Cultural Connection and a Sense of Place - Virtual Tour: Usability Study

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Final Prototype: http://youvis.it/NtJTYo

Abstract: As a student, how important is it to create a strong sense of connection to an educational institution you have chosen to help shape your mind and prepare you for your future profession? This usability study, entitled "Establishing a Cultural Connection and a Sense of Place - Virtual Tour," serves as a means to establish an enrollment pathway to Honolulu Community College for Native Hawaiian students and create a sense of place at the college for Native Hawaiians that is culturally significant and relevant. It is the *Kuleana* (responsibility) of an institution to create a distinctive learning environment and campus culture that students can connect to and establish a sense of place (Manning and Kuh, 2005). Creating a sense of place – both physically and emotionally has a direct positive impact on the experiences of students. Manning and Kuh (2005) expressed that colleges that take intentional efforts to create a sense of place foster a "powerful connection to something larger than oneself [and] encourages students to engage with faculty, staff, and peers in meaningful ways" (p.1).

Introduction

In 2015, Honolulu Community College (HonCC) secured a five-year Title III grant - Hō'āla Hou: Renewing a Pathway to Student Success Through Culture and Place-Based Learning from the U.S. Department of Education. The goal of the grant is to establish an enrollment pathway to HonCC for Native Hawaiian students and create a sense of place at the college that is culturally significant and relevant for Native Hawaiians. One of the ways to achieve this goal is through the creation of a bilingual (Hawaiian and English) virtual tour of HonCC's cultural history and native plant collection on campus.

The establishment of a virtual tour for HonCC serves as a supplement to the college's on campus physical tours. The virtual tour will allow for the college to highlight its unique cultural history, landmarks, buildings, and native Hawaiian plant collection at a click of a button. Additionally, the virtual tour will serve as a recruitment tool for prospective students to build their interest in attending HonCC and increase student enrollment for the college.

The purpose of this usability study is to evaluate the ease of use and efficiency for students and employees at HonCC to navigate and utilize a bilingual (Hawaiian and English) virtual tour prototype of HonCC's cultural history and native plant collection on campus.

Literature Review

Implementing culture and place-based strategies in a mobile learning environment played an intricate role in the development of this virtual tour project. Creating and integrating digital materials of HonCC's history into the virtual tour allows users to connect the "digital materials with a specific physical location" on campus (Alexander, 2004, p.67). Koole (2009) explains that mobile learning tools, such as the virtual tour, offers students, employees, and community stakeholders "access to relevant information, reduce cognitive load, and increase access to other people and systems" (p.25). Koole goes on to express that these types of mobile learning environments provide opportunities for learners to "move within different physical and virtual locations and thereby participate and interact with other people, information, or systems - anywhere, anytime" (2009, p.26). Roberts, Newman, & Schwartzstein (2012) express that modern learners are accustomed to "interactive and engaging materials that often have an appealing look and feel," and "have higher standards and expectation of how material is presented (p.276)."

Incorporating culture and place-based strategies in a learning environment are "increasingly being seen as a promising means for addressing educational disparities between indigenous students and their peers" (Takayama, Ledward, & Elia, 2009, p.1). Additionally, Kanaʻiaupuni (2007) found that:

> At a state, national, and international level, indigenous culture and place-based educational strategies suggest promise where other Western culture-based strategies have failed in reducing educational disparities between indigenous students and their peers and in promoting positive and successful outcomes among indigenous students (p.1).

To that end, incorporating culture and place-based strategies into the virtual tour will create a better sense of place, which according to Manning & Kuh (2005) colleges with "such a palpable sense of place also have salutary effects on student success" (p.1). These types of tours also provide users with the "opportunity to enhance the experience of a destination by providing relevant and personalized information anytime and anyplace" (Kramer, Modsching, Hagen, & Gretzel, 2007,).

In creating a strategic plan for the development of this virtual tour prototype and usability testing, I took into consideration a few planning strategies outlined by Boiano, Bowen, & Gaia (2012). They suggest that before planning, it is imperative to consider various perspectives, such as: "Should it be a mobile app, or is a web-based site aimed at mobile use good enough?" (p.1). The authors further explain: :

> Utilizing a web-based site over developing a mobile app offers many advantages such as: optimizing a website is cheaper; platform-independence: one website is suitable for all devices (iPhone, iPad, Android, BlackBerry, etc.); only the website content has to be updated; the technology required is easier and mainstream; and, there is independence from app stores publication policies, since it is not necessary to publish an app in a store like the Apple app store. Instead, the website can be published and nothing else is required (p.2).

These guidelines provided me with a foundation to explore web-based sites that are mobile ready, easy to maintain, and update as a platform to create the virtual tour prototype.

Designed with similar elements of virtual reality technology, virtual tours are "simulations of an existing location" comprised of images, video, textual, and graphic content (Osman, Wahab, & Ismail, 2009). Li, Lien, Chiu, & Yu (1999) define virtual tours as "virtual navigations of landscapes that exist in the real world." In reference to the program interface, design, and usage, Kenteris, Gavalas, & Economou (2009) suggest that the application should be designed for mobility while providing an intuitive interface with simple dialogues, short and concise information so that interaction with the application requires minimal effort. Though it is important to ensure that the interface design is aesthetically pleasing, "the success of the system is based on accessing information in an intuitive and easy way" (p.106) (Kenteris, Gavalas, & Economou, 2009).

Project Design

An open source web-based platform site called YouVisit was used to develop the virtual tour prototype. Other web-based platforms were considered such as Campus Tours,Tour Factory, and Tour App Builder, however YouVisit was selected because it provided a free virtual tour template with easy to use features such as drag-and-drop positional media, triggers focus zones, hotspots, living scenes, etc. to create a functioning prototype (Figure 1). The free version of the aforementioned platforms offered less features and/or were free for a limited time. Utilizing YouVisit to create the prototype also provided me with a web-based platform template that encompasses all of the advantages of using a web-based platform identified in the Boiano, Bowen, & Gaia (2012) study. Furthermore, this platform is suitable for all types of wifi connected web browsing devices, easy to use, and easy to access and update.

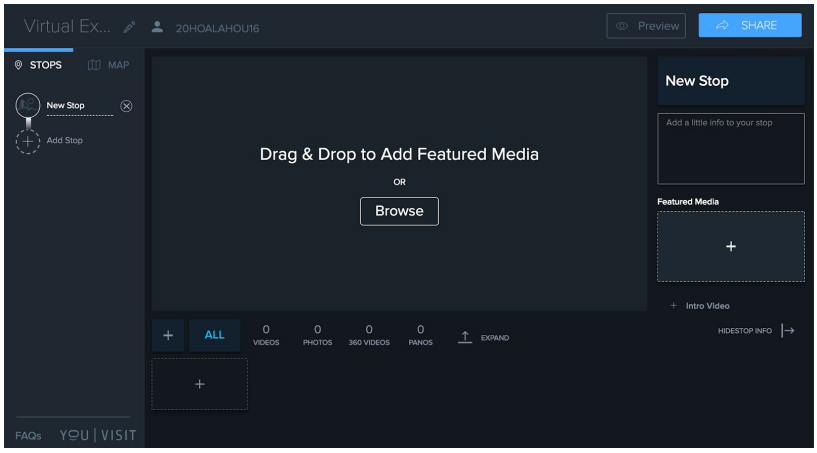

Figure 1. YouVisit Virtual Tour Template

My project prototype consists of three informational stops that introduce users to the campus and its history:

Stop 1 - Welina/Welcome to Honolulu Community College (Appendix B)
Stop 2 - E Kipa Mai, Let's begin the tour (Appendix C)

Stop 3 - Administration and Student Services (Appendix D)

In addition to these three main focus points, the tour includes stops that identified a few native Hawaiian plants on campus, to include information and location of each plant, via the virtual tour campus map (Appendix E).

The goal of my project was to receive feedback and suggestions on how to make the virtual tour more aesthetically pleasing with suggestions for enhancement, improve the ease of use and efficiency of navigating through each of the three stops. Feedback and suggestions on the text, images, and video content of each stop, and how easy it is for users to locate native Hawaiian plants via the virtual tour campus map were also solicited. At the end of the testing period, improvements were made at a level that allowed the digital tour prototype to serve its purpose and be utilized by its intended audience.

Methodology

The development and design of this usability study was designed implementing guidelines from Steve Krug's book *Rocket Surgery Made Easy*, described as a "do-it-yourself guide to fixing usability problems" (2010). Conducting a usability study is one of the most effective tools to improve performance of almost any interactive project (Krug, 2010). The usability testing process addressed the virtual tour's ease of use, navigation, and usefulness for students and employees at HonCC.

Research Questions

This usability study focused on how easy or difficult it was for students and employees at HonCC to complete the following tasks:

- Access the virtual tour
- Navigate through the first three sections of the virtual tour
- Locate the native plant section on the virtual tour map

Participants

The usability test was conducted utilizing volunteers that represented my target audience, students and employees of HonCC. All participants were at least 18 years of age. A list of 25 participants was identified as prospective participants for the usability study. A recruitment email (Appendix F) was sent out to inform the prospects of the study and to ask if they would be interested in becoming volunteer usability study participants. Of the 25 that were invited to participate in the study, I was able to secure nine participants who were able to meet during the scheduled interview dates and times (Appendix G). A confirmation email was sent to each participant to confirm their interview date (Appendix H) along with a consent to participate form (Appendix I) for participants to complete prior to their participation in the study.

A pre-questionnaire was administered to test participants to collect demographic data. According to the demographic data collected, 78 percent of participants were male and 22 percents were female (Figure 2). The age of participants were grouped by age range. 11 percent of participants

fell in the age range of 35-44; 67 percent were in the age range of 18-24; and 22 percent were in the age range of 25-34 (Figure 3). For highest education completed, 67 percent of participants achieved a high school diploma; 22 percent achieved an Associate's degree; and 11 percent achieved a Bachelor's degree (Figure 4).

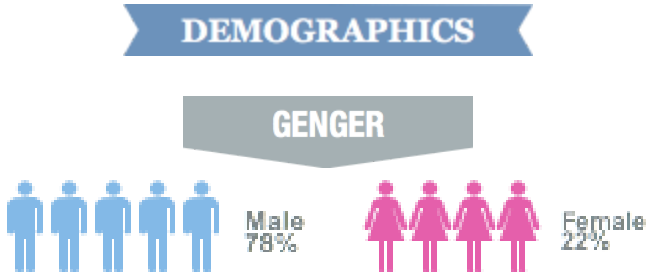

Figure 2. Male to female ratio of participants

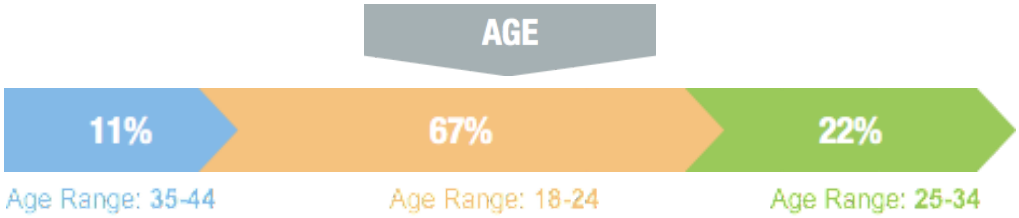

Figure 3. Age range of participants

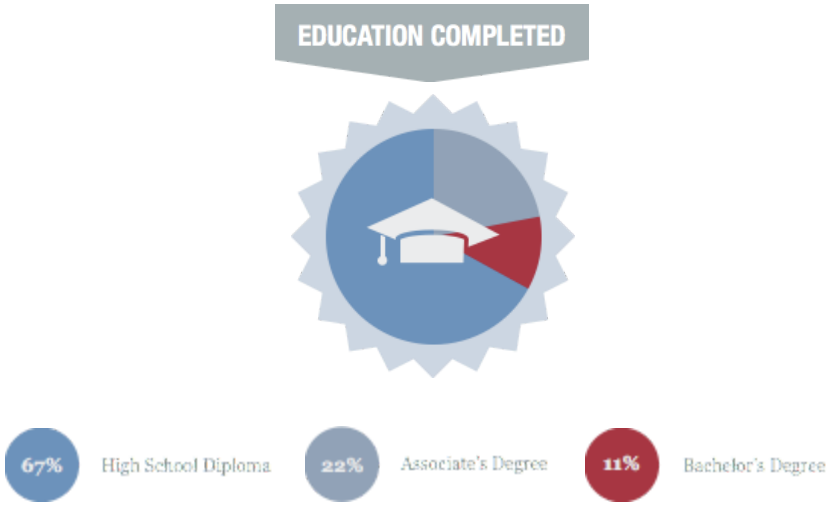

Figure 4. Level of education completed by participants

Usability Process

A designated meeting space was secured on campus where all usability testing took place. A total of three rounds of usability testing was conducted face-to-face which eliminated unnecessary technical issues. A desktop computer was provided for test participants to utilize during the usability test sessions. The testing process was conducted over a four week period,

which kept in-line with the testing schedule and timeline (Appendix J). Following prototype testing, data compilation and analysis was completed over a two-week period.

As suggested by Krug (2010) each round of testing consisted of a minimum of three test participants. Each interview session took no longer than 45 minutes to complete, and included:

- a five minute pre-questionnaire (Appendix K)
- 15 minutes of virtual tour prototype testing (participants conducted and completed two task and two scenarios)
- and a five minute post-questionnaire (Appendix L)

To ensure that each round of testing was consistent and conducted within the allotted time, a usability technology protocol checklist and a facilitator's script (Appendix N) were created. All usability test interviews were recorded using Screencast-O-Matic, a free screencasting software. As recommended by Krug (2010), a think aloud protocol method was used in order to gain the most out of each usability test. Observational notes were taken during each test session utilizing a data collection tool (Figure 7).

Data Collection Tool
Observation/Interview Guide

Participant number:			**Date:**		
Starting Time:	**Ending Time:**		**Completed Consent form?**		
			Yes		**No**
Task #1	**Participant's comments of the app appearance**				
Notes					
Task #2	**Navigate and Explore welcome page**				
Notes					
Task #3 (Scenario)	**History of the College**				
Notes					
Task #4 (Scenario)	**Accessing Hawaiian Plants database**				
Notes					

Figure 7. Data Collection Tool

To protect participants' privacy, all data collected from the interview and questionnaires were kept confidential. All data collected were used for the sole purpose of the usability study. No personally identifiable information were included. Upon completion of each testing round, data, observation notes, and recordings were reviewed, compiled, and analyzed. The data collected was summarized both quantitatively and qualitatively.

Results

Information collected from the data collection tool and the post-questionnaire was used to identify the top three usability issues from each round. The necessary changes were made to

increase the efficiency, ease-of-use, and user satisfaction of the prototype. There were a total of nine major usability issues that were identified for rectification.

The changes and modifications from the first round of usability testing, as seen in Table 1, included: adding more text and background information and increasing image quality. While attempting to complete one of the scenarios, a test participant found it difficult to locate the history section on the virtual tour app. To resolve this issue, the text "History of Honolulu" was added (Figure 8) to better identify the history section in the app. While scrolling through the native plant section of the tour, test participants felt it was important to add more information on each plant such as cultural significance and plant usage (Figure 9). The only information that accompanied each plant image was the plant's Hawaiian and scientific name and if the plant was indigenous, introduced, or endemic. Lastly, test participants did not respond positively to the image quality of the native plant photos. To address this, plant photos were re-taken as a means to improve image quality (Figure 10).

Table 1. List of modifications with comments made by participants from round 1 of usability testing

Item # and Modification	Participant's Comments
Item #1 – Add the text "History of Honolulu Community College" in the text box	❖ Make history the first thing that pops up on the text section of the homepage to make it clear
Item #2 – Added more information on each native Hawaiian plant - i.e., common and scientific name, and short intro/background on each plant	❖ Add cultural/medicinal aspects and uses of each native plant
Item #3 – Enhanced the image quality of native plant photos	❖ Photo quality of native plants could be a little better

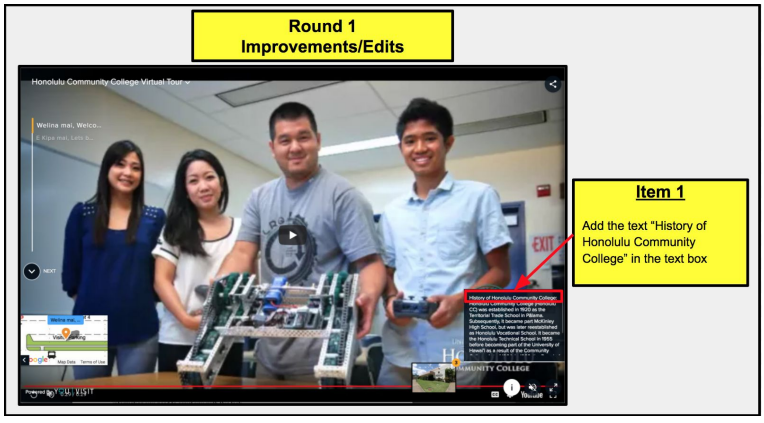

Figure 8. Item #1 Modification

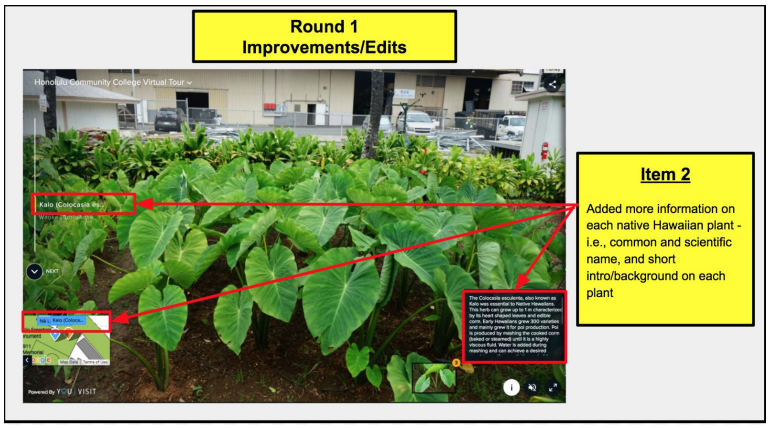

Figure 9. Item #2 Modification

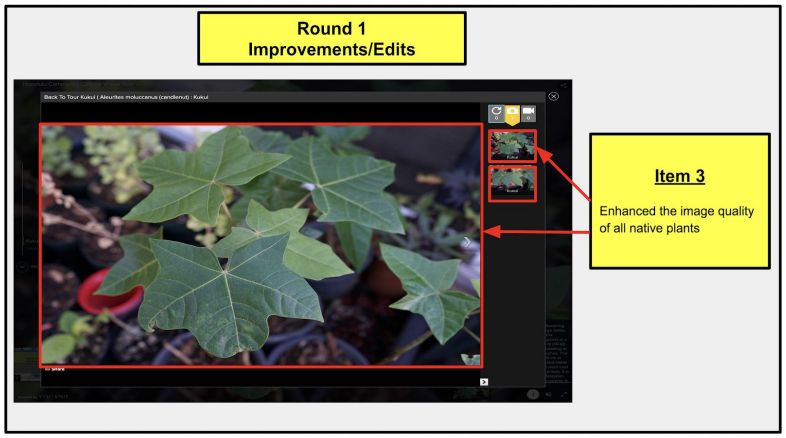

Figure 10. Item #3 Modification

During round two of the usability testing, participants suggested changes that included photo updates, a need to increase image quality, and the need to reorganize image placements. While scrolling through the virtual tour app, participants pointed out that there was a huge difference between the image quality of the native plant section in comparison with the images in other sections of the app. To keep image quality consistent, all images on the virtual tour were replaced with higher quality photos (Figure 11). Participants also voiced that it was important to include the campus' native garden (māla), Ka Māla o Niuhelewai, as it is a prominent feature for native Hawaiian culture and plants on the campus. Therefore, a māla section was added to the app (Figure 12). One participant noted that the photos in the administration and student services section were out of order. The intent was to have the photos arranged in the order of their appearance when walking through the administration and student services building. While reorganizing the images a major issue was encountered. The images kept falling into random order. After several attempts, the issue was rectified and the images were placed in the order in which they appear (Figure 13). Table 2 below lists the modifications made as well as participant comments from round 2 of usability testing.

Table 2. List of modifications with comments made by participants from round 2 of usability testing

Item # and Modification	Participant's Comments
Item #4 – Updated all site stop photos as a means to increase image quality	❖ Image quality on the second stop that features the administration building was poor in comparison to the native plant images
Item #5 – Added a stop and information regarding Ka Māla o Niuhelewai, Hawaiian Garden, section on the app	❖ I feel it is important to add a section on the Māla, especially if the app is going to feature all of the native Hawaiian plants on campus
Item #6 – Reorganized the pictures associated with the administration stop of the app	❖ Need to organize the order of the administration pictures

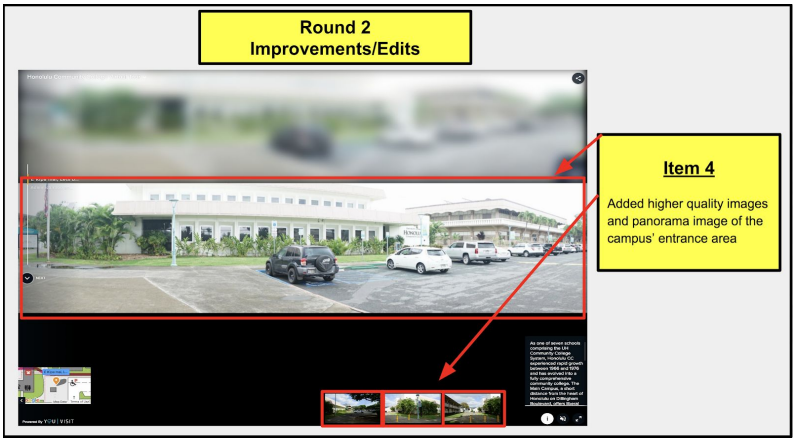

Figure 11. Item #4 Modification

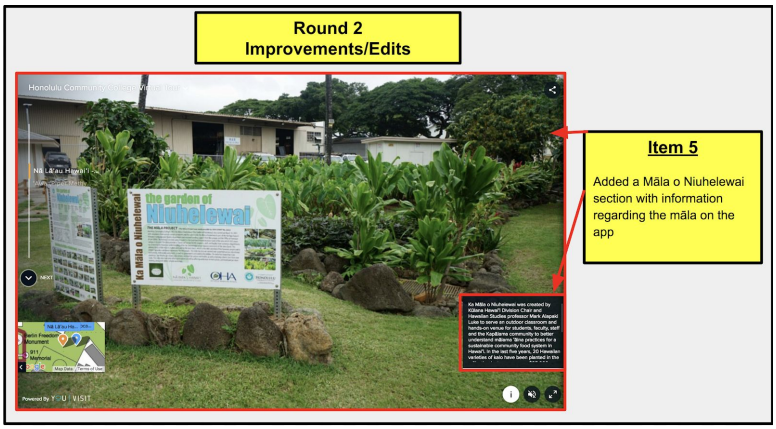

Figure 12. Item #5 Modification

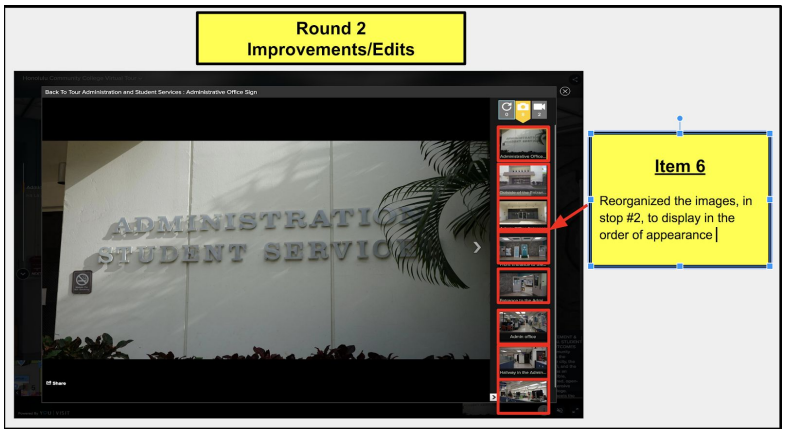

Figure 13. Item #6 Modification

Suggestions and comments made during round three of the usability testing (listed in Table 3 below) included renaming and adding photos and relocating certain images. When images were uploaded to YouVisit the title of the images displayed as an image number. Test participants suggested to replace the image number with the title of the image (Figure 14). Participants also felt that there were an insufficient amount of pictures of both the lehua and wauke plant on the site. The participant commented that more pictures should be added as a means for easier identification of each plant (Figure 15). Therefore, more images of both native plants were added. Lastly, a participant noticed that the lehua plant image was placed in the wrong area on the campus map and so it was relocated to its actual location on the map (Figure 16).

Table 3. List of modifications with comments made by participants from round 3 of usability testing

Item # and Modification	Participant's Comments
Item #7 – Added names and titles to all photos featured on the app	❖ The photos should have titles on them rather than having image numbers and jpg, it is a little distracting and unattractive
Item #8 – Added more images of native plants (lehua and wauke)	❖ It would be nice to have more than one image of the lehua and the wauke for plant identification purposes
Item #9 – Updated native plant locations on tour map	❖ Lehua plant is located in the wrong area on the tour map

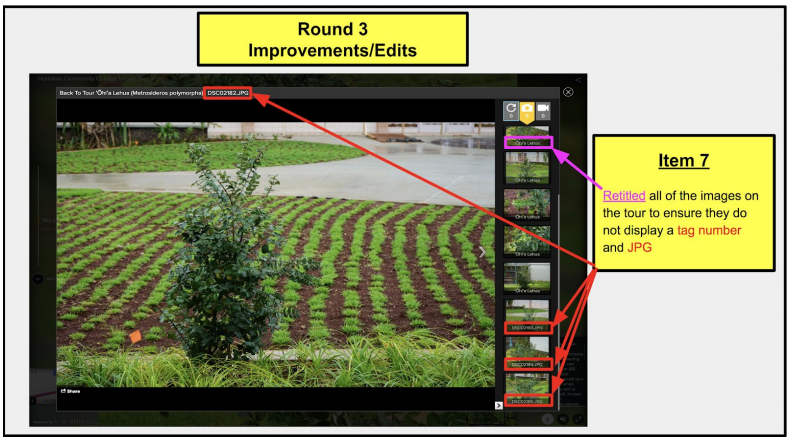

Figure 14. Item #7 Modification

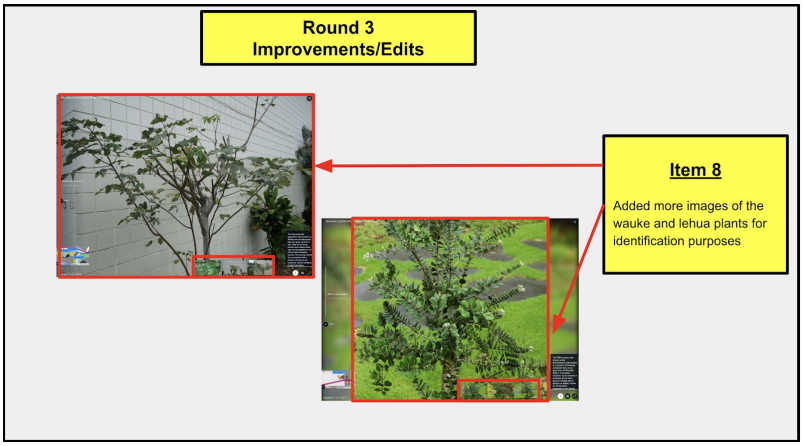

Figure 15. Item #8 Modification

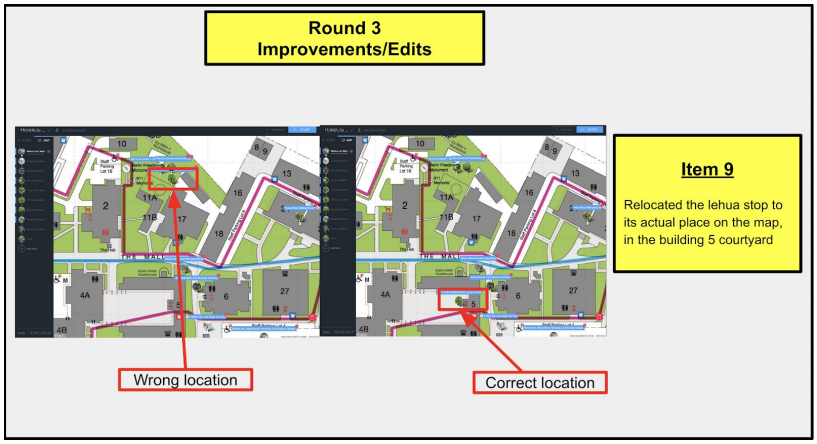

Figure 16. Item #9 Modification

During the post-questionnaire phase of the usability study interview, participants were asked to rate their user experience on a number of questions pertaining to usability testing improvements, prototype layout, and ease of use. Results and feedback from the usability test and post-questionnaire proved to be highly satisfactory. All participants agreed or strongly agreed to almost all of the questions posed in the post-questionnaire. The only question that received a disagree rating was the question that asked if the 'text on the app was clearly written and easy to read.' The participant who disagreed commented that it was difficult to locate the history section on the virtual tour app. The participant suggested adding the text 'History of Honolulu Community College' to assist in easily identifying the history section on the app. Table 4 below displays the questions and results from the usability study test post-questionnaire.

Table 4. List of questions and results from the usability study test post-questionnaire

Questions	**Results**				
	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
Usability tasks were clear to me?	8	1			
Usability study questions were clear to me?	7	2			

Interview facilitator prompted me to think aloud and asked me questions while I was performing the task?	9		
App features were easy to understand?	6	3	
The text were clearly written and easy to ready	6	2	1
Images were appropriate?	8	1	
The app is visually appealing?	6	3	
The app was easy to access?	6	3	
The app was easy to navigate?	7	2	
It was easy to locate the native plant section on the app?	8	1	

During the post-questionnaire, participants were also asked to comment on one thing they liked best about the usability study. One participant commented that, after experiencing the virtual tour prototype, it made the participant feel like HonCC has a lot to offer. Another commented that the app had great visuals that pulled the participant in and that it made HonCC look like a beautiful campus. One participant liked the concept of a virtual tour. The word cloud below, Figure 17, displays the comments made by participants in the post-questionnaire.

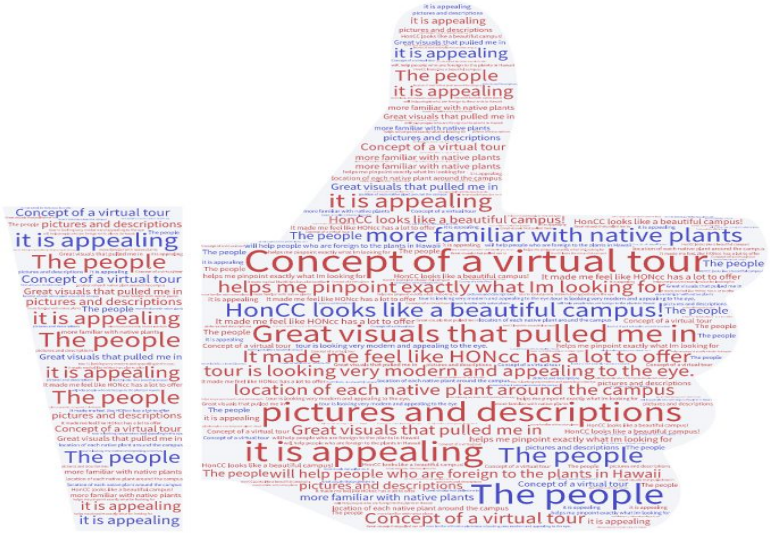

Figure 17. Comments from participants on what they liked best about the usability study

Conclusion

Overall, the virtual tour prototype was well received by test participants and responses were mostly positive. Utilizing YouVisit as the host platform satisfied the basic necessities for developing a functioning prototype. Though the app had only one template available, it was sufficient enough to allow for the prototype to be practical, easy to use and update, and aesthetically pleasing. Additionally, YouVisit is a free and allows for users to access the virtual tour from any type of computer, smartphone, or tablet. The ability to access the tour through multiple devices will allow for an increase amount of users accessing the app once the virtual tour goes live.

The process and procedures for conducting my research was adapted from Krug's "do it yourself guide to finding and fixing usability issues". Following his guide contributed significantly to the successful completion of my usability research. Therefore, I highly recommend utilizing Krug's guide when considering conducting a usability research project. The usability process provided me with much needed feedback and insight on what my target population is looking for in a virtual tour for HonCC. In the future, I would like to focus my recruitment efforts on employees of HonCC as a means to collect feedback on what they would like to see featured on the virtual tour.

As for the future of the virtual tour prototype, my plan is to utilize YouVisit as the host platform and complete the virtual tour for HonCC. Goals for the tour include adding stops for each academic program at the college, add more cultural and historic significance of the area the campus resides, and add videos that highlight the college's semesterly and yearly events and activities. Lastly, I will create an ʻŌlelo Hawaiʻi (Hawaiian language) version of the tour as the original intent is for the app to be bilingual. Though the free version of YouVisit provided me with a template to create a well received functioning prototype, additional features such as multiple languages and 360 degree images are only included in the paid version.

Completing this usability study ensures that the college moves closer to achieving its Title III Project goal. As the Title III Project Coordinator, creating the app and conducting the usability test fell within my locus of control. I believe that culture and place-based learning is essential to supporting indigenous cultures around the world. By incorporating indigenous ways of learning into teaching and learning andragogy, an institution of higher education not only cultivates a "traditional" set of knowledge and skills for students, but also helps to perpetuate and preserve a culture.

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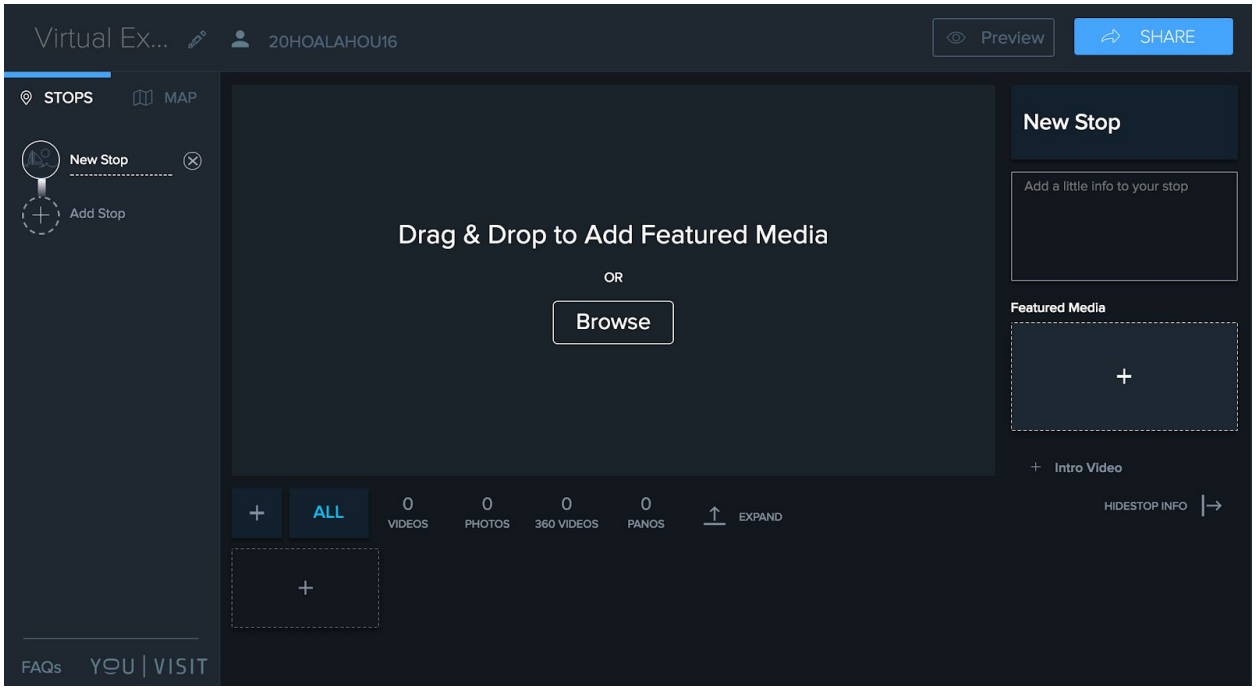
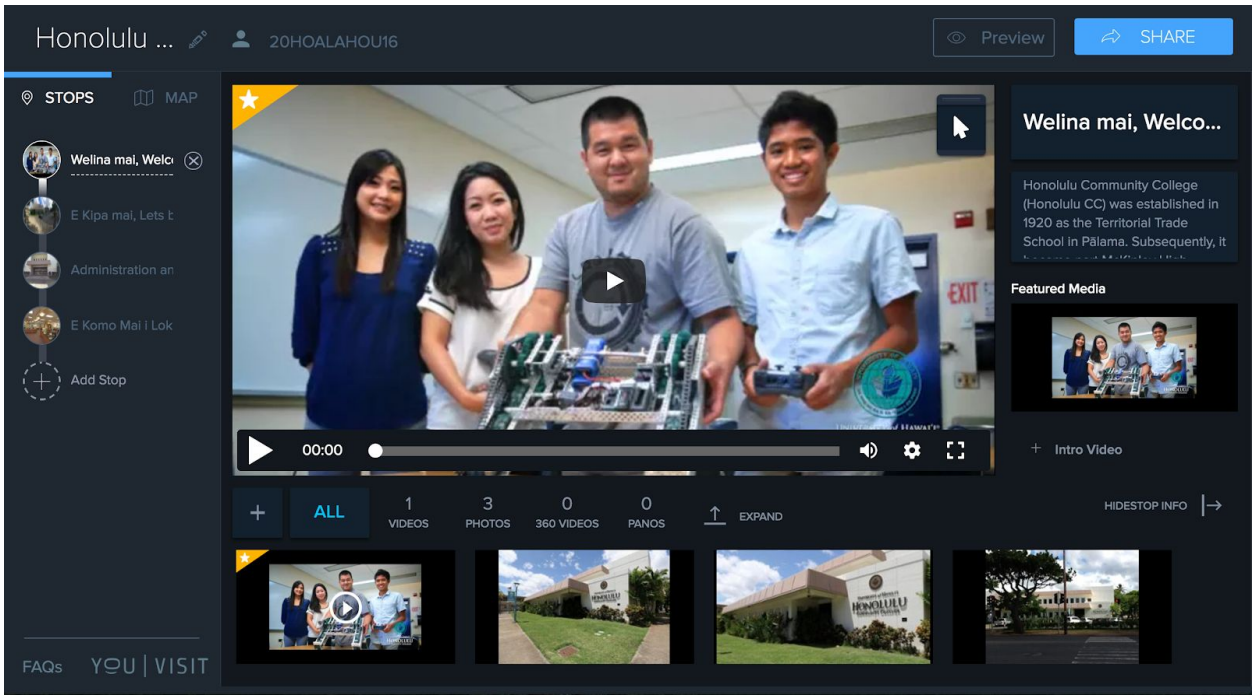
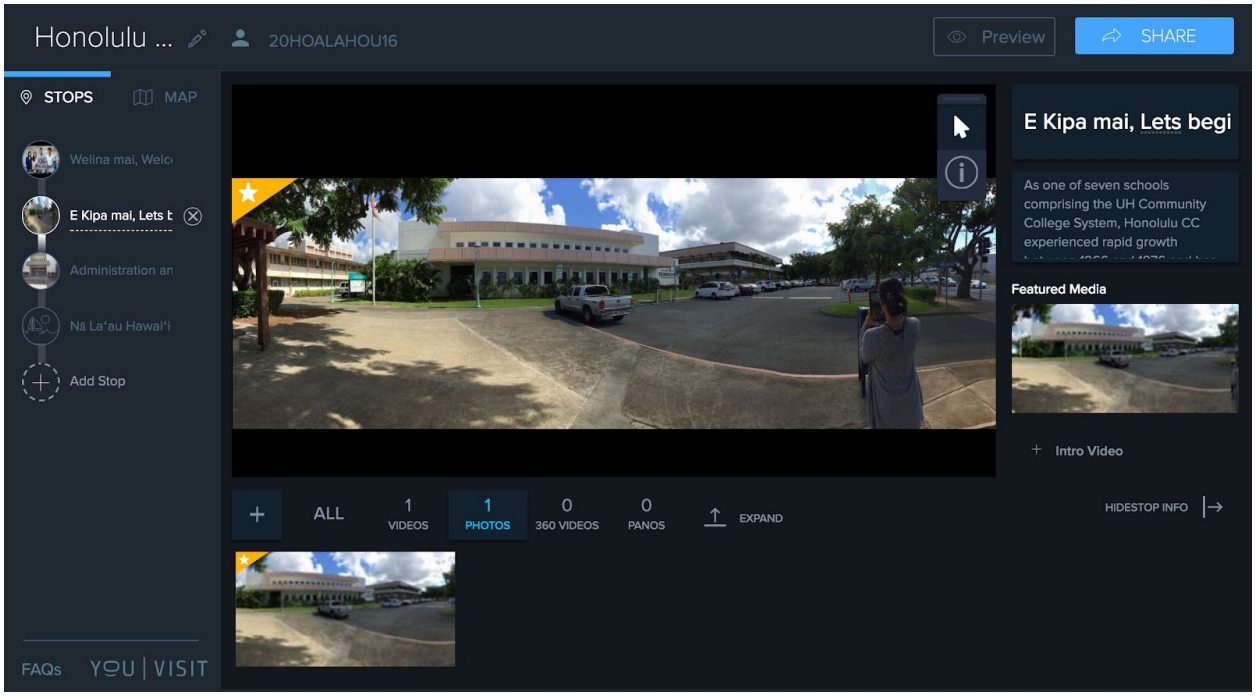
Appendix A:
Screenshot of YouVisit Virtual Tour Template



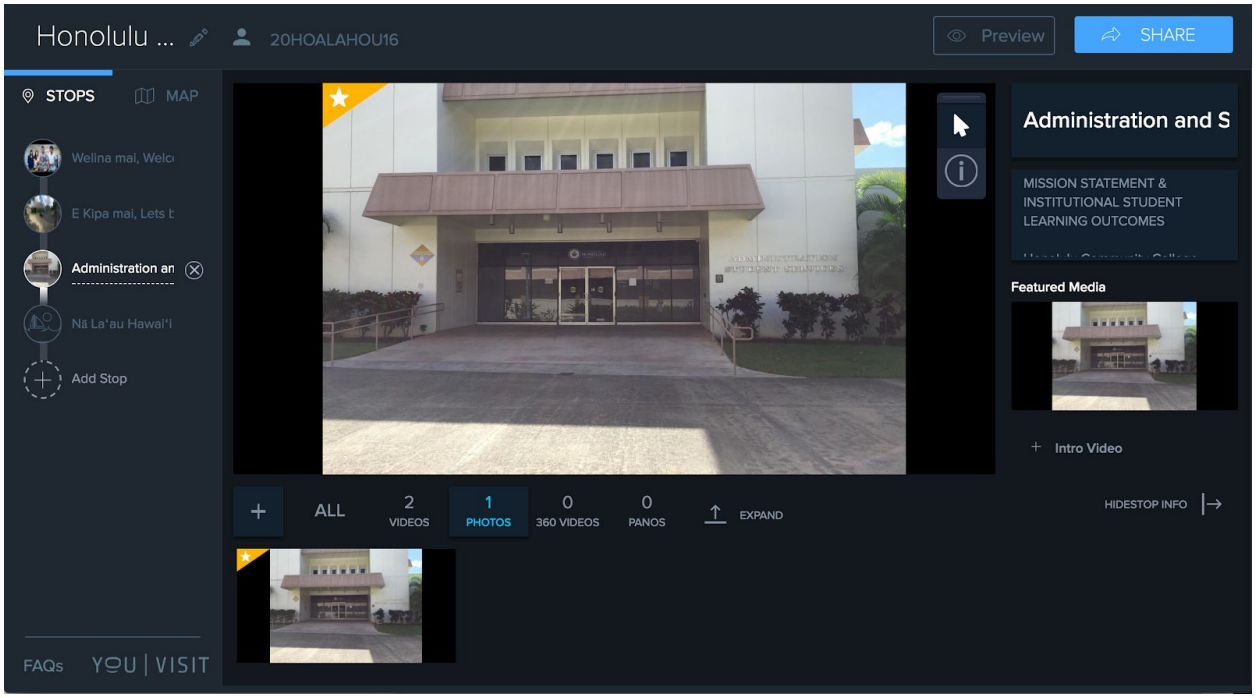
Appendix B:
Screenshot of HonCC Virtual Tour Prototype Stop 1 - Welina/Welcome to Honolulu Community College



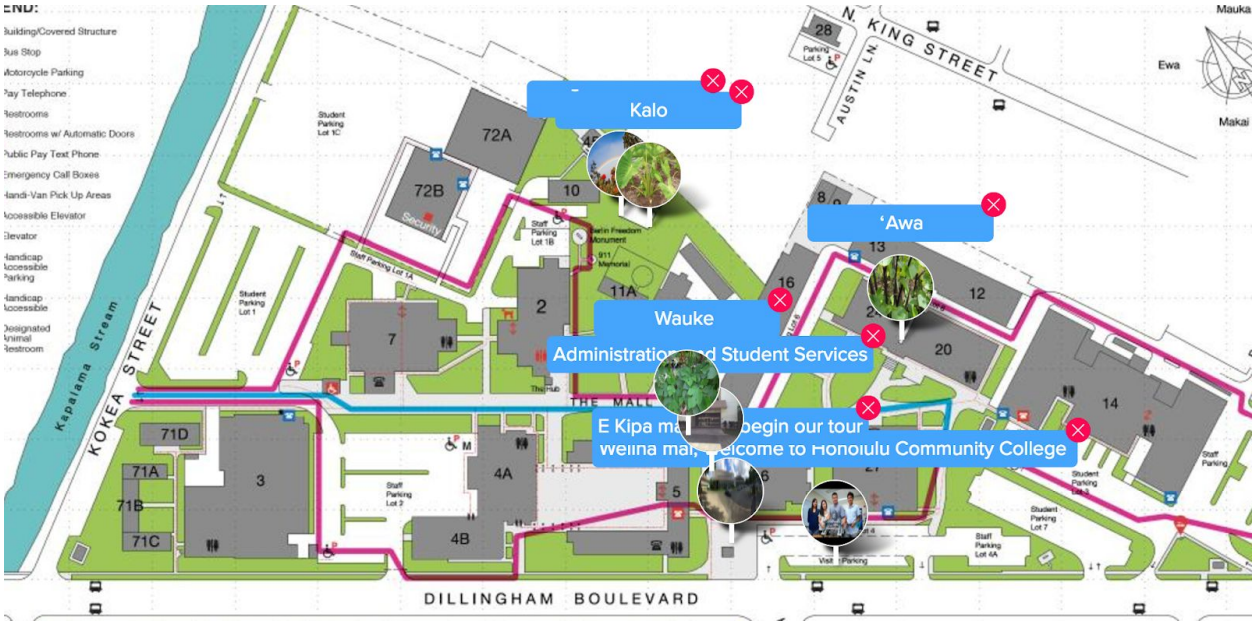
Appendix C:
Screenshot of HonCC Virtual Tour Prototype Stop 2 - E Kipa Mai, Let's begin the tour



Appendix D:
Screenshot of HonCC Virtual Tour Prototype Stop 3 - Administration and Student Services



Appendix E:
Screenshot of HonCC Virtual Tour Campus Map Prototype



Appendix F:
Participant Recruitment Email Draft

Subject Line: Invitation to Participate in a Virtual Tour Usability Study

Aloha mai kāua e [Participant's First Name] ē,

My name is Paul Kalani Flores and I am a Master's student in the Online Learning Design and Technology Department at the College of Education, University of Hawai'i at Mānoa. I am emailing you today to request your participation in my usability study.

As a requirement to graduate, my final project is a usability study on a new bilingual tour app of Honolulu Community College's (HonCC) cultural history and native plant collection. The purpose of this usability study is to evaluate the ease of use and efficiency for current/prospective students and employees at HonCC in navigating and utilizing the virtual tour. The completion of the usability study will provide critical feedback towards the enhancement and ease of use of the virtual tour. Participation in this usability study is strictly voluntary. Based on your status, you are a potential participant for this study.

The usability study involves an individual interview with you and will take no more than 45 minutes of your time. Individual interviews will be conducted on campus in a designated location. The interview will involve a 3-5 minute Pre-Questionnaire [Online form]; 10-15 minutes testing the tour app; and a 5 minute Post-Questionnaire [Online Form]. I will be conducting two rounds of interview during the following dates:

- Round 1: 1/22 - 2/22
- Round 2: 2/5 - 2/9

Upon the completion of each round, changes will be made to the tour app based on your feedback. All results of the study will be kept confidential and used for educational purpose only.

If you are interested, willing and available to participate in the study, please complete this Participant Questionnaire. Once completed, I will follow up with a confirmation email. A Consent to Participate form will be presented during the time of interview.

Mahalo nui loa for your time and consideration.

Me ke aloha nō,

Kalani Flores

Appendix G:
Participant Questionnaire

University of Hawai‘i at Mānoa
Cultural Connection and Sense of Place - Digital Tour

Please complete this questionnaire if you are able to participate in this usability study. Completing this questionnaire will provide me with information to conduct the study as well as your availability to participate. If selected, I will email you a confirmation.

Mahalo for your time.

My contact information:

Paul Kalani Flores
(808) 845-9489
pflores@hawaii.edu

1. Name (first and last)

2. Email

3. Phone number

4. Are you 18 years or older?
   - ❏ Yes
   - ❏ No

Part II - Scheduling
Please select all dates and times, for each week, that best fits your availability to participate in the usability study interview.

5. Test Week 1 - (Click N/A if you are unable to meet during any time of the week)

	8-9 AM	10-11 AM	1-2 PM	3-4 PM

Monday 1/15/18	No Interview Holiday	No Interview Holiday	No Interview Holiday	No Interview Holiday
Tuesday 1/16/18				
Wednesday 1/17/18				
Thursday 1/18/18				
Friday 1/19/18				
N/A				

6. Test Week 2 - (Click N/A if you are unable to meet during any time of the week)

	8-9 AM	10-11 AM	1-2 PM	3-4 PM
Monday 1/29/18				
Tuesday 1/30/18				
Wednesday 1/31/18				
Thursday 2/01/18				
Friday 2/02/18				
N/A				

7. Test Week 3 - (Click N/A if you are unable to meet during any time of the week)

	8-9 AM	10-11 AM	1-2 PM	3-4 PM
Monday				

2/12/18				
Tuesday 2/13/18				
Wednesday 2/14/18				
Thursday 2/15/18				
Friday 2/16/18				
N/A				

Appendix H:
Participation Confirmation Email

Subject Line: Confirmation to Participate in a Virtual Tour Usability Study

To: Participant Email

Aloha kāua e [Participant's Name] ē,

Mahalo for agreeing to participate in my virtual tour usability study. This email is to confirm that you are scheduled for a one-on-one interview regarding a new bilingual tour app of Hon CC's cultural history and native plant collection.

Attached to this email is a copy of the participant consent form for your review. Please do not hesitate to contact me should you have any questions regarding the content of the form. At the time of your interview, I will have a printed copy of the form for you to sign.

Your interview date, time, and location are as follows:

Date: [TBD]
Time: [TBD]
Place: HonCC's Hulili Ke Kukui - Hawaiian Center, Bldg. 5, room 201B

Upon the completion of the interview, I will provide you with a link to the post interview questionnaire that should take no more than five minutes to complete. I will leave the room to allow you the comfort of privacy as you complete to post-survey form. Your honest feedback will be greatly appreciated.

I kindly ask that you arrive 5-10 minutes prior to ensure we start on time. If at any time you would like to withdraw or are unable to make your interview session, for any reason, it is your choice. However, I kindly request that you please notify me at your earliest convenience for any cancellation or rescheduling.

Mahalo once again for your time.

Aloha nō,

Kalani Flores

Appendix I:
Participation Informed Consent Form

Consent to Participate in Research Project:
Cultural Connection and a Sense of Place - Digital Tour: Usability Study

My name is Paul Kalani Flores. I am a graduate student in the University of Hawai'i at Mānoa College of Education Learning Design and Technology program. As a requirement to graduate, I am doing a usability study.

Purpose of the Project: The purpose of this usability study is to evaluate the ease of use and efficiency for current/prospective students and employees at HonCC to navigate and utilize a bilingual (Hawaiian and English) tour app of HonCC's cultural history and native plant collection on campus.

Activities and Time Commitment: The usability study interview will take place at Honolulu Community College's Hulili Ke Kukui Hawaiian Center, building 5, room 211. A desktop computer will be made available for use in a private room. The interview will be recorded using an online recording application called Screencast-O-Matic. As mentioned, the time commitment for the usability study interview will be approximately 45 minutes.

The interview will include a short pre- and post-questionnaire of the following interview questions, using a Likert scale:

- ❑ How easy or difficult it is to access the tour app?
- ❑ How easy or difficult it is to navigate the first three sections of the toup app?
- ❑ How easy or difficult it is to locate the native plant section or the tour app?

In addition, I will ask you to complete a small number of tasks and scenarios based on the above questions. As you complete the tasks and scenarios, I will be asking that you think aloud so that I may take proper notes needed to make necessary improvements to the tour app.

Your participation in the study is for the purpose of testing the tour app, not you. There is nothing you can do wrong in this study. In fact, this is probably the one place where you don't have to worry about making any mistakes.

Confidentiality and Privacy: To protect your privacy, all data collected from the interview, surveys and questionnaires will be kept confidential. Data collected will be used for the sole purpose of the usability study. No information that will identify you as a person will be used.

Benefits and Risks: There will be no direct benefit to you for participating in this usability study. As a participant, you will be able to learn more about the usability study. The results of this study will be used to improve the virtual tour app and benefit all stakeholders. Additionally, there are no risks involved for your to participate in this study.

Voluntary Participation: The participation in this study is strictly voluntary. You have the freedom to withdraw your participation in this study at any time. There will be no penalty or consequence for not participating in the study.

Questions: If you have any questions and/or concerns regarding the study, please do not hesitate to contact me at any time. My contact info is as follows:

Office Phone: (808) 845-9489
Email: pflores@hawaii.edu

Should you have any further questions and/or concerns regarding this study or regarding your rights as a research participant, you may also contact my advisor, Dr. Curtis Ho, at curtis@hawaii.edu or you may contact the University of Hawai‘i Human Studies Program at (808) 956-5007, or email: uhirb@hawaii.edu.

Please read the statement below and sign where indicated.

- -

Signature of Consent

I am aware that my participation in this usability test session will be recorded. I grant the Cultural Connection and a Sense of Place - Digital Tour: Usability Study permission to use this recording for the purpose of improving the designs being tested.

Signature: _____

Print your name: _____

Date: _____

Appendix J

Table of Timeline and Goals

#	Date	Objectives	Goals
1	1/2/18	● Email Invitation to participate and consent forms ● Send out participation questionnaire as invitations are accepted ● Send out confirmation email for participation upon completion of participation questionnaire and consent forms ●	● Recruit a minimum of five volunteers for each round of testing ● Recruitment to be completed by 1/12
2	1/12/18	● Finalize recruitment schedule ● Send out reminders to volunteer participants ● Remind participants to turn in consent forms	● Prepare all materials for first round of usability testing
3	1/15/18 - 1/19/18	● Begin first round of usability testing/interviews	● 1/15/18 is a Holiday (none testing day) ● Follow usability protocol and facilitator script
4	1/22/18 - 1/26/18	● Compile and analyze data from first round of usability testing and questionnaires ● Identify top three usability issues ● Make recommended edits and enhancements according to data collected ● Send out reminders to second round usability study volunteers	● Prepare all materials for second round usability testing ● Ensure all changes are documented with screenshots and notes ● Prepare updated site for second round of usability testing
5	1/29/18 - 2/02/18	● Begin second round of usability testing/interviews	● Have all usability materials ready and organized ● Follow usability protocol and facilitator

			script
6	2/05/18 - 2/09/18	● Compile and analyze data from second round of usability testing and questionnaires ● Identify top three usability issues ● Make recommended edits and enhancements according to data collected ● Send out reminders to second round usability study volunteers	● Prepare all materials for third round of usability testing ● Ensure all changes are documented with screenshots and notes ● Prepare updated site for for final round of usability testing
6	2/12/18 - 2/16/18	● Begin final round of usability testing/interviews	● Have all usability materials ready and organized ● Follow usability protocol and facilitator script
7	2/19/18 - /2/23/18	● Compile and analyze data from final round of usability testing ● Identify top three usability issues ● Make recommended edits and enhancements according to data collected	● Ensure all changes are documented with screenshots and notes ● Organize data to begin usability narrative
8	3/02/18	Finalize usability study narrative	

Appendix K:
Pre-Questionnaire

University of Hawai‘i at Mānoa
Cultural Connection and Sense of Place - Digital Tour

Please complete this pre-questionnaire. Completing this questionnaire will provide information on the background experience of participants. Questions will be a combination of multiple choice, short answers, or based on likert scale.

Mahalo for your time.

1. What technologies do you have access to? Mark all that apply:
   - ❑ Desktop computer
   - ❑ Laptop computer
   - ❑ Tablets
   - ❑ Smartphone

2. How comfortable are you using mobile apps?
   - ❑ Very comfortable
   - ❑ Comfortable
   - ❑ Somewhat comfortable
   - ❑ Not so comfortable
   - ❑ Not comfortable

3. How many hours do you spend online per week?
   - ❑ 0-2 hours
   - ❑ 2-4 hours
   - ❑ 4-6 hours
   - ❑ 6+ hours

4. Have you had prior experience using a tour app?
   - ❑ Yes
   - ❑ No

5. If you had prior experience using a tour app, what kind of tour was it for (museum, city, university, etc.)? (Write N/A if you have not used a tour app)

6. Do you know if any of the University of Hawai‘i System campuses has a tour app?

- ❑ Yes
- ❑ NO

7. If you answered Yes to the above question, which campus? (if you answered No, write N/A)

Demographics

8. Gender

- ❑ Male
- ❑ Female
- ❑ Other

9. What is your age range?

- ❑ 18-24
- ❑ 25-34
- ❑ 35-44
- ❑ 45-54
- ❑ 55+

10. What is the highest level of education completed?

- ❑ High school diploma/GED
- ❑ Associate's degree
- ❑ Bachelor’s degree
- ❑ Master’s degree
- ❑ Doctorate degree

Appendix L:
Post-Questionnaire

University of Hawai‘i at Mānoa
Cultural Connection and Sense of Place - Digital Tour

Mahalo nui for participation in this usability study.

Please complete this post-questionnaire. Completing this questionnaire will provide information on overall satisfaction and feedback of the usability test and tour app. Questions will be a combination of multiple choice, short answers, or based on likert scale.

Mahalo for your time.

1. To help with improvements, please answer the following questions based on a scale from:
   - ❏ strongly agree
   - ❏ Agree
   - ❏ Disagree
   - ❏ Strongly Disagree
   - ❏ N/A

   - The task for the usability study was clear to me
   - The questions during the usability was clear to me
   - The interview facilitator prompted me to think aloud and asked me questions while I was performing the tasks

2. Design Layout, answer the following questions based on a scale from:
   - ❏ strongly agree
   - ❏ Agree
   - ❏ Disagree
   - ❏ Strongly Disagree
   - ❏ N/A

   - The app features were easy to understand
   - The text is clearly written and easy to read
   - The images are appropriate
   - The app is visually appealing

3. Ease of Use, answer the following questions based on a scale from:

- ❏ strongly agree
- ❏ Agree
- ❏ Disagree
- ❏ Strongly Disagree
- ❏ N/A

- The app was easy to access
- The app was easy to navigate
- It was easy to locate the native Hawaiian plant section of the app

4. What was one thing you liked best about this usability study?

5. What was one thing you liked least about the this usability study?

6. If you could make one significant change to the tour app, what change would you make? Please explain

7. Would you refer others to utilize the tour app? why/why not?

8. Please provide any additional feedback to assist with improving the app and/or the interview experience.

Appendix M:
Usability Technology Protocol

Usability Technology Protocol

Paul Kalani Flores
University of Hawai'i at Mānoa - Cultural Connection and Sense of Place - Digital Tour: Usability Study

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

Timeline

Date	Action
1/22 - 1/12	Recruit participants
1/22 - 1/26	First round of Interviews, three interviews
1/29 - 2/2	Second round of interviews, three interviews
2/5 - 2/9	Third round of interviews, three interviews
2/12 - 2/16	Compile data
2/19 - 3/2	Complete usability study narrative

Technology Setup Checklist

Usability Test Set-up Procedure for Facilitator (Preparation 1hr)

- ❏ SET-UP TEST
  - ❏ Technology Checklist
    - ❏ Computer Devices (2) and power cords
    - ❏ Run Google Browser for updates
  - ❏ Instructional Materials and Forms
    - ❏ Observation/Data Sheet
    - ❏ Task/Scenario List
    - ❏ Informed Consent forms
    - ❏ Pens and Pencils
- ❏ LAUNCH THE TEST
  - ❏ Use Google Chrome for best results

- ❏ Login with username and password for Google account.
- ❏ Website : https://screencast-o-matic.com/account
- ❏ *Facilitator: Have Script, Observation Sheets on Hand
- ❏ Test and Ensure Audio and Visual is working
- ❏ When ready, click on the icon record at the bottom left of the screen
- ❏ Welcome and recite Usability Script
- ❏ Instruct to open icon on desktop to site

❏ CONDUCT THE TEST

- ❏ Follow the Usability Script with the Scenario/Task Sheet
- ❏ Provide technical support as required
- ❏ Remind participant consistently to “think aloud”

❏ CONCLUDE THE TEST

- ❏ Direct your participant to stop recording
- ❏ Direct the participant to the Post- Survey Icon on desktop.
- ❏ Mahalo your participant and ask if they have any further questions
- ❏ Review archived recording

Appendix N:
Facilitator's Script

Aloha, [insert participant's name]. Once again, my name is Kalani Flores, and I'm going to be walking you through this interview session today.

Before we begin, I have some few instructions to share with you, and, to ensure that I cover everything, I'm going to read it to you.

You are here today because I am asking students and employees at Honolulu Community College (HonCC) to test a bilingual tour app of Honolulu Community College's cultural history and native plant collection, I created. I will refer to the bilingual tour as "tour app" for short from here on out. I would like to see if the tour app works as intended. The session should take about 10 - 15 minutes.

The first thing I want to make clear right away is that I am testing the tour app, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

When we begin testing the tour app, I'll be giving you a few tasks to complete. I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to me.

Also, please don't worry that you're going to hurt my feelings. I am doing this to improve the tour app, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone who can help. But if you still have any questions when we're done, I'll try to answer them then.

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

Pre-Questionnaire: 3-5 minutes

Before we begin, I am going to have you complete a short 3-5 minute pre-questionnaire. Please click on the first tab to complete the survey. Once completed please let me know.

Usability Test: 10-15 minutes

Now I'm going to ask you to try and complete a few specific tasks. I'm going to read each one out loud. And again, as much as possible, it will help me if you can do your best to think out loud as you complete the task.

Please click the record button on the bottom left of your screen. This will begin the audio and screen recording.

Usability Test Script

Task 1:
This is the tour app for Honolulu Community College.

At this time, I'm going to ask you to scan and scroll the app and tell me what you make of it. Just look around and do a little narrative. You can scroll if you want to, but don't click on anything yet.

It will help if you use your cursor to indicate what part of the page you are looking at so that we can follow along.

Questions to ask:

- What is the first thing you noticed?
- What strikes you about the page?
- What do you think about the graphics, theme, images, etc.?
- What would you click on first?

Once you feel you have completed this task, please let me know.

Task 2:
Take a minute or two to navigate and explore the welcome page. Look at the features of the page and feel free to click on the various icons to better understand what they do. Again, please remember to think out loud as you explore. I will let you know when it's time to move on to the next task.

Task 3 - Scenario 1:
You are a senior in high school and you plan to attend Honolulu Community College in the Fall semester and you want to learn more about the history of the college. Using the tour app, determine where you would go to learn of the history of the college.

Once again, please remember to think out loud as you complete this task.

Task 4 - Scenario 2:
You are enrolled in the ethnobotany course and are required to locate and identify 3 endemic Hawaiian plants on campus. Using the tour app, determine where you would go to access this information.

Once again, please remember to think out loud as you complete this task.

Mahalo, that's the last question, do you have any questions for me, now that we're done?

Please end the recording.

After the Session:

- ❑ Direct the participant to complete the Post-Survey (click on the tab)
  - ❑ Before you leave, I have a quick 5 minute post-survey for you to complete.
  - ❑ Mahalo nui loa for your time and willingness to be a participant in this study.
- ❑ Verify Recordings
  - ❑ Save screencast to computer
  - ❑ Do a quick scrub through the video to ensure the integrity of the audio and video
  - ❑ Upload video to Google Drive

Appendix O:
Data Collection Tool

Participant number:		**Date:**			
Starting Time:	**Ending Time:**	**Completed Consent form?**			
		Yes		**No**	

Task #1	**Participant's comments of the app appearance**
Notes	
Task #2	**Navigate and Explore welcome page**
Notes	
Task #3 (Scenario)	**History of the College**
Notes	
Task #4 (Scenario)	**Accessing Hawaiian Plants database**
Notes	