

**Master's Project Evaluation Plan for ASLingo**

**Kayla McGill**

**University of Cincinnati**

**Master's Project 8130**

**Janet Zydney Ph.D**

**May 24<sup>th</sup>, 2019**

**Table of Contents**

**Abstract**.....4

**Introduction**.....5

**Background**.....5

**Evaluation Methodology**.....7

    Remote Usability Testing.....7

    Think Aloud Protocol.....9

    Usability Evaluation Framework.....10

        Effectiveness.....11

        Efficiency.....11

        Satisfaction.....11

        Learnability.....12

        Memorability.....12

        Errors.....12

        Cognitive Load.....12

    Modified System Usability Scale (SUS) Questionnaire.....13

**Evaluation Instruments**.....14

    Computer and Internet.....14

E-Mail Provider.....14

Word Processor.....16

Think Aloud Video.....16

Modified System Usability Scale (SUS) Questionnaire.....16

**Sampling Methodology.....17**

**Analysis Procedure.....17**

    Think Aloud Videos .....18

    Modified System Usability Scale (SUS) Questionnaire.....18

**Timeline and Conclusion.....19**

**Appendix A – Remote Usability Evaluation Participant Email.....22**

**Appendix B – Usability Evaluation Instruction Document.....24**

**Appendix C – System Usability Scale (SUS) Questionnaire.....26**

**Revision Notes.....27**

**References.....29**

### **Abstract**

Usability evaluating is a key component that requires a comprehensive plan to ensure that a mobile application's purpose will be effective to the user. Conducting a usability evaluation will produce valuable data that will help improve ASLingo, the chosen artifact for this evaluation process. The evaluation plan for this mobile application will require implementation of various technologies, the cooperation by a diverse selection of participants, and a structured timeline. Performing remote usability testing, the usability design will be evaluated by subject matter experts, technology experts, and users with an interest in American Sign Language utilizing the Think Aloud protocol. The participants will be given a list of tasks to complete on the mobile application, providing feedback on the product's ease of use, ease of finding information, visual design, navigational flow, and overall satisfaction. Based on the obtained data, a detailed analysis will be conducted, and final revisions will be made on the mobile application based on the feedback received by the participants.

## **Introduction**

The purpose of this evaluation plan is to construct a plan of evaluating, data collection, and analysis. It is to help make the appropriate revisions to the ASLingo mobile application, making it more user-friendly, attractive, and effective for the user. By performing usability evaluations, I can obtain data that will identify analytical solutions for me to revise the mobile application, making it easy to use, visually appealing, and satisfying overall. This evaluation plan will also assess the retained knowledge and skills that I developed during the Instructional Design and Technology program at the University of Cincinnati. I plan to demonstrate my obtained knowledge and skills by participating in the evaluation process of ASLingo, revising my artifact to improve its effectiveness, present my journey through the master's project, and complete my digital portfolio.

## **Background**

Mobile app design has been my primary interest for a post-graduation career. Since I was interested in developing an expertise in mobile app prototyping and continue learning about American Sign Language, I decided that selecting our mobile application project as my artifact would serve as an effective self-learning experience. During the Spring 2020 semester, my project group developed a mobile learning application for our final project. The most popular ideas proposed in the class were selected and we established groups based on the idea that seemed the most appealing. Originally, ASLingo was an idea proposed by another classmate.

Prior to the course, I developed an interest in learning more about American Sign Language. Therefore, I decided to participate in designing and developing the prototype of the mobile application. It was a tedious process developing the wireframe using Balsamiq, a wireframing mockup tool used to create interfaces for websites and mobile applications. After developing the wireframe and receiving feedback from our peers, we revised the product in InVision, a web-based tool used for prototype design for websites and mobile applications. After completing the finalized version of our app prototype, we presented the product and received more feedback from our peers to consider if we considered developing the mobile application even further.

ASLingo is a mobile application designed to interactively teach American Sign Language (ASL) and allow users to connect globally utilizing a social feature. The mobile application was designed for adult learners, predominantly in higher education and in the community. ASLingo allows users to use the app in tandem with an ASL course as an additional resource. It is also used for information regarding ASL events in the user's area, and to connect with others that share the same interest. The purpose is to create a space for the ASL community to learn, connect, and grow.

We designed the mobile application to address a wide array of problems. While researching currently existing mobile applications, we noticed that several applications had bits and pieces of helpful ASL resources (ex. Dictionary, social feature, lessons, etc.), but everything was not included in one application. There was also a lack of mobile applications that were free, creating a disadvantage for those that cannot afford the additional resource. ASLingo is convenient and allows everything to be in one place, it is free for everyone, and will continue to grow along with the user. I am pleased to have the opportunity to enhance a learning mobile application that could potentially be useful for individuals who need a convenient, affordable,

and user-friendly resource. However, to begin the process of improving the effectiveness of the mobile application, it is important to identify areas of excellence and areas that need improvements. This can be achieved by developing a detailed evaluation plan that includes methodologies, potential instruments, participants, analysis plan, and a timeline.

### **Evaluation Methodology**

Applying methodologies is an important strategy to evaluate the effectiveness of mobile applications. For the master's project, I will be conducting a usability evaluation as my official methodology. Zahra et al (2017) defined usability evaluation as evaluating, "the ease of use and suitability of a system for a specific class of users carrying out specific tasks in a precise environment" (p. 2). The usability evaluation method is to determine if an application is user-friendly, effective, accessible, and something that people will constantly use.

Typically, the most common way to conduct usability evaluations are in person. However, due to the unforeseen circumstances of a global pandemic, I am unable to conduct a usability evaluation with the participants in person. Based on given advice and research on other potential evaluation methods, I have found an alternative method known as Remote Usability Testing. Some studies found remote usability evaluating to have just as good results as a traditional face to face evaluation (Thompson et al., 2004). According to Schall and Horst (2006), remote usability testing has been proven to be convenient, cost efficient, and still effective in obtaining data (as cited by Hammontree et al. 1994).

### **Remote Usability Testing**

Schall and Horst (2006) defines remote usability testing as a method that, "allows the facilitator to observe and record the entire range of user response that can be gleaned from

observing participants screens in real-time albeit from afar: what they saw, what they typed, where they positioned their cursor, and where they clicked” (p. 2284). Remote usability testing is often used to make things more affordable, save time, and add convenience for participants by allowing them to test in the comfort of their home, in an office, or another specified location.

Remote usability testing can be conducted both moderated and unmoderated. With moderated usability evaluation, the facilitator will work with the participant to complete a series of tasks given, guide them, and ask any questions that the participant has during the process (Derome, 2018). While this ensures that the moderator obtains the data they need, it also requires more thorough planning. Moderators must schedule dates and times with the participant and decide on a location with minimal distractions to facilitate the evaluation (Derome, 2018).

Unmoderated remote testing does not require any monitoring or guidance. The person provides instructions, tasks, and questions to the participant, but only the participant is present. That way, the participants can complete the test based on their own schedule, going their own pace, on their own time, and any location they choose (Derome, 2018). My daily schedule contains several tasks between different classes, so it would become a challenge to plan a moderated usability evaluation. Since ASLingo is a touch-based wireframe, I plan to conduct an unmoderated remote testing evaluation with my selected participants.

Organizing an unmoderated usability evaluation is a simple task and would be conducted utilizing video technology. My plan is to contact the participant via email, explaining the evaluation process. The participant will be given a link to ASLingo's touch-based wireframe which is located on InVision. Then, I will provide a summary on what the mobile application is and the purpose for its use. Next, the participant will be given a total of 6 tasks to complete within the app. Data shows that longer tests take more time to complete and require more effort

from the participants, so the testing is usually abandoned (Luchita, 2019). Therefore, the list of tasks will remain eight or less and will be simple objectives to complete. The participant will need to record themselves using either their pc camera, video conferencing tool, or some other desktop recording technology using the application. Given the tasks, the participant will complete the tasks in the application. While they are in the process of completing a task, the participant will narrate their actions and their thoughts on the process. For example, a participant is given a task to log in and go to their profile page. They will start the task, explaining which buttons their pressing, what is happening on the screen, and providing their opinion on the usability. This usability testing method is known as the Think Aloud Protocol. Since my focus is to contribute a technology tool to the community, there is a chance that a selected participant could be a part of that community. It is important to accommodate those that are unable to speak. Therefore, another option is to allow the participant to type down their thoughts as they are using the application.

### **Think Aloud Protocol**

The Think Aloud protocol is defined as asking, “participants to use the system while continuously thinking out loud – that is, simply verbalizing their thoughts as they move through the user interface” (Nielsen, 2012). There are many benefits when it comes to using the think aloud strategy for usability evaluations. The method is affordable, vigorous, flexible for the facilitator and participant, convincing, and easy to do (Nielsen, 2012). Most importantly, it will allow me to hear what users truly think about the mobile application. ASLingo was designed to help those in the ASL community by providing a safe space to come together and help the community grow.

During the usability evaluation, the participant will perform the tasks while narrating what they are doing in the process in a recorded video. They will also express their thoughts and opinions on the mobile application based on a usability criterion, which will be considered data. Once they finished recording the video, they will send the recording back to me for me to review.

### **Usability Evaluation Framework**

There are a variety of methods that usability evaluations are executed. It comprises of participants based on their qualifications and, “are representative of a target market” (Bigby 2018). Once participants are selected, they are introduced to the application and are given a variety of tasks to complete. These tasks relate to the application’s official use and the participants must use the application, complete the tasks, and evaluate the product based on a selection of criteria that is organized into a detailed framework.

Figure 1 details the People at Center of Mobile Application Development (PACMAD) Usability Evaluation (UE) Framework which consists of the criteria I plan to utilize for the usability evaluation process (Saleh et al., 2015, p. 234).

#### ***Figure 1: The PACMAD UE Model***



*Note:* This figure is from Saleh & Ismail, 2015, p 234.

### **Effectiveness**

The ability of a user to complete a specific task (Harrison et al., 2013, p. 4). The evaluation of effectiveness is based on whether the user can complete the task, or not. During the evaluation process of ASLingo, participants will be given a small list of tasks to complete. For example, one task will be to create an account and reach the main menu of the mobile application. If the participant can complete the task, it confirms that the specific component of the mobile application is effective.

### **Efficiency**

The ability of a user to complete a task quickly and accurately (Harrison et al., 2013, p. 4). This can be measured in different ways, such as the amount of time needed to complete a task, or the number of swipes, presses, and other actions. ASLingo is a touch-based wireframe, so the buttons are only a mockup. Since my evaluation method is unmoderated, my plan is to

develop a questionnaire that participants can give their opinion about the efficiency of the mobile application.

### **Satisfaction**

The level of comfort and confidence in the use of the mobile application. The participant's overall attitude of the product determines the level of satisfaction (Harrison et al., 2013, p. 4). Since I will be putting together a questionnaire, I am going to organize a few questions to ensure that participants can express their opinions based on how much they enjoy the product.

### **Learnability**

The level of expertise the user can receive while utilizing the mobile application. In other words, it is how long it takes for someone to understand how the application works and how to use it effectively (Harrison et al., 2013, p. 4-5). Questions relating to the participant's learnability will be included in the questionnaire.

### **Memorability**

The ability to retain the information learned on how to use the mobile application (Harrison et al., 2013, p. 4). If a user must return to the mobile application, will they be able to recall the knowledge on how to use the application effectively? This is a major component to the revision of ASLingo because it shows how important the application could potentially be to the user. If the user does not remember how to utilize the product, then it might not prove to be

useful to the user. Therefore, the questionnaire will ask questions relating to how much they believe they will remember about ASLingo the next time they use it.

## **Errors**

The ability to complete the given tasks without errors (Harrison et al., 2013, p. 4). This can apply to the button navigation, where the buttons are placed, the name of the pages, what page each button goes to, and so on. Obtaining this data will help me identify areas that need improvement on the application such as clarification, the layout of the buttons, the button functions, etc.

## **Cognitive Load**

The amount of cognitive processing required to use the mobile application. (Harrison et al., 2013, p. 4-5) The amount of information on each page applies to the amount of cognitive load the user might have while using the application. If pages are simple with a minimal amount of text, imagery, and buttons, there is less information that the user needs to process. This is important to achieve since I will be evaluating a mobile application. Users may use the application while performing multiple tasks such as walking, eating, working, and so on (Harrison et al., 2013, p. 4-5). If there is too much content placed on one page, it could potentially cause a cognitive overload on the user, making them unwilling to utilize the application. I want to ensure that I hear the participant's opinion on this criterion by applying a few additional questions on the usability evaluation questionnaire.

## **Modified System Usability Scale (SUS) Questionnaire**

The Think Aloud is the initial step of the usability evaluation. After the participants complete the video recording, they are to fill out a questionnaire based on a modified version of

the System Usability Scale (SUS). The SUS was invented by John Brook back in 1986 and was used to evaluate any kind of system (Thomas, n.d.). Garcia (2013) states that it is the most popular usability questionnaire, “accounting for approximately 43% of unpublished usability studies” (p. 3). Several individuals favor the SUS because it does not require a lot of resources, making it cheaper (Thomas, n.d.). It is also a faster alternative to other usability questionnaires (Thomas, n.d.). The SUS consists of 10 questions designed to rate the usability of a product, in this case, ASLingo (Garcia, 2013, p. 3). There are question templates available to use based on the product that is being evaluated. However, I plan to slightly modify a few of the questions to ensure that I receive data on the seven criteria from the PACMAD model (Please see Appendix C). Once the participants rate each criteria and statement, I can calculate the results to begin the next step of the master's project which is analyzing the data.

Overall, the entire evaluation process should take approximately 20 to 30 minutes to complete. I believe that the Think Aloud video will take most of the time depending on how long it takes for the participants to complete the task. It also depends on the amount of feedback they are willing to share about the mobile application.

## **Evaluation Instruments**

### **Computer and Internet**

The main tool required for the usability evaluation is a functional computer and any type of internet service capable of video recording and saving large files. Since my laptop has a large hard drive, I plan to use it to create the questionnaire and other documents, communicate with the participants, save video files, save documents, and view the videos and questionnaire results. I will also use my laptop for the analysis process to help organize the data I receive. The

participant can use any computer device (including smartphones and tablets) to participate in the evaluation; however, internet service is required to use any web-based software to record the video. Therefore, the evaluation will require stable internet connection to record and share the video files with me.

### **E-mail Provider**

Since the evaluation will be conducted remotely, there are certain technologies that will be required for myself and the participants to complete a successful evaluation. Thankfully, technological building blocks for remote usability testing are available and possible on all types of platforms (Hammontree et al., 1994, p. 21). First, a source of online communication is required to receive the information about the usability evaluation. I would prefer to use an e-mail service provider as the primary method of communication with the participants. After selecting my participants, the confirmation e-mail will include the following (See Appendix A for the email script):

1. A brief introduction of the evaluation, mobile application, and purpose
2. Detailed instructions regarding preparation for the evaluation
3. A document with instructions on the Think Aloud strategy
4. Instructions about the System Usability Scale questionnaire (included in #3's document. Please see Appendix B for document content)
5. The Modified System Usability Scale questionnaire
6. A link to the mobile application on InVision
7. A list of six tasks the participant must complete (included in #3's document)
8. Instructions regarding completion and submission of evaluation

To conclude the e-mail, I will provide my contact information in case there are any question, unexpected issues, or any comments regarding the evaluation and instruments. I would like to build a small connection with the participants to keep them motivated and convinced to thoroughly complete the usability evaluation. Building a connection with the participant will also be beneficial for any future evaluations I conduct to further improve ASLingo.

### **Word Processor**

Participants who are unable to speak have the option to type their thoughts into a word processor such as Microsoft Word, Google Docs, and several others. I want the user to avoid paying a large sum of money for word processing software. Therefore, any application that allows the user to save text and send within an email provider is acceptable.

### **Think Aloud Video**

The think aloud process in the remote usability evaluation will require any type of video recording software. Applications such as the built-in PC camera, smartphone cameras, video conferencing tools (i.e. WebEx, Skype, Zoom, etc.), Kaltura, PC and non-PC external cameras, and many others are all acceptable technology tools to use. In addition to the video recording, it will also require a voice recording tool, which is a critical component of the think aloud process. Participants will need to use either an internal or external PC microphone to record their narration and thoughts while testing ASLingo. A smartphone would also be an acceptable tool to use for voice recording.

A video recording typically creates a large file size, which could become challenging to include in a simple email provider. Therefore, there needs to be an alternative resource to share large files. If the participant is affiliated with the University of Cincinnati (UC) and has created a

video outside of Kaltura, they can upload the video file to their Kaltura account. As an alternative, I plan to utilize WeTransfer, a cloud-based web platform that allows users to transfer different types of files with each other over the internet (Gómez, 2018). If the participant does not possess a UC account, they can use WeTransfer to send their think aloud video to me. There are other alternatives that I plan to consider just in case WeTransfer is not an option such as OneDrive, Google Drive, and Dropbox.

### **Modified System Usability Scale (SUS) Questionnaire**

In addition to the Think Aloud video recording, participants will also fill out a ten-question questionnaire that evaluates each of the seven criteria of the PACMAD model. First, I plan to use Microsoft Word to create the SUS questionnaire and include them in the emails as an attachment. Once I finish creating the document, I plan to convert it to a PDF format since most e-mail providers are PDF friendly. To construct an effective SUS questionnaire, I need to research templates and use them as a reference. I would like to find an up to date template and modify the questions to better suit the data I require.

### **Sampling Methodology**

It is important to define the target audience by identifying who utilizes American Sign Language (ASL) tools, what audience is ASLingo intended for, and who would be interested in using the mobile application (Rochanayon, 2020). Experienced researchers recommended to have at least five to ten participants participate in a remote usability evaluation and identify common usability issues (Rochanayon, 2020). During the selection process, characteristics such as gender, age, and income should be taken into consideration (Rochanayon, 2020). Dr. Zydney suggested selecting participants from an office for ASL located on UC's campus. Since the

office consists of professionals and others affiliated with the ASL community, I plan to select individuals from the department that have an interest in participating. In addition to the ASL office, there are a few individuals I am acquainted with. They currently have an interest in the ASL community that would prove to be beneficial for my data collection. It also provides a more diverse selection of individuals of a different age, gender, and income status.

### **Analysis Procedures**

To analyze the information received from both the think aloud videos of the participants and the system usability scale questionnaire, I need to perform both a qualitative and quantitative data analysis. The qualitative data will identify the reason why the issues exist, how to fix them, and why the rating on the System Usability Scale (SUS) was given (“Usability evaluation and analysis”, 2020). The quantitative data will help me analyze the areas of excellence in ASLingo, areas of improvement, and the severity of issues within the mobile application interface (“Usability evaluation and analysis”, 2020).

### **Think Aloud Videos**

The think aloud videos will provide the qualitative data portion for my analysis. After obtaining the data from usability testing, I will start by analyzing the comments made during the video by the participant. The comments will be separated into two categories: the narration of actions, and mobile application feedback. The narration and feedback will determine if they understood the task instructions, the application's ease of use, and satisfaction of the application. For example, during the narration, if their tone has any sounds of uncertainty, then it tells me that the application makes completing the specific task challenging. The participants will then provide detailed feedback on why it is difficult to complete the task. This will help me identify

the reason why they were not confident in completing the task and what needs to be revised to make it more user-friendly. I will then organize the comments in a table on a Microsoft Word Document in groups. These groups will be categorized as confident narration, uncertain narration, positive feedback, and potential issues. If multiple participants identify the same issue, I will prioritize the most common issues and make them my primary focus for revision.

### **Modified System Usability Scale (SUS) Questionnaire**

The SUS questionnaire will be the quantitative data portion of my analysis. Upon receiving the results from the participants, I will calculate the results based on the SUS method. For each odd numbered question, I need to subtract one from the score (Thomas, n.d.) Then, I subtract 5 from the score on each even numbered question (Thomas, n.d.) Lastly, I will calculate the new total and then multiply by 2.5, giving me the final score (Thomas, n.d). This will allow me to view the scores out a 100-point scale, making the results easier to calculate. My plan is to calculate each category, identifying the areas with high scores and low scores. These scores will help me determine the strong areas of ASLingo and the components that needs attention. If a score in one area is significantly low, it will become my primary focus to fix during the revision process.

### **Master's Project Timeline**

Figure 2 details a timeline of deliverables for the master's project, the anticipated begin date on each part, and separated due date expectations. This timeline will allow a full completion of my master's project, fulfilling all requirements within a reasonable amount of time.

*Figure 2: Master's Project Timeline*

<b>Deliverables</b>	<b>Begin Date</b>	<b>Due Date</b>
---------------------	-------------------	-----------------

Draft Evaluation Plan – Version 1	Week of May 18th, 2020	Sunday, May 24th, 2020 by 11:59 PM
Provide & Receive Feedback on Evaluation Plan	Week of May 25th, 2020	Sunday, May 31st, 2020 by 11:59 PM
Revise & Edit Evaluation Plan (Version 2)	Week of June 1st, 2020	Sunday, June 7th, 2020 by 11:59 PM
Remote Usability Testing, Data Collection & Analysis Part 1	Week of June 8th, 2020	Sunday, June 14th, 2020 by 11:59 PM
Remote Usability Testing, Data Collection & Analysis Part 2	Week of June 15th, 2020	Sunday, June 21st, 2020 by 11:59 PM
Draft Evaluation Report- Version 1	Week of June 22nd, 2020	Sunday, June 28th, 2020 by 11:59 PM
Provide & Receive Feedback on Evaluation Report	Week of June 29th, 2020	Sunday, July 5th, 2020 by 11:59 PM
Revise & Edit Evaluation Report (Version 2)	Week of July 6th, 2020	Sunday, July 12th, 2020 by 11:59 PM
Artifact Revision (Design & Content)	Week of July 6th, 2020	Sunday, July 19th, 2020 by 11:59 PM
Portfolio Presentation & Defense	Week of July 20th, 2020	Sunday, July 26th, 2020 by 11:59 PM (or earlier)
Portfolio Completion & Feedback	Week of July 20 <sup>th</sup> , 2020	Sunday, August 2nd, 2020 by 11:59 PM
Finalize Digital Portfolio & Complete	Week of August 3rd, 2020	Friday, August 7th, 2020 by 11:59 PM

My plan is to ensure that my schedule of deliverables remain as organized as possible while following the anticipated project deadlines. I will begin constructing my evaluation plan starting the week of May 18<sup>th</sup> and finish the following Sunday. That way, there is a large window of time for peer review and feedback with my classmate. Once I receive feedback on my evaluation plan, I will make the necessary revisions and prepare to conduct the usability evaluation with subject matter experts, technology professionals, and other potential participants with an interest in ASL. This process will take approximately two weeks, starting the week of

June 8<sup>th</sup> and concluding around June 21<sup>st</sup>. There is a possible chance that the evaluation will be completed days before June 21<sup>st</sup>, allowing more time for me to analyze the obtained data.

Starting the week of June 22<sup>nd</sup>, I will begin constructing an evaluation report based on my findings from the data collected during the evaluation. After participating in another peer review and receiving feedback, I will be able to make the final revisions of my evaluation report. After performing a complete analysis on the received data, I plan to execute the artifact revision process during the same week as our peer review to allow enough time to make major changes to the mobile application. After completing the final revisions of ASLingo, I will present my portfolio as a webinar session in front of CECH staff, faculty, and other guests. Finally, during the week of August 2<sup>nd</sup>, I will finalize my portfolio with my completed artifacts, evaluation, presentation, and other portfolio components, concluding my master's project and the Instructional Design and Technology program at the University of Cincinnati.

## **Appendix A – Usability Evaluation & Think Aloud Protocol Confirmation Email**

Good Morning/Evening/Afternoon Participants,

Thank you for agreeing to participate in the usability evaluation for ASLingo. ASLingo is a mobile application that will be used by adult learners within higher education and their community with an interest in learning American Sign Language. The purpose of the application is to teach American Sign Language by providing a dictionary and an interactive learning function. It is supposed to be utilized in tandem with an ASL course or workshop as an additional resource. Another purpose of the app is for users to find out about different ASL events in their area and connect with other users. Any feedback will help with the application's development and becoming available for future use.

**Please click here to test the mobile application prototype, ASLingo.**

For the evaluation, you will be asked to try out the touch-based wireframe of the mobile application and provide your thoughts about your experience in a think aloud video. You will be given a total of 6 tasks to complete while testing the mobile application using the Think Aloud strategy.

**What is the Think Aloud strategy?** You will record a brief video of yourself testing the application and completing the 6 given tasks. As you are testing, you must provide a narration of what you are doing in the application and offered detailed feedback during the experience. Once you are done testing the application, you are more than welcome to provide additional feedback before ending the recorded video.

To successfully complete the think aloud portion of the evaluation, you must have the following:

- A computer or mobile device
- Stable internet connection
- Video recording capabilities (i.e. Webcam, Phone camera, etc.)
- Audio recording capabilities (i.e. Microphone)

**\*If you are not able to create or speak in a video, you may also write your narration and feedback on a word processing document (ex. Microsoft Word, Google Docs, etc.)**

In addition to completing the Think Aloud video or document, you will be asked to complete a brief 10- question questionnaire based on you experience (which I have attached to this email)I have attached a usability evaluation instruction document that includes detailed instructions on how to successfully complete the think aloud video, the list of tasks, and send the evaluation video/document and questionnaire to me. I have also attached the Usability Questionnaire document. Please make sure to reserve a quiet space with little to no distractions for the evaluation.

Once you are finished recording your video, please send me a link or file of the video and documents using OneDrive, Google Drive, Dropbox, Kaltura (videos only), and WeTransfer. Let me know if you have an alternative option you prefer to use. The attached usability evaluation instruction document provides more details.

The entire evaluation should take approximately between 15 – 30 minutes. I ask for you to please complete this evaluation by June 21<sup>st</sup>, 2020. If you have any questions, comments, concerns, or can no longer participate in this study, please contact me as soon as possible.

Thank you again for your participation!

Kayla McGill

## Appendix B – Usability Evaluation Instruction Document

Thank you again for participating in this study. You will be evaluating the mobile application's usability interface. The purpose of this test is to determine the application's user-friendliness, ease of use, and user satisfaction. You will be completing this test by performing the following:

- **Think aloud video** – For this portion, you will be recording a video of yourself testing the application and completing the 6 given tasks. As you are testing, provide a narration of what you are doing and detailed feedback during your experience. Once you are done testing the application, feel free to provide additional feedback before ending the video.
- **\*Word Processor** – If you are unable to speak in a Think Aloud video, you may also write your narration and detailed feedback on a word processor such as Microsoft Word, Google Docs, etc.
- **Usability Questionnaire** – You will be given 10 questions to rate your experience based on the categories. With honesty and the best of your ability, please rate each statement based on your testing experience.

### Usability Evaluation Task List

The following lists are the tasks you are asked to complete. Please make sure to narrate your actions and provide detailed feedback as you are recording your video or writing your document:

1. Create an account and reach the main menu
2. Log in and go to your profile
3. Go to the Learn page and complete the ABC lesson.

4. Go to the Social page
5. Go to the Community page
6. Go to the Chat page

Once you are finished, please save, and proceed to answering the Usability Questionnaire. The questionnaire is a 10-question, Likert Scale survey. Please answer each question honestly based on your testing experience by highlighting the number, making the number bold, adding shapes, or anything that will make your chosen answer obvious.

Great job! You have completed the usability evaluation for ASLingo. Please share your video and document using the following methods:

- [Kaltura](#) – If you have a UC account, you may upload your video to your Kaltura account. You can only send videos with Kaltura, so please send the document along with the completed Usability Questionnaire via email or any of the options below.
- [WeTransfer](#) – If you do not have a UC account or prefer to use another method, you can also send the video and document using WeTransfer. To send the video, please follow the instructions on the website. You will need my email ([mcgillkn@mail.uc.edu](mailto:mcgillkn@mail.uc.edu)), and your own email. It is optional, but you may also include a message with more details. (Note: You do not need an account to use this service, but it is an option.)
- Other Alternatives – If you do not want to use any of the above tools, you can also share the video and document using OneDrive, Google Drive, and Dropbox.

The entire evaluation should take approximately between 15 – 30 minutes. As I mentioned before, please complete this evaluation by June 21<sup>st</sup>, 2020. If you have any questions, feel free to contact me anytime.

**Appendix C – Modified System Usability Scale Questionnaire**

Please rate your experience by circling a number on each statement below.

<b>1= Strongly Disagree, 2= Disagree 3= Neutral, 4= Agree, 5= Strongly Agree</b>					
<b>Effectiveness</b>					
1. I was able to complete all the tasks successfully in the mobile application.	1	2	3	4	5
2. I thought the mobile application was easy to use.	1	2	3	4	5
<b>Efficiency</b>					
3. I was able to complete each task quickly without problems.	1	2	3	4	5
<b>Satisfaction</b>					
4. I think that I would like to use this mobile application frequently.	1	2	3	4	5
<b>Learnability</b>					
5. I feel like I have learned how to use the mobile application effectively by completing the tasks.	1	2	3	4	5
<b>Memorability</b>					
6. I am confident that I will remember how to use this mobile application if used in the future.	1	2	3	4	5
<b>Errors</b>					
7. During the evaluation, little to no errors while completing all the tasks.	1	2	3	4	5
<b>Cognitive Load</b>					
8. The application navigation was easy to understand and memorize.	1	2	3	4	5
9. The page layout of the application was simple to understand.	1	2	3	4	5
10. The information on each page was easy to process and was not mentally overwhelming.	1	2	3	4	5

### Revision Notes

- My peer, Lacey suggested either combining or rephrasing the beginning of the introduction section. She also offered the idea of switching the first two sentences to create a better flow.
- Lacey mentioned using first person in the paper (ex. I, my, me, etc.). I reviewed examples of evaluation plans and they used first person. Therefore, I am not sure if it is allowed or not.
- Lacey noticed a few word-spacing issues in my introduction paragraph that I plan to fix.
- Within the background section, Lacey suggested I define the “we” in my explanation by providing names or something else to be more specific.
- Within the background section, there is a sentence that Lacey suggested I start with at the beginning.
- I applied error when citing sources in text. Lacey suggested I remove the page numbers since the citations are not direct quotes.
- Lacey pointed out a logical point about the Think Aloud methodology. Since the application focuses on the deaf community, Lacey suggested applying a method that allows individuals within the deaf community to participate in the evaluation.
- Lacey asked if the memorability explanation in the PACMAD breakdown meant that participants would walk away. My plan is to clarify the strategy of this step.
- Lacey suggested I simplify the timeline for my master's project. I made it specific to help me stay on track to complete things on time. Therefore, I feel more comfortable keeping it the way that it is.

- Lacey recommended adding an estimated time length for the evaluation to let participants know how long the process would take approximately.
- I forgot to include the page numbers in the table of contents. I plan to add the page numbers so readers know the exact pages of information.
- I also plan to add more detailed instruction on how to fill out the questionnaire. I'm going to instruct the participant to either bold or highlight their selected choice.

## References

- Bigby, G. (2018, October 23). How to perform a usability evaluation. Retrieved May 22, 2020, from <https://dynamapper.com/blog/19-ux/427-how-to-perform-a-usability-evaluation>
- Derome, J. (2018, September 12). Moderated Vs. Unmoderated Usability Testing: The Pros and Cons: UserTesting Blog. Retrieved May 24, 2020, from <https://www.usertesting.com/blog/moderated-vs-unmoderated-usability-testing>
- Duce, D. (2013). Usability of mobile applications: Literature review and rationale for a new usability model. Retrieved May 24, 2020, from [https://www.academia.edu/38056134/Usability\\_of\\_mobile\\_applications\\_literature\\_review\\_and\\_rationale\\_for\\_a\\_new\\_usability\\_model](https://www.academia.edu/38056134/Usability_of_mobile_applications_literature_review_and_rationale_for_a_new_usability_model)
- Garcia, A. (2013, November 27). UX Research Standardized Usability Questionnaire. Retrieved May 24, 2020, from <http://docplayer.net/61520362-Ux-research-standardized-usability-questionnaire.html>
- Gómez, A. (2018, September 9). What is WeTransfer, what is it for and how does it work? Retrieved May 24, 2020, from <https://www.ecommerce-nation.com/what-is-wetransfer-what-is-it-for-and-how-does-it-work/>
- Hammontree, M., Weiler, P., & Nayak, N. (1994). Remote usability testing. *Interactions*, 1(3), 21-25. doi:10.1145/182966.182969

Harrison, R., Flood, D., & Duce, D. (2013). Usability of mobile applications: Literature review and rationale for a new usability model. *Journal of Interaction Science*, 1(1), 1.

doi:10.1186/2194-0827-1-1

Luchita, E. (2019, March 2). 8 tips for writing great usability tasks. Retrieved May 24, 2020, from <https://maze.design/blog/write-great-usability-tasks/>

Nielsen, J. (2012, January 15). Thinking Aloud: The #1 Usability Tool. Retrieved May 24, 2020, from <https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/>

Saleh, A. M., & Ismail, R. B. (2015). Usability evaluation frameworks of mobile application: a mini-systematic literature review. *Global Summit on Education GSE*.

Schall, A. J., & Horst, R. L. (2006). Demonstration of Remote Usability Testing Practices and Procedures. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 50(20), 2284-2287. doi:10.1177/154193120605002010

Thomas, N. (2019, September 13). How To Use The System Usability Scale (SUS) To Evaluate The Usability Of Your Website. Retrieved May 24, 2020, from <https://usabilitygeek.com/how-to-use-the-system-usability-scale-sus-to-evaluate-the-usability-of-your-website/>

Zahra, F., Hussain, A., & Mohd, H. (2017). Usability evaluation of mobile applications; where do we stand? *AIP Conference Proceedings*. doi:10.1063/1.5005389