

Supplemental Materials: Leveraging Participatory Design and User Experience Methods to Collaboratively Envision an Inclusive, User-centered Writing and Design Lab

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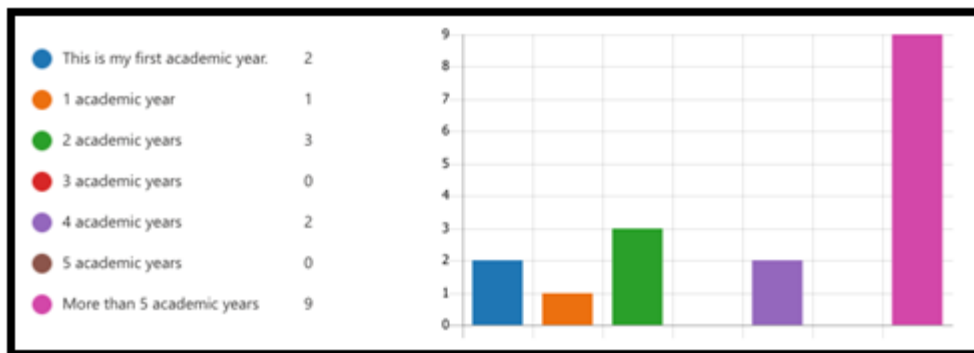
Appendix A: Faculty Perceptions of Student Writing Across the Disciplines at Embry-Riddle Aeronautical University Prescott (Survey questions and selected results)

Instruction at ERAU

- Please select your College.
 - College of Arts and Sciences
 - College of Aviation
 - College of Engineering
 - College of Business, Security, and Intelligence



- Please indicate how long you have been an educator at ERAU.
 - This is my first academic year.
 - 1 academic year.
 - 2 academic years.
 - 3 academic years.
 - 4 academic years.
 - 5 academic years.
 - Five or more academic years.

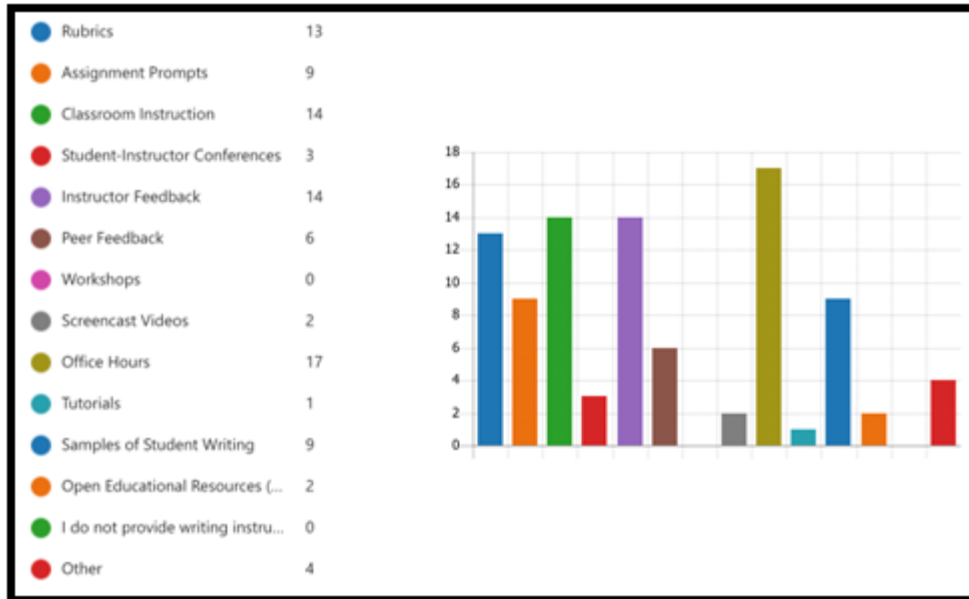


- What level of instruction do you teach at ERAU in your department? Check all that apply.
 - 100-level courses
 - 200-level courses
 - 300-level courses
 - 400-level courses
 - Graduate-level courses

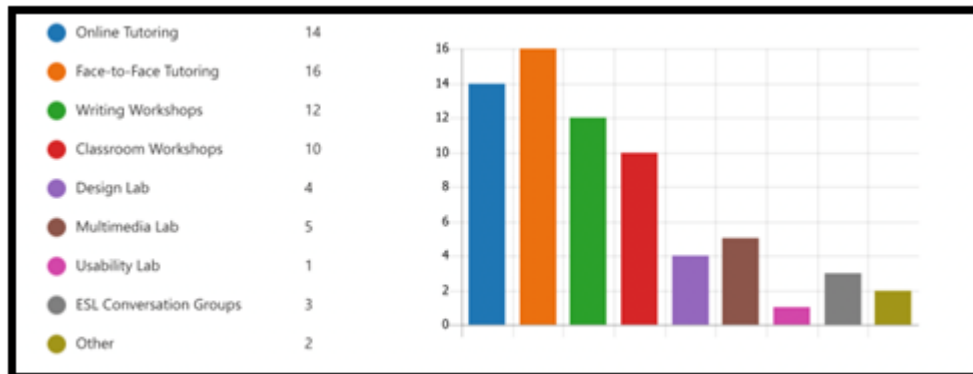


Writing in the Disciplines Support at ERAU

- What types of *writing/designing assignments do you ask students to complete in courses where you are the Instructor of Record?
 - *For the purposes of this survey, writing/designing may be broadly conceived as composing across different genres, modes, and technologies to communicate a message to an audience or user.
- Please provide a list of the past 5 assignments (of any type) you tasked students with completing across all sections taught.
 - (Short Answer)
- What kinds of writing instruction support do you provide to your students to help them learn the constraints and forms of the genres you teach at a STEM university? Check all that apply.
 - Rubrics
 - Assignment Prompts
 - Classroom Instruction
 - Student-Instructor Conferences
 - Instructor Feedback
 - Peer Feedback
 - Workshops
 - Screencast Videos
 - Office Hours
 - Tutorials
 - Samples of Student Writing
 - Open Educational Resources (OER)
 - I do not provide writing instruction support to my students.
 - Other (type)
 - Textbox



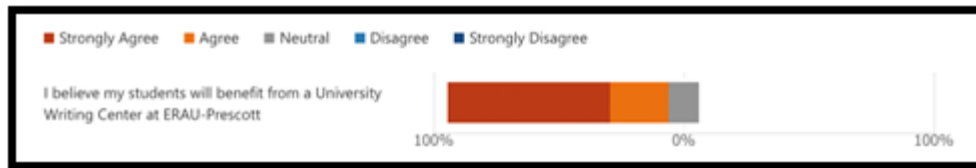
- What kinds of writing support resources might a University Writing Center offer on our campus to help students write and design for diverse audiences and users in your discipline-specific classes? Check all that apply.
 - Online Tutoring
 - Face-to-Face Tutoring
 - Writing Workshops
 - Classroom Workshops
 - Design Lab
 - Multimedia Lab
 - Usability Lab
 - ESL Conversational Groups
 - Prefer to type.



Attitudes toward new writing support resources

Likert Scale: I believe my students will benefit from a University Writing Center at ERAU.

1. Strongly disagree.
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree



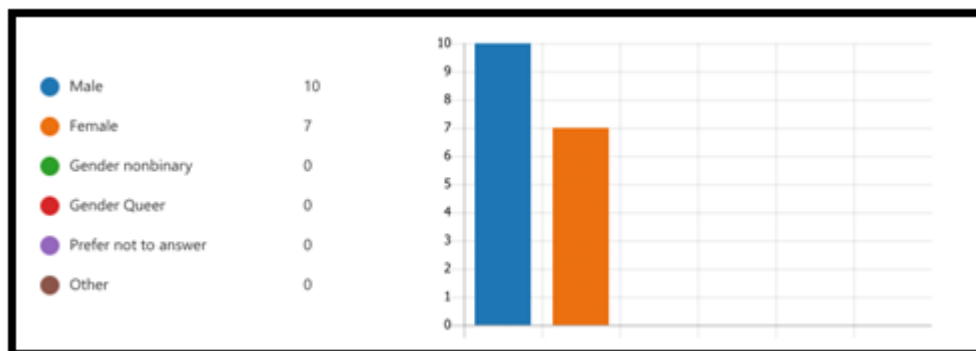
Invitation to Participate

- Do we have your permission to contact you for a remote, 30-minute interview to discuss the ways you and your students use writing in your courses and how a Writing Center could best serve you? If so, please follow the link below to provide your .edu email address. If not, please leave this question blank.
 - Textbox
- Do we have your permission to contact you for a UX Design Sprint? If so, please follow the link below to provide your .edu email address. If not, please leave this question blank.
 - Textbox

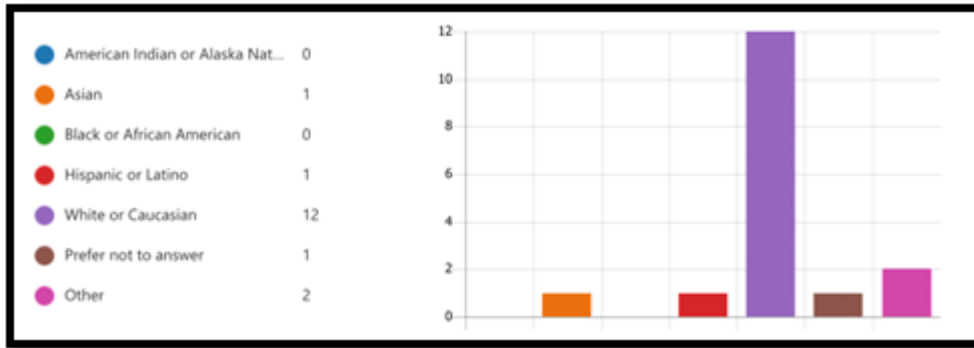
Demographics

We acknowledge the following questions are sensitive. In the spirit of inclusive design, we would like to learn more about your demographic identities and your abilities as potential users of a University Writing Center at [University].

- Select your gender.
 - Male
 - Female
 - Gender nonbinary
 - Gender Queer
 - Prefer to type.
 - Prefer not to answer



- Which of the following best describes you? Please check all that are relevant.
 - American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian or Other Pacific Islander
 - Hispanic or Latino
 - White or Caucasian
 - Prefer to type (textbox)
 - Prefer not to answer



- Please indicate your written language proficiency.
 - English is my first written language.
 - English is not my first written language.
 - If checked, what is your native language?
 - I prefer not to disclose.



- Are you a person with a disability?
 - Yes
 - No
 - I prefer not to disclose.



Appendix B: Faculty Informational Interview Questions

- What do you teach at ERAU?
- What kinds of writing do students compose in courses that you teach?
- Are students prepared for the kinds of writing tasks that you assign?
- If a University Writing Center is launched at ERAU, what kinds of writing support or writing resources might the University Writing Center provide to help your students succeed in your class?
- Is there anything else you want us to know about student writing across the disciplines at ERAU?

Appendix C: Student Perceptions of Writing Instruction Support Options at ERAU (survey questions and selected results)

Instruction and tutoring at ERAU

1. What college do you belong to?--Multiple Choice

- College of Arts and Science
- College of Aviation
- College of Engineering
- College of Business, Security, and Intelligence



2. What is your Academic Standing at ERAU?--Multiple Choice

- Freshman or 1st Year
- Sophomore or 2nd Year
- Junior or 3rd Year
- Senior or 4+ years



3. Describe 2 or 3 writing assignments you have worked on in your college courses. Share which specific courses these were a part of (if you feel comfortable doing so).--Open-ended

4. Have you ever received tutoring on or off-campus?--Check all that apply

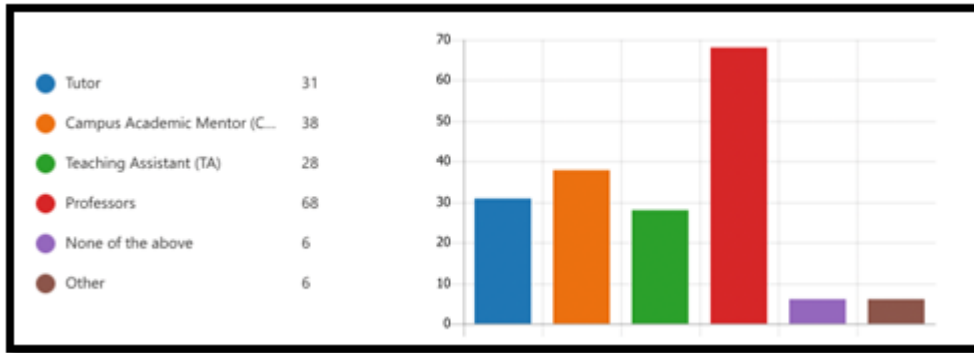
- Yes, on campus.
- Yes, off campus
- Yes, both on and off campus
- No, neither.



5. What resources have you used on campus?--Check all that apply

- Tutor
- Campus Academic Mentor (CAM)
- Teaching Assistant (TA)
- Professors

- None of the above
- Other



6. What resources have you used off-campus?--Check all that apply

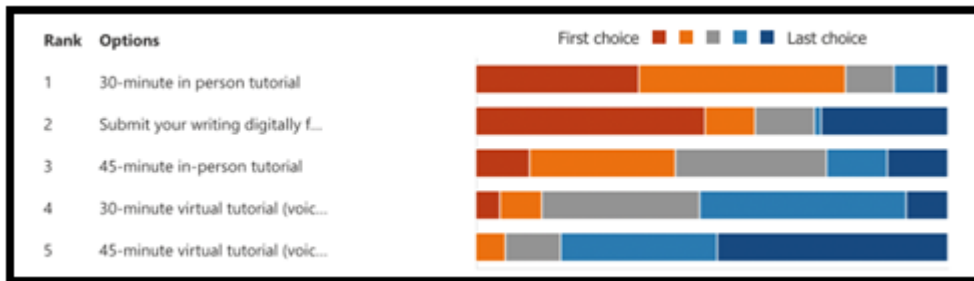
- Tutoring website
- Another college,
 - Please specify
- None of the above
- Other



Attitudes toward new writing support resources

7. If ERAU provides a writing center, what is your preferred mode of tutoring?--Rank

- 30-minute in person tutorial
- 45-minute in-person tutorial
- 30-minute virtual tutorial (voice or video call)
- 45-minute virtual tutorial (voice or video call)
- Submit your writing digitally for later review and feedback



8. Describe your ideal writing tutoring session.

- Open-ended question

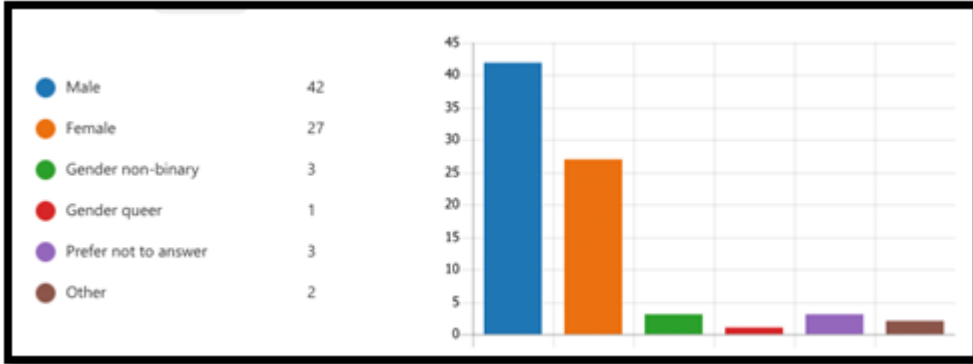
Demographics

We acknowledge the following questions are sensitive. In the spirit of inclusive design, we would like to learn more about your demographic identities and your abilities as potential users of a University Writing Center at ERAU.

9. Select your gender.

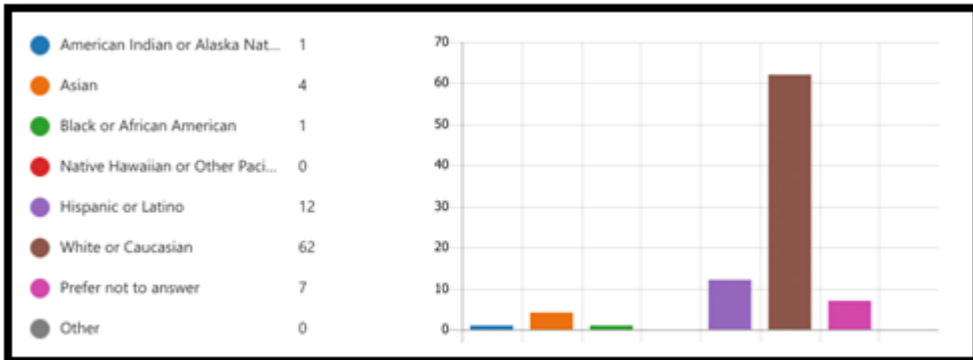
- Male

- Female
- Gender nonbinary
- Gender Queer
- Prefer to type.
- Prefer not to answer



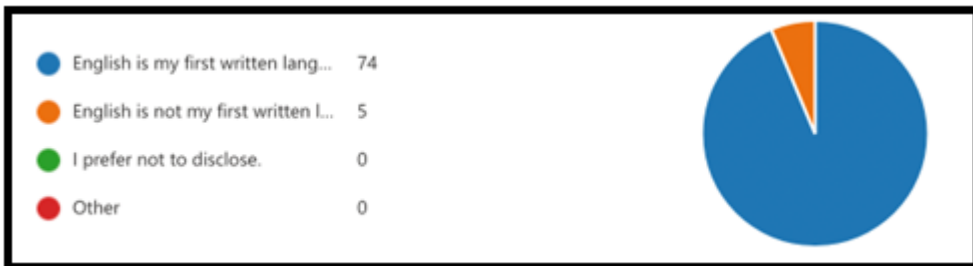
10. Which of the following best describes you? Please check all that are relevant.

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- Hispanic or Latino
- White or Caucasian
- Prefer to type (textbox)
- Prefer not to answer



11. Please indicate your written language proficiency.

- English is my first written language.
- English is not my first written language.
 - If checked, what is your native language?
- I prefer not to disclose.



12. Are you a person with a disability (physical or mental)?

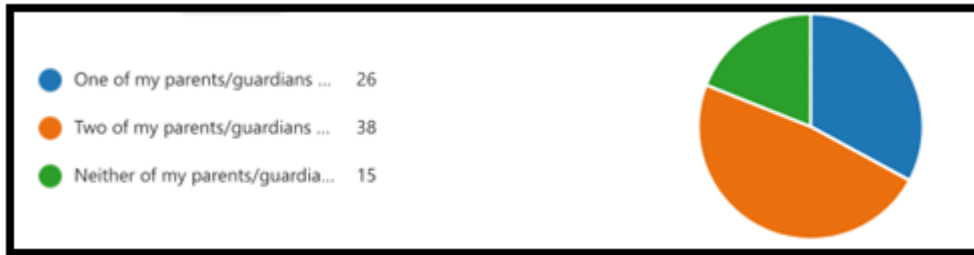
- Yes

- No
- I prefer not to disclose.



13. Please select the most appropriate option to identify your status as a first-generation college student.

- One of my parents/guardians graduated from college.
- Two of my parents/guardians earned college degrees.
- Neither of my parents/guardians earned college degrees.



Appendix D: UX Design Sprint Script with Slide References

Slide 1

Understand: 10 Minutes

Slide 2

Researcher 1: *Good afternoon and welcome! Thank you for participating in our study today. We are [introduce members of the research team by name], and we are members of the Writing Center Planning Committee. As part of the university's Writing Matters QEP, this design sprint is meant to gather student and faculty perspectives about the kinds of writing support resources we need most in a new University Writing Center.*

Slide 3

The UX design sprint will be recorded and photographed, as indicated on the Informed Consent document. By staying and participating, you are consenting to be included in all photographs, video, and audio recordings. If at any point you wish to opt out or feel uncomfortable participating, you are welcome to withdraw and leave the room.

*During the next hour and a half, you will be taking part in a User Experience (UX) design sprint, which is an interactive session that today covers three stages of the design process: understanding, sketching, and prototyping. Your participant group will investigate **(Read only 1 of these 3, whichever is relevant)**:*

- 1. Learning outcomes for such a writing center and the kinds of tutorial instruction users might desire to receive at the center.*
- 2. The physical, built environment of a forthcoming University Writing Center.*
- 3. The digital, online space of a University Writing Center.*

Slide 4

*The full Design Challenge Statement for today is: **(Read only 1 of 3)***

- *[Learning Outcomes] Students and faculty at [University] face challenges in succeeding at writing/design-intensive work in courses across the disciplines because they do not have access to a University Writing Center on the Prescott campus. Given our STEM focus, help the Writing Center Planning Committee understand optimal learning outcomes that a new campus writing center should focus on for its end users.*

- [Physical Space] Students and faculty at [University] face challenges in succeeding at writing/design-intensive work in courses across the disciplines because they do not have access to a University Writing Center on the Prescott campus. Given our STEM focus, help the Writing Center Planning Committee understand an optimal physical space design and environment that is conducive to learning for the center's end users.
- [Digital Space] Students and faculty at [University] face challenges in succeeding at writing/design-intensive work in courses across the disciplines because they do not have access to a University Writing Center on the Prescott campus. Given our STEM focus, help the Writing Center Planning Committee understand an optimal user-centered design for a new campus writing center's digital or online services to provide academic support to end users.

Slide 5

The goal for today is to: **(Read only 1 of 3):**

- Identify and prioritize key learning outcomes that the forthcoming university writing center and media lab should address and design solutions to support those learning outcomes.
- Design solutions to structure how the physical space and environment will be built and inhabited by end-users who seek tutorial support and instruction at a university writing center and media lab.
- Think about how the university writing center and media lab's online services could be designed (content, organization, navigation, design) for effective and successful access by end users who need online tutorial support and instruction.

By the end of the design sprint, you will collectively produce the following deliverables:

- Crazy 8 Sketches
- How-Might-We Post Its
- User Journey Maps
- A low-tech prototype using card sorting

I will now turn it over to [Researcher 2].

Slide 6

Researcher 2: Since we are designing for students who will be the primary users of the writing center, let's review what we know about those users. As of Fall 2021, Prescott has more than 3,000 students, including just over 650 graduate students and approximately 250 international students. Based on our initial student surveys, here's what we know:

- Students write across different discipline-specific genres: Research Essays, Lab Reports, capstone preliminary design documents, etc.
- Students envision a range of ideal writing tutorial sessions. Some wrote that they want help understanding writing assignments, others envisioned video tutorials, course-specific help, and so on.
- Many students said they would like to submit their writing online for later feedback or meet for a short tutorial (in-person or virtually).

Slide 7

Before we begin imagining solutions, let's discuss a few existing approaches to university writing centers in U.S. higher education.

- Classic approaches that offer 1 on 1 peer tutoring in 30-minute or 50-minute consultations along with online writing resources such as workshops, classroom visits, etc.
- Blended approaches that mix writing tutorial support with design and multimedia lab support to assist students with e-Portfolios, video editing, web editing, poster design, etc.
- Design studio approaches that provide software and equipment for students to work on their own projects in their own time.

For any of these approaches, a university writing lab might also be equipped with:

- Breakout rooms for English-language learning conversation groups, writing workshops, speech or presentation practice or recordings
- Multimedia production and review spaces
- Study spaces in designated quiet areas
- Collaborative workspaces equipped with white boards, charging stations, movable seating, smartboards, etc. for group/team projects

To be clear, we want you to think expansively about what writing and design work can mean on our campus. A University Writing Center doesn't have to only provide tutorials for "traditional" forms of writing. The writing students do could include discipline-specific writing, professional writing, employment materials, research grants, conference papers, instructions and procedures, usability testing, multimedia production, blueprints, poster design, video editing, web app content, and so on. To support students who compose and

design all this and more, we need YOU to think big about what resources and support might be possible; at this stage, the sky is the limit and money is no object!

PAUSE - FOR RECORDING STOP/RESTART

Slide 8

Sketch: 20 minutes

Slide 9

Crazy 8s (Individual Activity)

Researcher 1: *We are now going to move into our first activity: Crazy 8s. Take a blank sheet of paper from your table—1 per person. Fold it so that you have 8 rectangles, like this [show pre-folded example]. During the activity, you will individually fill each rectangle with 1 distinct idea or vision for the writing center's [key learning outcomes, physical spaces, OR digital spaces]. You can write or sketch out your ideas-- just make sure others can understand them. Add descriptive labels to any drawings. The full prompt for this exercise is as follows:*

- *Think expansively about what writing and design can be for STEM students. Given the different approaches to writing centers, imagine the kinds of academic support and resources students might receive at a forthcoming University Writing Center.*

*You have 8 minutes to complete this activity. (Provide a verbal time signal once each minute passes)
Now take 2-3 minutes with your table to share the approaches you came up with.*

Slide 10

How-Might-We Post-Its (Individual and Group Activity)

The second activity is designed to build from the previous sketch activity. Given your responses to the Crazy 8s activity concerning the ideal outcomes for a writing center, use the Post Its on your table to design solutions for how we might achieve these possible outcomes.

For the first half of this activity, you have 5 minutes to each generate as many How-Might-We Post-It notes as you can. Each note should include a proposed design solution to address the design challenge mentioned at the start of the design sprint. The content can include words or sketches with descriptive tag phrases.

(Provide a verbal time signal once each minute passes)

Researcher 2

For the second half of this activity, work with participants at your table to organize the notes into themed categories on the large Post-It note on your table. You have 5 minutes to finalize your categories.

(Provide a verbal time signal once each minute passes)

Note: Researcher 1 photograph the post it notes on each table.

Slide 11

User Journey Map (Group Activity)

The final sketch activity is a user journey map. Now that you have created a vision for the kinds of support an ideal university writing center might provide and have created a set of possibilities for how we might achieve these goals, let's move on to explore possible actions students might take once this vision materializes on our campus.

As a group, you have 5 minutes to respond to the prompt. Use the large post-it note on your table to visualize specific possible actions the student might take should your proposed University Writing Center exist on our campus. As you begin the flow chart, consider the following questions:

- *What do student writers want when working on unfamiliar discipline-specific writing assignments?*
- *What do student writers find frustrating when writing and designing for their courses?*
- *How might the University Writing Center minimize these frustrations and maximize a positive learning experience for our STEM student population?*

(Provide a verbal time signal once each minute passes)

Take a minute to review your journey map and choose 1 participant to deliver a 60-second summary for us. [Give each table 1 minute to share their work and show their maps]

FACILITATOR PAUSE - FOR RECORDING STOP/RESTART

Slide 12

Low-tech Prototype: 15 minutes

Researcher 1

We've entered the final phase of the UX design sprint. This final activity is a low-tech paper prototype for the kinds of services and experiences the ideal writing center could provide for our campus.

[For the LEARNING OUTCOMES group:] First, take time to write out as many possible learning outcomes as you can, 1 per card. These can be outcomes you've already been thinking about in the previous design phases. If you need more blank cards, just ask!

[For the PHYSICAL and DIGITAL SPACES groups:] First, review the items on each card. If there are elements of a writing center space / website that are not present on these cards, add them to the pile using the blank cards we've included. If you need more blank cards, just ask!

Slide 13

Then you'll use a MuSCoW (Must-Should-Could-Won't) approach to sort the cards. As a team, you will use these four labels to prioritize essential, must-have elements in a writing center, note things that are non-essential but high priority, designate "nice to have" elements, and pinpoint any irrelevant or unnecessary elements. If you think of additional ideas or elements as you're sorting, feel free to add them using the blank cards.

You have 10 minutes to complete this activity.

Note: Researcher 1 should write M, S, C, or W on the back of each card based on how the participants sorted them

Slide 14

Researcher 2

Reflect and Share (5 minutes)

- As we conclude the UX design sprint, what other ideas or insights do you have that you haven't shared yet?

Slide 15

Thank you for participating!

Note: We must dismiss participants on time at 5:00pm sharp!

STOP RECORDING

Appendix E: Year 2 Digital Student Survey

Technology Usage (behavioral questions)

- In the past week, how much time did you spend online?
 - Less than 5 hours
 - 6-10 hours
 - 11-15 hours
 - 16-20 hours
 - More than 20 hours
- What devices do you use on a daily basis or a near daily basis? Check all that apply.
 - Desktop
 - Laptop
 - Tablet
 - Smartphone
 - Write in
- Please indicate your comfort with using technology devices. [Likert scale]
- Do you benefit from the daily use of assistive technologies? Check all that apply.
 - List of assistive technologies, including the option: I do not use assistive technologies.
- In the past 12 months, what online writing websites do you frequently use to find resources about writing or academic-related content?
 - Purdue OWL; Ashford Writing Center, etc.
 - Textbox
- In the past 12 months, what past online tools have you used to improve your writing? Check all that apply.
 - YouTube
 - Refworks

- Grammarly
- EasyBib
- Microsoft Word Editor
- Prefer to self-describe.
- What design features do you find most useful in the online writing resources that you have used in the past 12 months?
 - Searchable content
 - Easy navigation
 - Button navigation
 - Minimalist design
 - Clear menus
 - Visual signposts
 - Informal language choices
 - Formal language choices
 - Live chat
 - Error messages
 - Intuitive user interfaces
 - Prefer to self describe
- *Writing Support Resources (attitudinal/behavioral questions)*
- Please describe your attitudes toward writing for academic or nonacademic purposes?
 - I feel passionate and very satisfied when writing.
 - I am somewhat confident in my writing abilities.
 - I am neither satisfied nor unsatisfied with my writing abilities.
 - I am somewhat frustrated and confused when writing.
 - I dislike writing.
 - Skip logic: If frustrated: How often do you feel confused or frustrated when writing an assignment for a class? [Likert scale]
 - Skip logic: If frustrated: In the past 12 months, what has contributed to any sources of frustrations about academic or nonacademic writing?
- Please describe your familiarity with discipline-specific writing conventions or standards. [Likert scale]
- In the past 12 months, how many of your ERAU professors have improved your understanding of discipline-specific writing across all enrolled courses?
 - None
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6+
- In the past 6 months, how much time do you typically devote to a writing assignment?
 - I do not devote time to writing assignments.
 - Less than 3 hours per week
 - 4-6 hours per week per week
 - 7-9 hours per week per week
 - More than 10 hours per week
- In the past 6 months, how much time do you devote to seeking external writing support outside of class?
 - I do not devote time to seeking writing support outside of class.
 - Less than 1 hour per week

- 1-2 hours per week
- 3-4 hours per week
- 5-6 hours per week
- 7 or more hours per week
- If a new online writing lab is launched, what kinds of online writing support resources might you find beneficial to improve your writing? Check all that apply.
 - Documenting research
 - Citation style guides
 - Ethically integrating information without plagiarizing
 - Getting started
 - Writing a thesis statement
 - Arranging and organizing my writing
 - Writing paragraphs
 - Writing topic sentences
 - Embracing my linguistic background in academic writing
 - Understanding my audience needs, attitudes, and expectations
 - Writing with purpose and focus
 - Generating a References or Works Cited list
 - Formatting media assets with captions and attributions
 - Designing my reports and essays
 - Revising my draft
 - Editing my draft
 - Incorporating instructor/peer feedback
 - Prefer to self-describe

Demographics

We recognize that demographic questions are sensitive. In the spirit of inclusive design, we ask that you provide this information so that we can account for a more diverse representation as we design user experiences that are inclusive and accessible for everyone.

- Please select your college. Check all that apply.
 - College of Engineering
 - College of Aviation
 - College of Arts and Sciences
 - College of Business, Security, and Intelligence
- Please select your academic standing.
 - First year
 - Sophomore
 - Junior
 - Senior
 - Graduate student
- Please select the option that best describes you.
 - Male
 - Female
 - Gender non-binary
 - Gender queer
 - Prefer not to answer
 - Prefer to self-describe
- Please select the options that best describe you. Check all that apply.
 - American Indian or Alaska Native
 - Asian
 - Black or African American

- Native Hawaiian or Pacific Islander
- Hispanic or Latino
- White or Caucasian
- Prefer not to answer
- Prefer to self-describe.
- Textbox entry
- What is your preferred written language?
- What is a preferred spoken language?
- Are you a person with a disability?
- Do you have any form of colorblindness?
 - If yes: List of types of colorblindness
- Do you find colorful websites hard to navigate?

Interest in Remote Usability Testing

The researchers are conducting remote usability testing to invite faculty and students to evaluate an early prototype of the university writing lab and design studio. Usability testing will take place in 1-hour time slots during April 2023.

- Would you like to register to participate in a remote usability test?
 - Yes
 - No
 - Skip Logic: End the survey
- Three distinct usability test sessions will be held to evaluate materials for the university writing lab and design studio. Please select the topic that most interests you. Check all that apply.
 - Online writing lab website prototype
 - Promotional and branding materials
 - Technical writing materials
- What is your preferred language to communicate in writing and verbally with the researchers during the usability test session?
- Do you require any assistive technologies to participate in a usability test?
- Do you have access to a stable wi-fi connection to participate in a usability test?
- Do you have access to a desktop or laptop to participate in a remote, recorded usability test?
- Please type your first and last name(s).
- Please provide your .edu email address. Your email address will be used to send updates about the upcoming usability test session.

Appendix F: Task-Based Unmoderated Usability Test Script

Welcome to the user testing of our new Eagle Writing & Design Lab website! We appreciate you taking the time to help us make our new campus resource more effective.

Our user testing will ask you to complete six tasks using the new Eagle Writing & Design Lab website. Our primary users are students, faculty, and staff working in other academic support services. We are asking participants in this user testing to enable their computer cameras and microphones and "think aloud" by verbally sharing what they are thinking as they go about attempting these tasks. Sharing your thoughts as you navigate the site will help us pinpoint what areas of the website need to be revised. We anticipate that this user test will take 10-15 minutes. After completing the user test, we have a brief follow up questionnaire. Thanks for your help!

Welcome to the Eagle Writing & Design Lab website! Your first task is to check operating hours. (Please remember to "think aloud" as you try to accomplish this task.)

Your second task is to check the upcoming events to find out when the Eagle Writing & Design Launch event is happening. (Please remember to "think aloud" as you try to accomplish this task.)
Your third task is to look for Engineering Design Project Proposal Formatting Guide. (Please remember to "think aloud" as you try to accomplish this task.)

Your fourth task is to look for information on the peer tutor who specializes in engineering writing. (Please remember to "think aloud" as you try to accomplish this task.)

Your fifth task is to register for an account in WCONLINE in order to make an appointment. (Please remember to "think aloud" as you try to accomplish this task.)

Finally, your sixth task is to book a one-hour session appointment with the tutor who specializes in engineering writing for the following week. (Please remember to "think aloud" as you try to accomplish this task.)

Thank you for participating and helping make our campus better! After completing the test, we ask that you take a few minutes to fill out a brief survey: [\[LINK\]](#)