IMA2: Usability Testing Report

Duolingo

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Team Duo Trio

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Introduction

Duolingo is a mobile app for language learning. The app offers lessons in a variety of languages—even those of fictional worlds—and allows users of all skill levels to learn or brush up on their language of choice. Users are encouraged to practice daily, engaging in lessons and drills that build upon each other. The app allows users to take lessons of increasing difficulty, building their skill set, and incorporates gamified elements to increase user engagement and motivation. Gamified elements include the ability to earn achievement badges and power-ups as well as the ability to personalize Duolingo's owl mascot. There is also a social aspect to the app, which allows users to connect with friends as well as join language clubs to practice their skills with other users.

The Duo Trio team members conducted one-on-one usability tests with six individuals including coworkers and family friends. Tests were conducted using four iOS and two Android mobile devices. The team members asked the testers to complete seven tasks and captured the number of taps each task took, the amount of time each task took, the number of errors, and any other relevant observations. After completing all tasks, each tester then completed two surveys.

Methodology

Sessions

Each team member (henceforth referred to as "administrators") recruited two participants from their personal or professional circle and scheduled a time and place to complete the usability tests. Participants 3–6 were tested in an office setting, and they used their personal iPhones. Participants 1 and 2 were tested in the administrator's home and they used Android devices. At the beginning of each session, the administrator described for the participant what would happen during the usability test, explaining that they would observe the participant as they completed tasks, encouraging them to speak out loud, and explaining that the administrator could not answer any of their questions. The administrator then asked the participant a series of questions prior to starting the usability test. Questions included:

- What is your occupation? What do you do exactly?
- Have you used mobile applications before? What do you use most?
- Have you used any language learning mobile apps? What are they?
- What is your mother tongue (a first language)?
- Where is your home country (if not USA)?
- How do you use your mobile phone (or tablet)? In a typical day, for instance, tell me what you do, at work and at home, with your mobile device.
- Do you have any favorite mobile app?

The usability test asked each participant to complete seven tasks:

1. Complete the steps necessary to create a new account. Stop after your account has been created.
2. Find one language you would like to learn and add it to your profile/account.
3. Change the language to another language you would like to learn.
4. Turn off and turn on auditory sound.
5. Go to a setting/preference and change a setting option.
6. Set a reminder.
7. Add a friend.

The administrator observed the participant, recording the start and stop times, the number of taps to complete each task, errors, and any other observations. Tracking the number of taps and amount of time spent on each task allowed the administrator to gauge how quickly the participant was able to adjust to and learn the app's interface.

The administrators noted that, upon opening the app and tapping "Get Started" to begin Task 1, the participants were immediately asked to select a language (Task 2) before setting up an account. They were then prompted to choose a goal and take a pre-test, which varied in length depending on the participant's level of prior knowledge. Counting the taps for the pre-test significantly added to the total and proved difficult to capture accurately, so for the purposes of this report, the administrators have omitted those taps.

After Tasks 1 and 2, completing the remaining tasks proved to be straightforward. One exception to this is that all participants encountered a pop-up advertisement asking if they would like to upgrade to Duolingo Plus for an additional fee. All opted not to. After completing the seven tasks, the administrator asked the participant to study with the app for approximately three minutes and then provide overall impressions. On average, the task completion lasted from 10 to 20 minutes.

Once the usability test was complete, the administrator answered any questions posed by the participant during the test. Then, each participant completed two surveys gauging the participant's:

- Perception of how easy or difficult each task was
- Satisfaction with the Duolingo app

The task survey used a 5-point Likert scale while the satisfaction survey used a 7-point Likert scale. Finally, the administrator thanked the participant for their time and closed the session.

Participants
The participants included four adult professionals (three female and one male) and two male teenagers for an even gender split and an age range of 14 to 46.

Participant	Name	Gender	Age	Test Date	Participants in Session
1	Luis Trabanino	Male	16	3/4/19	1
2	Julio Trabanino	Male	14	3/4/19	1
3	Spencer Perez	Male	20	3/6/19	1
4	Diana Hamilton	Female	44	3/6/19	1
5	Haley DeLeon	Female	27	3/5/19	1
6	Jenny Hawley	Female	46	3/7/19	1

Results

Task Completion Success Rate
Each observer in the testing of Duolingo sat individually with participants to record their ability to complete tasks without being prompted. All participants successfully completed all tasks. Although some participants took longer to complete certain tasks, there were no critical errors.

Task Completion Rates

| Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6
1	√	√	√	√	√	√
2	√	√	√	√	√	√
3	√	√	√	√	√	√
4	√	√	√	√	√	√
5	√	√	√	√	√	√
6	√	√	√	√	√	√
Success	6	6	6	6	6	6
Completion Rates	100%	100%	100%	100%	100%	100%

Learnability: Time to Complete a Task Successfully
Each administrator recorded the time on task for each participant. Some tasks were slightly more difficult to complete than others, which is reflected in the average time on task.

1. Task 1 required participants to complete the steps necessary to create a new account (Mean = 7.5 minutes). Completion times ranged from 3 to 15 minutes, with the majority being less than 10 minutes. This task took the longest due to

the required personal information that needed to be entered and the pre-test for the participant's chosen language.

2. Task 2 asked participants to find one language they would like to learn and add it to their profile/account (Mean = 0.917 minutes). The range of times to complete this task was 0.75 to 1 minute, with the majority taking 1 minute.

3. Task 3 asked participants to change the language to another language they would like to learn (Mean = 0.917 minutes). The range of times to complete this task was 0.75 to 1 minute, with the majority taking 1 minute, just as with Task 2.

4. Task 4 was to turn off and turn on auditory sound. This task took a little longer (Mean = 1.04 minutes) due to the participants' difficulty finding the option in their settings. The range of times to complete this task was 0.75 to 2 minutes, with the majority taking less than a minute.

5. Task 5 was to change a setting option. This task had the third highest time (Mean = 1.17 minutes) as participants seemed to have difficulty navigating settings again. The range of times to complete this task was 0.75 to 2 minutes, with the majority taking less than 1 minute.

6. For Task 6, participants were asked to set a reminder. This task took the least amount of time (Mean = 0.75 minutes). Every participant took less than a minute to set a reminder.

7. Lastly, we asked our participants to add a friend. This task had the second longest completion time (Mean = 1.54 minutes) because of one participant's difficulty finding and utilizing the "add a friend" option. The range of times to complete this task was 0.75 to 3 minutes, with half taking less than a minute.

Time on Task
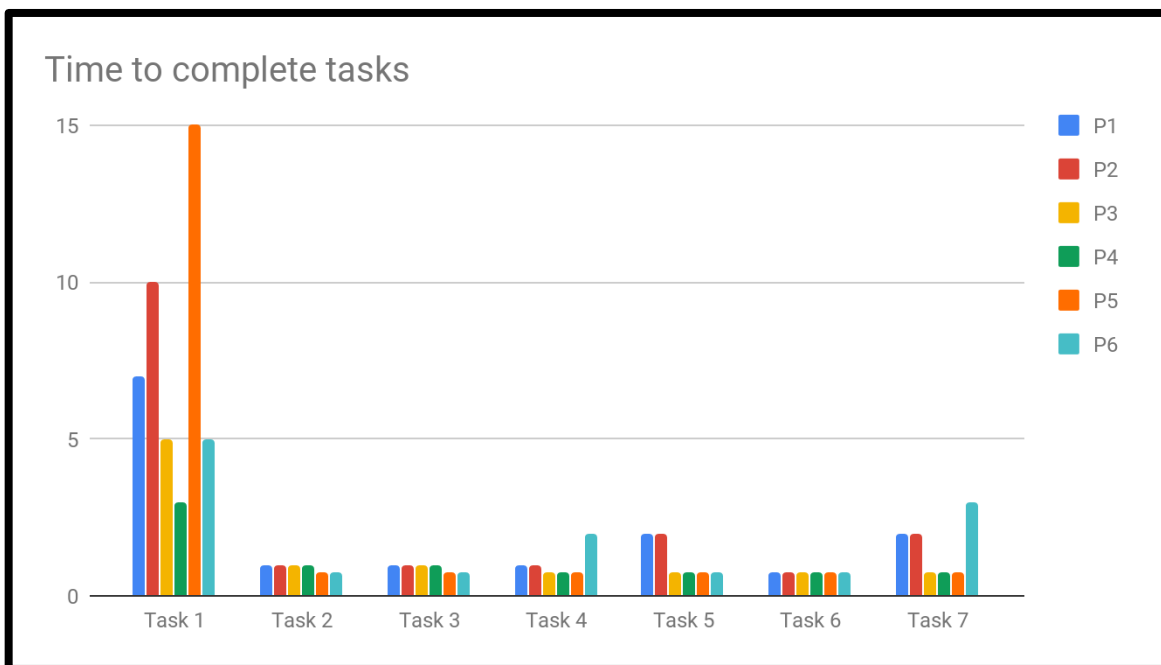
Errors

Each team member captured the number of errors participants made while trying to complete each task. No critical errors were made, although participants made more errors on some tasks than others. The task with the most errors was Task 7—however, all errors came from Participant 6. First, this participant had trouble locating the "find a friend" option, and then she had difficulty searching for a friend to add. The task on which the most participants made errors was Task 4, turning the auditory sound on and off. There were no errors on Task 2, add a language, and Task 6, set a reminder. These were the simplest tasks, as they required the least taps overall.

Errors

	P1	P2	P3	P4	P5	P6	Total	Average
Task 1	0	0	2	2	0	4	8	1.33
Task 2	0	0	0	0	0	0	0	0
Task 3	0	0	2	2	1	0	5	0.83
Task 4	0	0	1	1	1	9	12	2
Task 5	4	4	0	0	0	2	10	1.67
Task 6	0	0	0	0	0	0	0	0
Task 7	0	0	0	0	0	15	**15**	**2.5**

Summary of Data

The table below displays a summary of the test data. The highest average time on task and highest average number of errors are bolded.

Summary of Completion, Learnability (Time on Task), Errors

| Task	Task Completion	Learnability (Mean Time on Task in Min.)	Errors (Average)
1	6	**7.5**	1.33
2	6	0.917	0
3	6	0.917	0.83
4	6	1.04	2
5	6	1.17	1.67
6	6	0.75	0
7	6	1.54	**2.5**

Task and Satisfaction Questionnaire Results

Most of the participants (83.4%) agreed (i.e., agree or strongly agree) that they were satisfied with the app and its ease of use. The majority of participants (83.3%) agreed that it was simple to use Duolingo. All participants (100%) also agreed that they could: effectively complete tasks, complete tasks quickly, and they felt comfortable using the app.
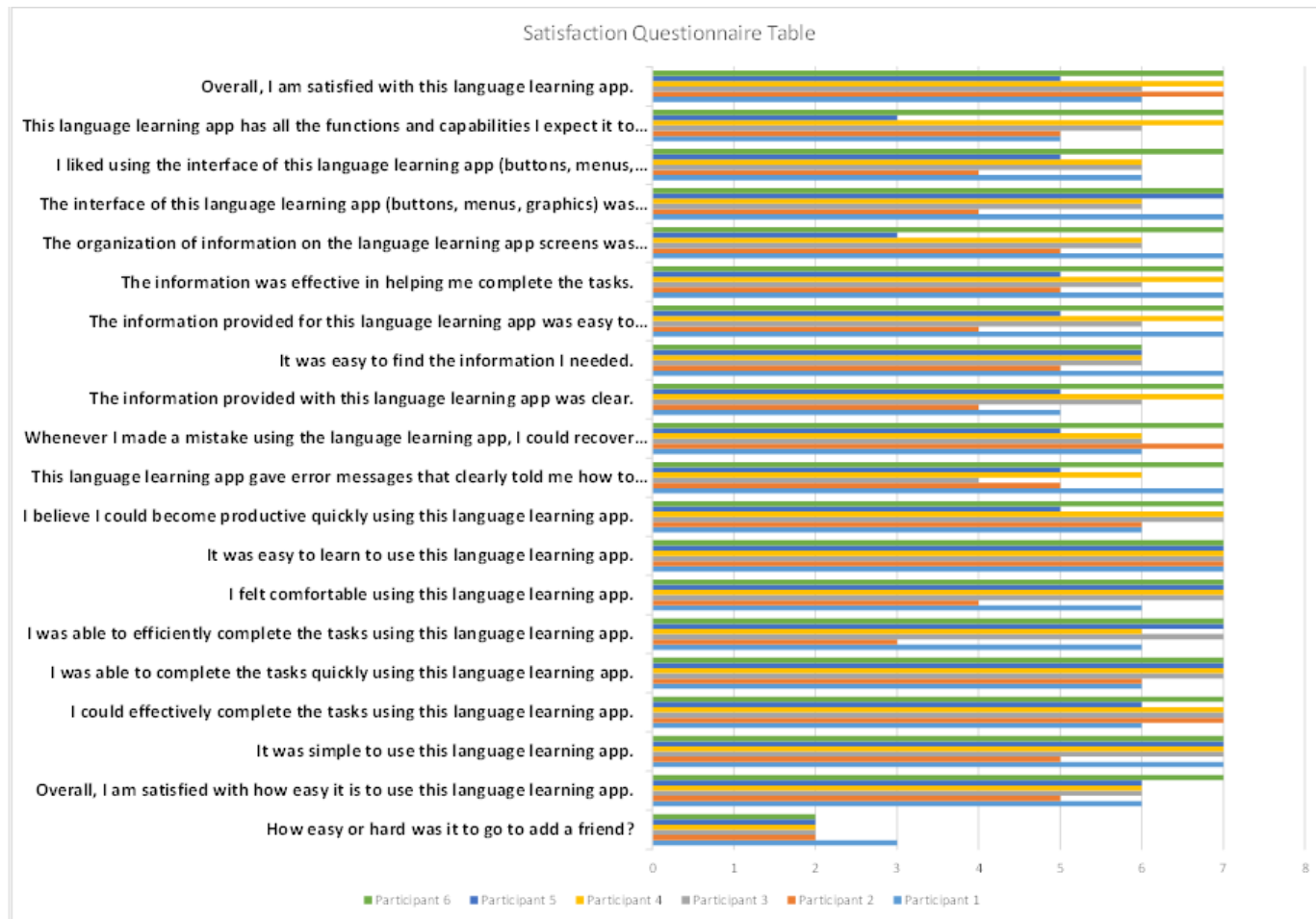
The following graph reflects the responses of the participants regarding the tasks that they completed during the usability test.

Task Questionnaire Responses

Task Questionnaire Responses
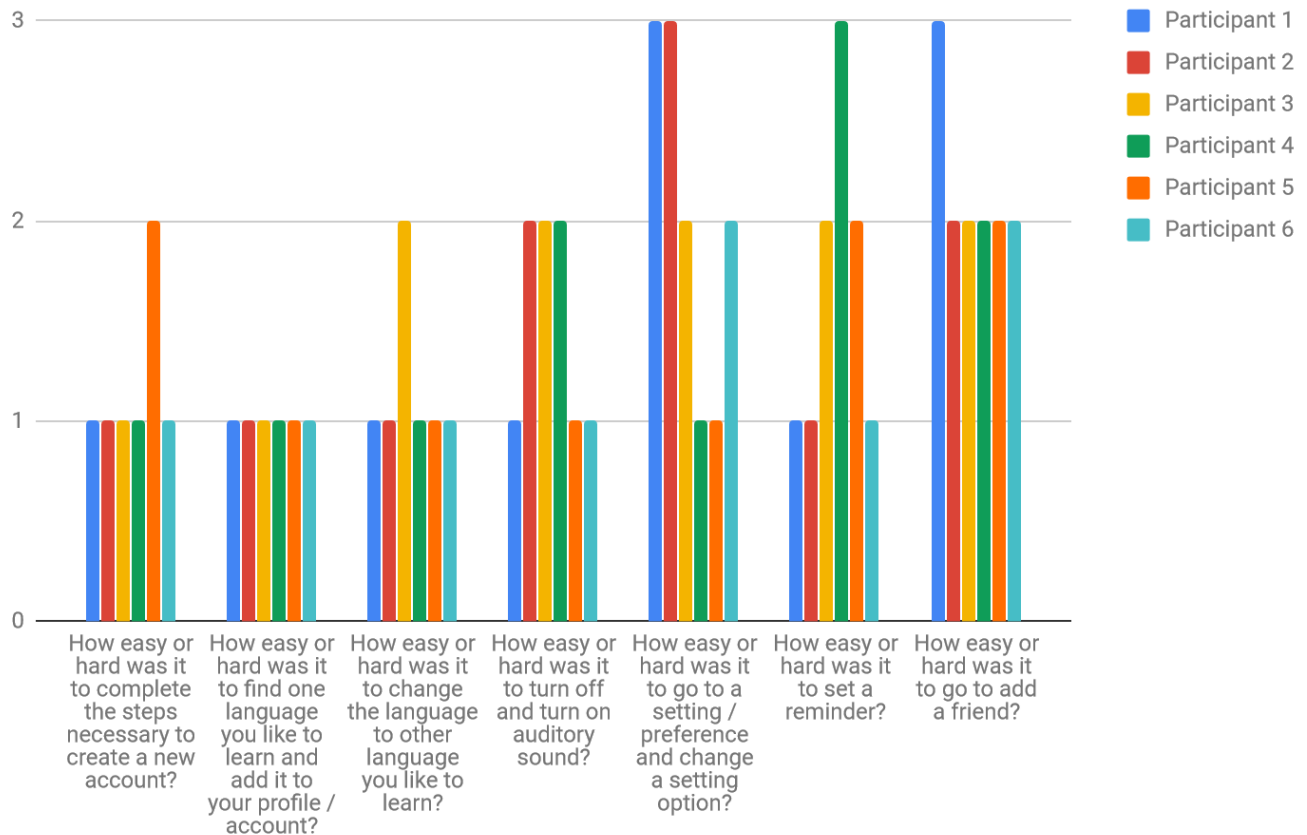
Satisfaction Questionnaire Responses

User Experience

Out of the six respondents surveyed, all six found this app to be useful, convenient, and were overall satisfied. The vast number of languages to choose from added a lot of utility to the app. Many reported that this app was easy to use and navigate, although they had more difficulty with certain tasks. Particularly, all participants reported less satisfaction with Task 7.

Participant 4 stated that this is a useful app, as it is something she can do during her work breaks or while watching television. Participants 5 and 6, who both work for an e-learning company, commented favorably on how intuitive the app is, how the lessons build on each other, and how the app motivates the learner. Participant 3 thought the app is up-to-date as far as learning apps go, and he noted that the design doesn't seem like it is for kids. Participants 1 and 2 also felt it is very easy to use and facilitates learning even though it doesn't include videos that they can watch (such as on YouTube).

Recommendations

Overall, Duo Trio has few recommendations, as the app proved to be intuitive for most users. Below are some recommendations for minor changes.

Explanatory Pop-Ups (Task 4 and Task 7)
Task 4 required participants to go into the settings for the first time, which is off of the main dashboard and was sometimes difficult to find. Alternatively, adding a friend was on one of the main pages, while users may anticipate it being in the settings.

Change	Justification	Severity
• Add pop-ups explaining the sections of the app when using it for the first time	Although most users easily navigated the Duolingo interface, each section is represented by an icon and there is no explanation. At least one participant struggled briefly. Adding pop-ups as the user is navigating the app for the first time would help them learn the app even faster and increase learnability.	Moderate

Conclusion

Group Duo Trio set out to perform usability tests on the Duolingo app and found the results to be user friendly. Overall, the participants found the interface of the app to be easy to navigate and understand. A couple participants did have brief trouble finding the settings and understanding what some of the sections meant. The **learnability** of the app, however, made it easy for those who had never experienced it before, as well as those participants returning to use it, to adapt. Each usability test took no more than half an hour, as participants were able to quickly perform the tasks and take time to study with the app, making it very **efficient**.

Memorability proved to be effective as well, as the participants that had used it were able to reestablish proficiency in the limited time for testing. There were generally few errors, although one participant struggled with a couple tasks. However, there were no critical errors. **Satisfaction** with this app is high amongst the testers in this group as per the satisfaction surveys. The **utility** of this app is commendable: it does what the user needs in the sense of enabling them to learn a new language. The **usability** of this app is also positive as it had easy and pleasant features for the user. Duolingo is a **useful** app and this group would recommend it to others.