

Contributions:

David Au:

He will plan, coordinate, and conduct the interviews using the master/apprentice style, write the backgrounds of the interviewees as well as the processes that occur during the interview, and also establish the appendix.

Randy Shi:

He will work with Dave on the competitive analysis components by focusing on apps that are related to our project idea and also conduct a general overview for spelling, grammar, formatting, and mistakes.

Dave Liu:

He will develop a concise overview of the problem our app solves and also work with Randy on the competitive analysis components as well as conduct a general overview for spelling, grammar, and formatting.

Jaesung Lee:

He deals with the problems that our project will be tackling and propose a suitable solution to the problem and also help develop the competitive analysis against the context-learning app.

Problem and Solution Overview:

Problem: Develop a way to passively allow a person to learn a language, or at least a translation of foreign keywords, while they enjoy themselves.

Solution: Read an engaging story to the user, but replace some words with the foreign language (in proper grammar) and allow the user to customize how much grammatical information gets explained as well as how often words get replaced. In doing so, the app utilizes context-learning to cognitively associate the replaced words with specific ideas based on the story or text being read. Higher exposure to those same ideas again, allows the app user to remember and use foreign words more easily.

Target Users' Background:

Person A:

Person A's job is to be the Development Technician, AV Support, and Student Lab Coordinator. Juxtaposing with other employees in the vicinity, he maintains his job for over eighteen years and he is considered to be the senior employee. He has two kids and lives in a house in a nearby city of the UC Berkeley campus. One of the kids is in middle school and the other one is in high school with the age gap of three years. He spends time with his kids only on night time during the weekdays and weekends. He has a priority for the family for nighttime ranging from conducting garden work to spend one-on-one time with the kids. In terms of linguistic skills, he and his family are a bilingual speakers.

Person B:

Person B's job is to be the Senior Producer and Coordinator for webcasted videos for some Berkeley courses. Juxtaposing with other employees, he has worked for the department for approximately three years. He has only one child who is in the elementary school. He spends time with his son during the evenings and all day during the weekends since his job does not require him to stay beyond 5pm. He is also lived in a nearby city that is close proximity to the UC Berkeley campus. He prefers to take priority in his work during the day and evening for his family in order to balance out between work and family. In regard to linguistic abilities, he is the only member in the family that is bilingual and everyone else are monolingual.

Person C:

Person C's job is an Engineer in the EECS department. His main job in regard to the EECS courses is to develop educational labs, provide equipment and supplies, and supports the instructors. He does not have kids, so he has no priority towards the family and can focus most of his attention at work. In addition, he lives in an apartment in a city that is nearby to the UC Berkeley campus. Therefore, he can prioritize work by being able to work during the evening since he has no commitment to family. He also likes to spend extra time not at work for the weekend doing various activities such as riding bike around the city. He loves to travel, both locally and internationally. In retrospect to languages, he only knows English for his linguistic skill.

Contextual Inquiry:

The Interview

Each interview has a unique characteristic from each other. Furthermore, we will discuss the verbal skills of a foreign language. Person A clearly has children who are bilingual, so they are exposed to language other than English. Furthermore, both children are middle of taking a foreign language class during the weekday while attending chinese school during the weekend. Therefore, they are learning two languages at same time. Our focus for the interview will be the process when one of the children are trying to learn Mandarin language since they are learning it in a casual way. I will be asking the parent as a third party perspective as I watch his kids learning in class. In the other hand, Person B wants his kid to acquire a new language in a library settings during the weekends and uses the kid book for the weekday. Our focus will be when they visit the library to witness a public interaction of learning the language. Lastly, Person C wants to learn Japanese language as a hobby and has no commitment to children since he is single. Unlike the other two interviews, he learns verbally from fellow friends casually in different locations since he spends the outdoors the most when he is not working. Therefore, it clearly demonstrates that each interview does indeed have a unique feature.

For Person A, the desired environment is a Chinese school classroom setting and the interviewee is a parent who helps around in the classroom as a third party perspective. I was permitted to remain inside the classroom and witness the interaction in learning Mandarin. I noticed the teacher write some of the Chinese characters on the board and pronounce it to the students with context clues in order to give them a hint of the meaning of the word. The interviewee's kid walks up to the board upon being called to say the translation for one of the words. Next, he gives an example in front of the class in Chinese of when to use the word verbally. Lastly, he would try to use the new character and write it into a sentence on the board. I ask the following questions from the appendix to the interviewee while the students are on a break. In addition, I ask his child on how he would know the meaning of the chinese character, which is label as Q2. He clearly shows mastery in pinyin so he use that ability to use Google Translate for help. The process took up about 1.5 hours since that it is the duration of a class period.

For Person B, the environment for the interview is in children library where my interviewee and his child are interacting with each other on a kid book for Spanish. I will be watching them interact with each other by reading several foreign language books. The interviewee would read a book to his child once then let the kid read it again on his own pace. The process of reading a book is a cycle of interviewee reading to his kid then his kid read it by himself for three cycles. During the time the kid reads to himself I conduct some prepared questions found in the appendix to the interviewee. The amount of reading time in the library was about two hours and the interview takes up those two hours.

For Person C, the environment is essentially a comfort place for him, which is hanging outside with a friend who is fluent in Japanese. For my interview, I am conducting the master-apprentice model when my interviewee is with his friend in a Japanese theme restaurant. I shadowed my interviewee for this interview as he talks to his friend. I notice as they enter the restaurant they try to greet the waitress in Japanese. When they receive the menu, they take a little longer to order as they try to pronounce some of the food in Japanese instead of the English words in the menu. They try to make a conversation with each other in Japanese and his friend replace some word in English in order to understand the context of the conversation. After one hour has passed from eating and talking, I decide to conclude the interview with the following questions in the appendix and a snips of his responses of what he thinks out loud.

Juxtaposing between the three different interviews, I notice a stark comparison in regard to how they trying to learn a new language. All three of the interviewees require at least two people present in order to understand words verbally. You need to have one person who wants to know the desired item to be translated and the other person who has that particular knowledge of the item in that particular language. In regard to learning a language in written form, all the interviewees have textbooks and tv shows in another language as a resource for them. The acquisitions of the textbooks varies between the interview. Person A has children who are taking a foreign language class in school for weekend and weekday. In the other hand, Person B buys kid books or visit the library for his child to learn a language at early age. Likewise, Person C visits the bookstores and purchase the books he needs to learn the language. In respect to television, all interviewees agree on using tv shows with the desired language as a subtitle, which proves to be efficient.

Top 5 User Needs

1. The presence of two entities is needed to practice a foreign language.
 - a. This particular need will be immediately handled due to the fact that it will be the core function of our project. The application will essentially have our VUI replying back to the user in order to indirectly point out there would be at least two individuals to do the learning.
2. For children, one of the idea is to start practicing a language at early age.
 - a. We are addressing this particular need in our design by extending our age limit to children who has command of fifth grade level knowledge or higher as a way to start learning a new language at early age.
3. In order to practice more about a foreign language, an individual could go to a community and practice verbally to those who speak that language.
 - a. This particular need can be established in our design after some influences from our app. Our app is to allow user to learn a language at a casual speed. Thus, the user can have the choice to learn more through the need that is being described after having some exposure to the language learning.
4. An individual can gather some language learning textbooks to learn the writing aspect of a language.
 - a. The need from the contextual inquiry is impossible due to the fact that the project is essentially towards VUI. We do not have the ability to do the written aspect of a foreign language since it requires more than VUI.
5. An individual can watch tv shows in the language the individual wants to learn using subtitles.
 - a. We will not be addressing the need for tv shows in our design due to the fact that our project will only be focusing on VUI aspect. The idea of watching tv shows with captions to learn foreign language is beyond the scope of our ability to generate from the VUI function.

Competitive Analysis:

Application 1: ili - The Wearable Translator¹

Target User Group - *ili* seems to target mostly people who are traveling to foreign countries since they can use the device to instantly do a voice translation, and it is similar to our group project in the translation method but it differs because it does not offer the learning aspect of our project.

Functionality - *ili* offers a quick voice translation between English, Chinese and Japanese back and forth for convenience so that people can communicate even if there is a language barrier, and our proposed idea will do the same thing but also be able to help teach the language and not only just translate it.

Usability - *ili* is successful when it comes to being quick, very simple, and it can be used without an internet connection unlike Google Translate, but it is limited to only English, Chinese and Japanese; although our app can only handle English and German, it will aim to improve upon *ili*'s effectiveness by maintaining simplicity and usability while providing extra features like the learning aspect.

¹ <http://www.iamili.com/index.html>

Application 2: Duolingo²

Target User Group - This application targets individuals trying to learn how to speak, read, and understand a new language. It appeals to individuals of all ages, with its cartoon-like characters and interface. Plus it's free- making it highly accessible. Our app is similarly free, but focuses on being for people with at least the English fluency of a ten-year old.

Functionality - This app allows users to practice how to say, read, and respond to conversations in another language. Users can even practice through an automated conversation with suggestions on how to improve after responding. Our app aims to develop similarly engaging aspects through the stories and intonation as well as embellishment to our context learning (" 'Schwert' is sword in this sentence, scary!").

Usability - The app is easily accessible for anyone with internet access. Each lesson takes around 5 minutes, and the app has an option to remind you gently through email or notification, in order to consistently practice. The interface is clean and simple, but it's difficult to use this app as a serious class. However, our app offers the unique advantage of exclusive focus on context learning. We replace english words with foreign words to mesh the languages together- allowing them to cognitively become more associated with relevant context, and thus, making the words easier to remember.

² <https://www.duolingo.com/>

Application 3: Voice Translator Free³

Target User Group - Traveling adults who needs a quick translation, and who have a mobile data plan. (Middle and upper-class traveling adults.) Our app does not require internet access except to initially download the app. There will be an option to upload your own books, but there will be several dozen that come with the installation.

Functionality - This app translates a person's voice or text into text of another language. However, there is no learning aspect to this application- it serves as a strictly voice-only interface. This app cannot be used for most learning purposes, unlike our app. It provides neither feedback nor grammatical context. However, it works well to translate more than fifty languages and is available for Android.

Usability - This app is reasonable to use, but lacks responsiveness to the user. Our app aims to teach, instead of dictate an answer. We aim to develop an app that has an engaging VUI, one that draws the user's intention instead of a bland translation.

Application 4: Rosetta Stone Mobile Apps (Multiple)⁴

Target User Group - Adults who want to seriously learn a language and develop fluency within around a year or two, OR parents who want their kids to learn and develop English phonics, depending on the specific application. This conglomerate of apps rivals our target audiences, except for kids below the age of ten. In a sense, our app is more focused than what they can provide on the context-level. Their closest match to our functionality is the live-tutoring app, which is not free.

Functionality - These apps are meant to help an individual develop phonics and grammar skills, while also offering an option for live-tutoring, to develop context skills.

Usability - All of Rosetta Stone's apps are made to be engaging and encouraging. Unfortunately, quality and depth comes at a price- these apps are not free and may deter users due to their modularity- they make apps specifically for phonics, grammar, live-tutoring, and the other portions of language learning. This allows them to generate more revenue, but deters users from a wholesome learning experience. Our app aims to focus in on a single specific form of learning- contextual learning at maximal cognitive benefit for minimal physical effort and price.

⁴ <http://www.rosettastone.com/mobile-apps>

Application 5: Google Translate⁵

Target User Group - Anyone who needs a quick translation (anyone who can type or dictate text). Our target might try to hover over each word in order to read the definition and learn the foreign language.

Functionality - This app is meant to only translate text into another language. Our app teaches users new words through context learning and quizzes.

Usability - Getting a voice-converted conversation would be difficult to grammatically understand. By changing one word at a time, we help individuals focus on the nuances and grammar of words- emphasizing learning a language over translation. It would be tedious for a person to use a translation app to actually learn a language- they wouldn't understand grammar that we would explain through our app, whenever a word gets switched out.

⁵ <https://translate.google.com/>

Competitor Analysis Summary

	Target User Group	Functionality	Usability
ili: Wearable Translator	People who travel, and want to converse in a foreign language.	Instant translations for communication.	Great for communication, but not for learning. Expensive.
Duolingo	People of all ages can use their app.	Leisure learning.	Quick, Daily, Free. Good for learning.
Voice Translator Free	People who travel, and need a quick translation.	Dictation or text converted into translation.	Have to open the app and type if you can't pronounce. Not for learning.
Rosetta Stone Apps	People of all ages can use their apps.	Learn a language rigorously.	Great for learning, but expensive.
Google Translate	Anyone who needs a translation into another language, whether through text or voice.	Semi-instant translations for communication.	Similar to other translators, not ideal for learning.

Within these competitors, our application stands out for two reasons: contextual learning, and engagement. These other apps are not strictly for learning; some of them can only translate, but cannot allow the user to actually understand the foreign language. Rosetta Stone is not free either. That leaves Duolingo as a significant competitor to our contextual-learning app. Duolingo does offer similar word-replacement, but does not deliver the story-form that our app captures. Duolingo still feels more like a light-training routine than a leisurely activity. Through context-learning, the user becomes cognitively conditioned to associate specific foreign words with ideas through the story being narrated. In this manner, users may be able to effectively recall learned words in the right context, and still simultaneously enjoy a story.

Appendix:

Questions⁶

Q1: What tools do you tend to use when you want to learn a new language?

Q1a: What can you do to teach your children a new language? (Person A and B only)

Q1b: When do you think is best age for kids to learn a new language? (Person A and B only)

Q2: What tools do you use when you are stuck trying to translate a word?

Q3: How much time do you spend learning a language?

Person A

Q1:

"I would use Rosetta Stone for myself and my kids when they are not going to Chinese school."

Q1a:

"They would read textbooks the most to learn the language. Otherwise, I make them go to a community that speaks that language to make them more fluent. Worst case, I can send them to extra school if they offer it like Chinese school during the weekends."

Q1b:

"We should have them learn the language at the earliest age."

Q2:

"I use Google Translate for help." (Children and my interviewee both state the same)

Q3:

"I prefer to do some language learning for one hour. My kids should be spending 1 or 2 hours in a language."

⁶ The answers for each question for each interviewee are a snippet of the full response. The snippets consists of important part of their answer to the question.

Person B

Q1:

"I would prefer Duolingo to learn a language for myself. If it is for my kid, I would use Rosetta Stone when I do not have time to teach him myself. I want a two person interaction to help my kid learn the language."

Q1a:

"I would personally interact with my kid and help him learn a using a kid book to understand the basics in the language."

Q1b:

"I suggest that learning the language at an early age, which I am doing with my kid."

Q2:

"If I need help, Google translate is my friend."

Q3:

"I prefer to do some language learning for one hour. If it is for my kid, I would want him to spend at least 1-2 hours. "

Person C

Q1:

"I use Duolingo since it looks more convenient for me to learn the language without real commitment."

Q2:

"I would use google translate when I am stuck in a word or phrases."

Q3:

"I prefer to do some language learning for one hour."