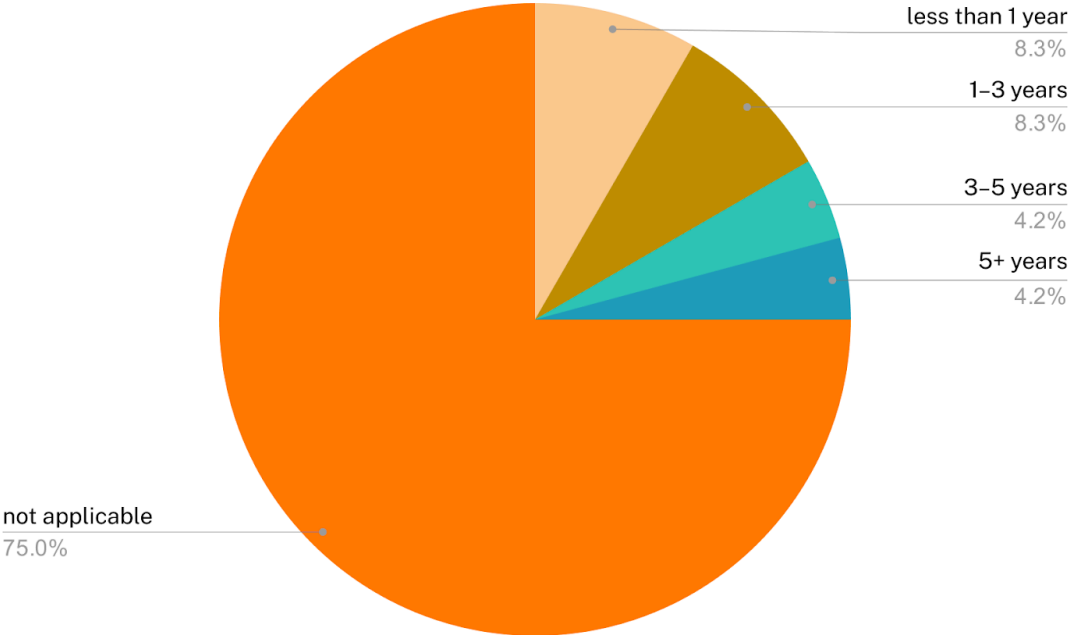
After incorporating modifications to the course based on detailed feedback from participants in the usability study, a comprehensive assessment was conducted to evaluate its effectiveness. The evaluation consisted of two key components: a

pretest featuring a demographic survey to capture essential background information about the participants and a post-test with an attitudinal survey measuring knowledge gained and overall user satisfaction after the course completion. Both pre- and post-tests included questions assessing the content in Modules 1 and 2. These assessments provided valuable insights into how well the course met its learning objectives and the areas in which further improvements could be made.

The participants (n=28) were divided into beginners, intermediate, and advanced students. Instruction was delivered to the learners using both synchronous and asynchronous methods. The intermediate participants had one week to complete the task asynchronously, while the beginners and advanced participants had one class period to complete it synchronously. None of the usability participants participated in the learning experience. Eighty-two percent of participants had studied graphic design, while 18% did not study graphic design. Figure 5 shows that participants who had worked or are currently working in the graphic design field had experience from less than a year to more than five years. Seventy-five percent of the participants are not working in the field.

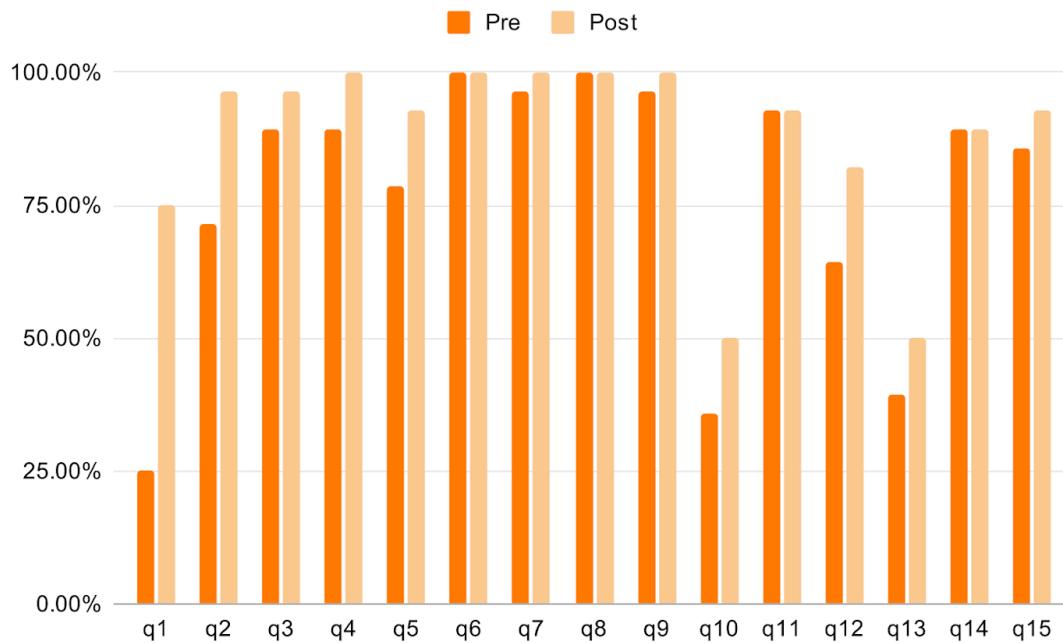
**Figure 5**

*Participants' Graphic Design Experience (N=28)*



**Figure 6:**

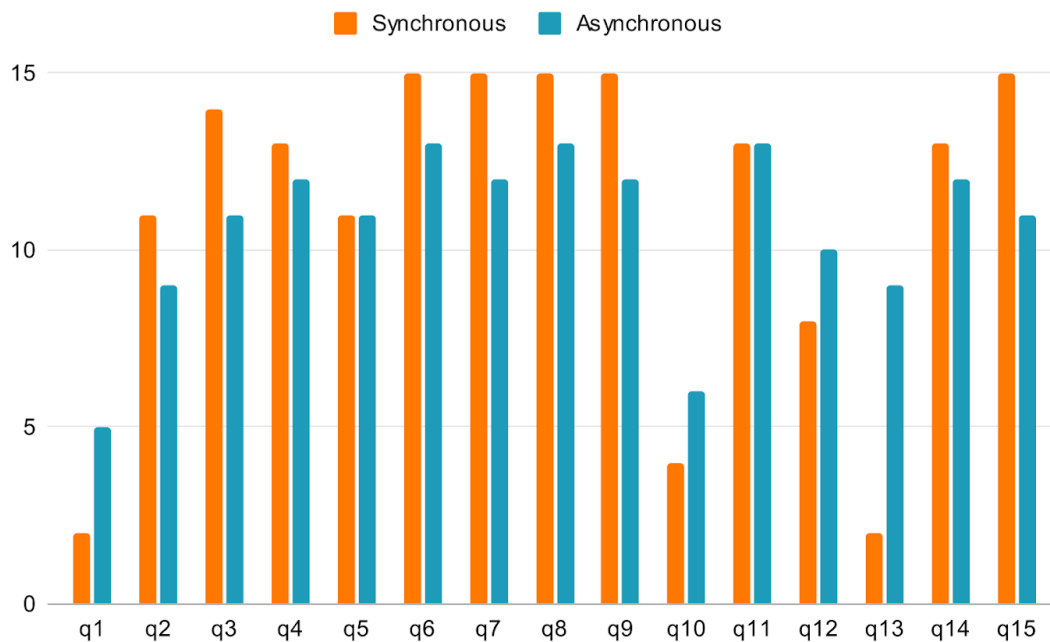
*Results of the Number Correct in the Pre- and Post-test*



A total of (n=28) completed the learning effectiveness assessment. Participants varied in graphic design experience. Figure 6 illustrates the overall learning effectiveness. Assessment results showed that participants increased their scores by up to 50% from the pre-test to the post-test, with the percentage of correct answers. Shown in [Appendix D](#) are the test questions. Figure 7 shows that the synchronous class had a class period to complete the task, while the asynchronous class had a week. As you can see, asynchronous participants did better than synchronous learners on questions 1, 10, 12, and 13, which may have been due to a time constraint. Overall, synchronous participants did better, however, there was no change in questions 5 and 11, suggesting poorly written test items or learners had more prior knowledge than I expected.

**Figure 7:**

*Number of Correct Answers (N=28) Synchronous and Asynchronous*



## Attitudinal

As part of the post-test, participants were also asked to complete an attitudinal survey and rate their experience using a Likert scale to determine how they felt about the instructional design course. The questions asked participants what they thought about the course and how they would rate their confidence and knowledge levels. The attitudinal survey can be seen in [Appendix C](#).

As seen in Table 5, participants provided 73 attitudinal comments overall, encompassing both positive and negative feedback for each evaluated aspect. Focusing on visual design, there were 23 (31%) comments, with 19 (26%) being positive, four (0.05%) being neutral, and zero for negative. Participants made 33 (45%) comments about course content, with 20 (20%) positive and eight (12%) negative, 4 (%) of the total comments being neutral. Regarding navigation, out of 73 comments, 1 (16%) was positive, and zero were neutral or negative. Positive comments from participants from each of the general (overall, content, navigation, visual design) categories included: “I really liked the layout of the website and how concise the text is where it was easy to understand. I also found it visually appealing and loved the choice of colors.” Content user said, “I like the visual tests because it helps me retain the information better. I also feel practicing with design was very helpful and exciting, especially when there's

demo videos to guide us.” In regards to navigation, a user said, “Very easy to navigate through.” On the topic of visual design, one user said, “I like the minimalistic design and contrast between colors, it keeps you focused. The incorporation of videos and activities was good as well.” Figures 8 and 9 show that the results were quite similar from learning effectiveness participants and usability testers, respectively, with more positive and less negative comments. Both showed the content needed to be improved. A few participants had similar thoughts regarding the Typography & Typefaces section. For example, one shared, “my only minor concern with the website pertains to the task located in the 'Typography & Typefaces' section. When responding to the question, 'What typeface has no feet?' The crossword puzzle interface displays a space between 'sans' and 'serif'; however, it appears as 'sans\_serif' in the text box. This discrepancy leads to an incorrect answer.” Participants indicated that they would like to “rephrase prompts.” Revisions were implemented following the completion of the post-test by subjects who completed the course. Table 6 shows that using the Likert scale, with one being strongly disagree to five being strongly agree, the averages were close to the maximum (5) points allowed.

**Table 5**

*Participants' Positive and Negative Comments (N = 28)*

Category	Total	Positive	Netural	Negative
Visual Design	23 (31%)	19 (26%)	4 (0.05%)	0 (0%)
Content	33 (45%)	20 (27%)	4 (0.05%)	8 (11%)
Navigation	1 (0.01%)	1 (0.05%)	0 (0%)	0 (0%)
Overall	16 (22%)	17 (23%)	0 (0%)	0 (0%)
Total	73 (100%)	57 (78%)	8 (11%)	8 (11%)

**Table 6:***Website Feedback From Attitudinal Survey (N = 28)*

#	Question	Avg	SD
1.	I am satisfied with the overall design of this website	4.68	0.72
2	I am satisfied with the user-friendliness of this website.	4.71	0.66
3	I felt motivated to participate in the website activities.	4.68	0.55
4	The course material was clear.	4.57	0.63
5	The course material was effective.	4.57	0.63
6	I felt very confident using the website.	4.71	0.53
7	I had to acquire much knowledge before I could start working on this website.	<b>3.18</b>	<b>1.44</b>
8	I found the resource page of the website helpful.	4.46	0.74
9	The website enhanced my understanding of Graphic Design.	4.43	0.63
10	Overall, I found the website to be visually appealing.	4.79	0.42
11	Overall, I am confident in using this website.	4.79	0.50

Note: *Using the* Likert scale, one strongly disagree to five being strongly agree

## Discussion & Conclusion

The purpose of this project was to create and assess innovative instructional materials for individuals with minimal graphic design experience. The course aims to equip learners with essential strategies to enhance their presentations by following graphic design principles. Additionally, the project sought to develop and evaluate educational content that offered foundational visual design knowledge, enabling learners to customize and enhance their slide presentations. The evaluation focused on understanding the usability and effectiveness of the instructional materials in teaching core graphic design concepts. The usability test showed that some of the questions asked of the participants needed revisions on the prompts, meaning type. Overall, the participants were pleased with the visual design, website layout, content, and navigation, which helped to keep them engaged.

Results of pre/post test instruments further illuminated changes to make in a future iteration that might improve learning outcomes. Participants may have misunderstood what some of the test questions were asking, leading to incorrect answers. Figure 5 is on page 17. It is a chart showing Participants' Graphic Design experience. Figure 6 is the bar chart with pre/post test results. The questions were open-ended. It could have been a two-part question. Participants were confused about how the questions were worded (Figure 6). For example, on question 1, "What is arranged into meaningful words and sentences?" The results show that question one had the highest increase from pre- to post-test, with a 50% increase. Question 13, "Group similar or related items together is," participants had chosen unity when the corrected choice was proximity. If I had limited the choice, the results would have been better. The course was updated in response to feedback gathered from the study participants. The results suggest that the activity helped participants to answer questions correctly.

Overall, attitudinal survey results showed that participants enjoyed the website, including the activities, quotes, visual layouts, and custom illustration (see Table 6). The average score was determined using the Likert scale for questions asking participants to rate how they felt. On a Likert scale of 1 being strongly disagree and 5 being strongly agree, learners reported that everything was quite good except question 7, which stated: I have to acquire more knowledge before I could start working on this website. The average rating for this statement was 3.18, so it was somewhat neutral.

The educational problem addressed by this study was that students and professionals with minimal graphic design experience often struggle to create effective slide presentations due to a lack of skill and technical confidence. The goal of instruction was to help learners acquire foundational design skills and boost their confidence in creating personalized presentations that align with graphic design standards, whether using templates or not. While it was not directly part of this particular study, I have noticed that students in my class are producing better presentations and improving the design quality in their work after going through this module.

If I had additional time, I would improve the site by creating more detailed subcategories, adding more interactive elements, and incorporating subtle animations. Other target audiences include non-designers, faculty, and learners interested in learning more about design. Another step is to create more modules using design programs such as Adobe Products and Figma. Future ideas are to include a section on animations in the instructional content. This component would help learners further enhance their presentation skills.

Overall, my experience applying instructional design knowledge was a rewarding success with this project. The most significant flaw of the study proved to be wording of test questions. Working through the instructional design process using the ADDIE model which involves a sequential movement from analyzing an educational problem, designing and developing engaging material to reach learning objectives, implementing instruction, and evaluating both the usability and learning effectiveness of the design product was a useful method to help organize my thoughts and test the impact of this project. The goal of the analysis phase was to understand the education problem better by researching implications of the problem as well as theoretical insights that could inform instructional materials. The design and development process incorporated an array of intricate features and enhancements, seamlessly aligning with the insights uncovered during the analysis. It is a rewarding process of implementing and evaluating original instruction because all of the research and instructional strategies come alive visually, and are no longer just in your head. According to the information gathered through the instructional design process, participants of this study achieved the terminal objective which was to gain technical confidence and increase their basic visual design knowledge to improve the quality of slide presentations.

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## Appendix A

### Demographics

1. What is your profession?
  - Student
  - Instructor
  - Graphic Designer
  - Other: \_\_\_\_\_
  
2. Have you been studying graphic design or have you previously studied it? (personally, privately, or in a group setting)
  - Yes
  - No
  
3. If you have answered "yes" to the previous question, have you currently or previously studied graphic design in an online setting?
  - Yes, asynchronously
  - Yes, synchronously
  - No
  - Not sure
  - Not Applicable
  
4. Please select any of the following digital editing programs you use or have used? *check all that apply*
  - Adobe Photoshop
  - Adobe Illustrator
  - Adobe InDesign
  - Canva
  - none of the above
  - other
  
5. Have you worked in or are currently working in a design-related field?
  - yes
  - no
  - not sure
  
6. If you answered "yes" to the previous question, how many years of experience do you have working in a design-related field?

- less than 1 year
- 1-3 years
- 3-5 years
- 5+ years
- n/a

## Appendix B

### Usability Protocol

*Adapted from Usability Script - Rocket Surgery Made Easy © 2010 Steve Krug*

- Before the interview, click on the Join Meeting button to begin the session. The participant will join at an agreed-upon time by clicking on a Zoom link in the body of an email.**

#### **Facilitator Script [5 minutes]**

Aloha, [participant's name]. Thank you for offering to help me with my project! I'm going to be walking you through this session today. With your permission, I will record what happens on the screen and during our conversation. The recording will only be used for my research and to improve the website I will show you.

Before we begin, I have some information for you, and I will read it to ensure that I cover everything.

You already know why I asked you here, but let me briefly review it.

I'm asking people to try using an educational website I'm building to see whether it works as intended. This session should take about 30 minutes.

The first thing I want to make clear right away is that I'm testing the website, not you. You can't do anything wrong here. This might be the only place you don't have to worry about making any mistakes today.

As you move around the site, I will ask you to think out loud as much as possible. For example, say out loud what you're looking at, what you're trying to do, and what you're thinking as you explore. Hearing your thoughts will be a big help!

Also, please don't worry about hurting my feelings. I'm doing this test to improve the site, so I need your honest reactions.

If you have any questions as we go along, ask them. I might not be able to answer them immediately since I'm interested in seeing how people do without help. But if you still have questions, I'll try to answer them when we're done.

If you need to take a break at any point, just let me know. Do you have any questions so far?

**Ask participant a few preliminary questions: [3 minutes]**

OK. Before we look at the site, I'd like to ask you a few quick questions about your online experience.

1. First, what is your occupation (colleague) / career goal (student)? What do you like about it?
2. Now, can you give me a ballpark estimate of how many hours a week you spend using the Internet at work/school and home?
3. What kinds of sites do you spend most of your time on?
4. Have you ever used a website to learn something new? If so, which resource(s) do you like?
5. How frequently do you use them?

OK, great. We're done with the warm-up questions. Now, we'll start testing out the site.

**Send participant Graphic Design Basics Key Principles to Enhance Designing Slide Presentations web link via the Zoom Chat: [30 sec]**

URL: <https://thesillyme.com/ltec-masters/>

I just sent a chat message with the link to the site. Please open it now.

**Ask the participant to begin the share screen: [30 sec]**

Please start sharing your screen by clicking the green Share Screen button on your bottom navigation bar in the Zoom window.

**HIT RECORD**

I'm going to start the recording now.

**Have participants do a narrative of the website's overall appearance. [3 minutes]**

I'd like you to look at the homepage and tell me what you think about how it looks. Tell me what stands out to you, who you think it was built for, and what you can do here. Just look around and tell me what you think. You can scroll if you want to but don't click on anything yet.

Ok, thanks for sharing your thoughts. That was awesome!

- Ask participants to complete a few specific tasks, one at a time. [15 mins]**

Now, I will ask you to try doing some specific tasks. And again, it will help me if you try to think out loud as you go along.

Tasks:

**Homepage:** You're looking at the homepage of the instructional module site with basic information about the course. You do not need to read everything; feel free to scroll through the page. Don't click anything yet, and tell me your first impressions, thoughts, or anything you notice. **Thanks for sharing.**

**Module:** In this case, you're the student wanting to start the module. Don't click yet; just tell me what you would do. Where would you begin? Good job. On a scale from 1- 5, with 1 being "can't find it" to 5 "found it" or "easy peasy," how hard would you say that was to find? Why?

Now, we're in Module 1, don't click anything yet—share your thoughts out loud. What do you think this instructional module is about? What do you think about the visual design?

Task 2: Now that you've looked at this page, how do you think students would participate in activities suggested in Module 1. Try it out the interactive crossword. Excellent. On a scale from 1- 5, with 1 being "can't do this" and 5 "got this" or "easy peasy", how difficult would you say it was to figure out what the activities are asking a student to do? Why?

Now, we're in Module 2, don't click anything yet—share your thoughts out loud. What do you think this instructional module is about? What do you think about the visual design?

Task 3: Now that you've looked at this page, how do you think students would participate in activities suggested in Module 2. Awesome. On a scale from 1- 5, with 1 being "can't do this" and 5 "got this" or "easy peasy", how difficult would you say it was to figure out what the activities are asking a student to do? Why?

- Allow the user to move from one task to the next until it produces no value or becomes very frustrated. Repeat for each task or until time runs out.**

Thank you so much for your input; it was very helpful!

- Request that the participant end their screenshare by clicking the Stop Share button on the bottom navigation bar of Zoom. [Stop Recording - 1 min]**

You can go ahead and stop sharing your screen. Now that we're finished, do you have any questions for me? (answer questions if time permits)

Thank you again for your time and feedback! We're all set. I hope you enjoy the rest of your day!

- Stop the Zoom share by clicking the "Stop Share" button.**
- After the session, wait for the recording to download to the computer and quickly scrub through to ensure audio and video integrity.**
- Save to project file.**

## **Appendix C**

### Attitudinal Survey

1. I am satisfied with the overall design of this website.  
(1 - strongly disagree, 5 -strongly agree)
2. I am satisfied with the user-friendliness of this website.  
(1 - strongly disagree, 5 -strongly agree)
3. I felt motivated to participate in the website activities.  
(1 - strongly disagree, 5 -strongly agree)
4. The course material was clear.  
(1 - strongly disagree, 5 -strongly agree)
5. The course material was effective.  
(1 - strongly disagree, 5 -strongly agree)
6. I felt very confident using the website.  
(1 - strongly disagree, 5 -strongly agree)
7. I had to acquire much knowledge before I could start working on this website.  
(1 - strongly disagree, 5 -strongly agree)
8. I found the resource page of the website helpful.  
(1 - strongly disagree, 5 -strongly agree)
9. The website enhanced my understanding of Graphic Design.  
(1 - strongly disagree, 5 -strongly agree)
10. Overall, I found the website to be visually appealing.  
(1 - strongly disagree, 5 -strongly agree)
11. Overall, I am confident in using this website.  
(1 - strongly disagree, 5 -strongly agree)
12. What are your overall thoughts and feelings about the website?

13. What did you like most/least about the website?

14. Any Suggestions for improvement?

## Appendix D

### Pre-Post Test Questions

1. What is arranged into meaningful words and sentences? **Typography**
2. What typeface is decorative? **Display**
3. What typeface has is "feet"? **Serif**
4. What typeface is handwritten? **Script**
5. What typeface has is "no feet"? **Sans Serif**
6. Which of these button has good contrast? **Button 1**
7. Which of these ad images has good contrast? **Ad 2**
8. Which of these slide has good contrast? **Slide 2**
9. Which of these shapes has good contrast? **Shape 1**
10. To change color size, shape, and proximity for emphasis is... **Contrast**
11. The process of lining up objects and texts is... **Alignment**
12. Repeats something throughout color, space, shape, or font is... **Repetition**
13. Group similar or related items together is... **Proximity**
14. Organize visual elements in order of importance is... **Hierarchy**
15. What is Grid? **All of the above**

- Questions 2–5 had these multiple-choice questions.

Display	Script
Serif	Sans Serif

- Questions 10–14 had these multiple-choice questions.

Alignment	Movement	Rhythm
Balance	Pattern	Unity
Contrast	Proportion	Variety
Emphasis	Proximity	White space
Hierarchy	Repetition	