Assignment M1

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***Abstract*—This project will examine the task of listening to multiple podcast episodes in succession, focusing on the act of selecting, queuing, and playing several podcast episodes for listening during a single session or in multiple sessions. Specifically, the project will analyze and redesign the Apple Podcasts application, seeking to improve its current interface for queuing podcast episodes.**

1 NEEDFINDING EXECUTION 1 – SURVEY

The first needfinding plan comprised a survey to gauge overall podcast listeners' listening habits. The survey received 25 responses, with respondents either being fellow OMSCS students or my personal acquaintances.

1.1 Results

Table 1 presents a summary of survey results, displaying the most popular responses for select survey questions. The percentage of respondents that selected these top responses is also shown.

Table 1 — Summary of top responses for survey questions.

Survey question	**Most popular response**	**Percentage of respondents**
1. What application do you use to listen to podcasts?	Apple Podcasts	52%
2. Why do you use your preferred podcast application?	The application is the default on my device	52%
3. How frequently do you listen to podcasts?	2-4 times a week	28%
4. How many podcast shows do you routinely listen to?	3-4 shows	44%

Survey question	Most popular response	Percentage of respondents
5. On average, how many podcast episodes do you listen to in a single listening session?	1 episode per session	56%
6. How long are your typical listening sessions?	30 minutes to 1 hour	60%
7. When I listen to podcasts, I am usually…	Driving	52%

1.2 Takeaways

Upon analyzing the survey results, I have concluded the following:

52% of respondents use Apple Podcasts. Of those Apple Podcasts users, **85% use it because it is the default application on their device.** Only **23% of Apple Podcast users select it because it is also intuitive or easy to use**. This analysis indicates that the vast majority of Apple Podcast users simply use it because it is already installed on their device. Intuitiveness and ease of use are secondary reasons and only considered by a minority of Apple Podcast respondents. On the other hand, of respondents that selected a podcast application because the "interface is intuitive or easy to use," 75% use an application other than Apple Podcasts.

This data does not conclusively denote that Apple Podcasts is unintuitive. However, it does support the notion that an interface redesign in order to optimize intuitiveness and ease of use may be appropriate.

Another takeaway is regarding users' listening habits. **The large majority (72%) of users listen to 1 or less episodes per session**. This indicates that the queuing redesign may not be utilized by such users, *unless* the feature allows the queue to persist across multiple listening sessions. Therefore, users that only listen to 1 or less episodes can still resume their queue at a subsequent listening session.

Lastly, only 16% of respondents listen to podcasts while "doing nothing else other than listening to the podcast." The remaining respondents are engaged in

other activities: **52% are driving, 32% are cooking, and 28% are working/studying while listening to podcasts**. This indicates that the queue redesign should adequately support interactions that do not require directly touching the device. Especially with driving and cooking, users may not be able to consistently interact with the device touchscreen safely.

1.3 Controlling for biases

To control for biases, the survey questions were agnostic to the respondent's selected podcast application. This reduced the risk of questions biased by my own personal experiences with the Apple Podcasts application. The questions were also reviewed by 2 objective acquaintances prior to distribution.

Additionally, to minimize any social desirability bias, the survey questions did not indicate what application interface was being redesigned. The questions were only focused on general listening habits and not on specific criticisms or praise of Apple Podcasts.

2 NEEDFINDING EXECUTION 2 – PARTICIPANT OBSERVATION

The second needfinding exercise was participant observation, in which I added multiple episodes to a queue and edited the queue in different contexts. The different contexts were in a car while driving, outdoors while exercising, at a desk while working, and sitting in a chair while concentrating fully on the podcast.

2.1 Results

2.1.1 *Quantitative Data*

For each context, I recorded the amount of time and number of touch gestures (e.g., click, long press, swipe) required to populate a queue of 5 episodes, change the playback sequence for 2 episodes, delete 1 episode from the queue, and clear the entire queue. These times are recorded after familiarizing myself with the interface—my notes on this familiarization process are detailed in *2.1.2 Qualitative Data*.

The context did not affect the times/clicks to complete each action, *except* for the driving context, where editing the queue was not safely possible. Therefore, the average of time/click results from all contexts (with the exception of the aforementioned driving context) are presented in Table 2.

Table 2 — Tasks conducted in participant observation exercise

Task	Average time to complete (sec)	Average number of touch gestures
Add 5 episodes to a queue	30.2	12
Move 2 episodes in queue sequence	10.8	6
Delete 1 episode	2.5	2
Clear queue of 5 episodes	7.1	10

2.1.2 *Qualitative Data*

While familiarizing myself with the application, I noted that finding the location to view the entire queue was quite difficult. In fact, I had to search for the solution on the internet to find out how to access the queue.

I also noted that while queueing episodes, I occasionally queued a show's whole catalog of episodes instead of just a single episode. This happened when accidentally clicking "Play last" on an entire show's thumbnail versus a thumbnail of a specific episode, as shown in *Appendix 7.1: Side-by-side thumbnail comparison.*

Additionally, there was no way to clear the entire queue except by deleting each episode individually, which I recorded as feeling quite tedious.

2.2 Takeaways

The quantitative data indicates that adding and manipulating the queue is relatively quick. With the exception of clearing the entire queue, actions are accessible through simple long presses or swipes. To clear the queue, I had to individually delete each episode as there was no option to clear all episodes—this is an area that can be improved.

Discoverability of these features is a major issue. To find the location of the queue, I had to search external internet sources. Additionally, the "Play Next" and "Play Last" buttons provide unnecessary functionality that only confused me—I tended to only use the "Play Last" button.

An expert user may be familiar with these features and easily add to or edit their queue. However, a beginner user may not be aware that these features exist or know where to access them. Therefore, the redesign should focus on increasing discoverability and reducing the confusion between "Play Next" and "Play Last" buttons.

2.3 Controlling for biases

To control for the potential confirmation bias due to my personal use of the Apple Podcasts app, I analyzed data gathered through performing a scripted set of tasks. Additionally, I performed the actions in predefined contexts that included contexts outside of my typical interactions with the application.

3 NEEDFINDING EXECUTION 3 – THINK-ALOUD

I conducted a think-aloud exercise with two participants, instructing each of them to discuss their thoughts on the interface while completing a set of predefined tasks (which were the same tasks I completed in my participant observation)

3.1 Results

Participant 1 does not currently own an iPhone and does not use Apple Podcasts. While completing the scripted tasks, the participant said:

- "'Play Next' and 'Play Last' are the options. The imagery displays what it means but you don't really understand until you click on it. Most of the time, I use 'Play Last.' 'Play Next' is a weird choice…. It should be a FIFO (first in, first out)"
- "…super painful, unintuitive, and very difficult to find anything about a queue or their nomenclature for the queue itself."
- "Feels intuitive to be able to drag an episode into a new location in the queue"

Participant 2 owns an iPhone and regularly uses the Apple Podcasts app but does not usually use the queuing feature. The participant said:

- "Oh, I just found the queue. I found the queue on accident, but it made sense. I have a lot in my queue that I don't know is there. I probably accidentally downloaded the whole thing or queued the entire series"
- "I do not know how many I've chosen and how to see what's playing next"
- "The location of 'Play Next' in the three-dot menu makes sense."
- "Why would I care what should play last?"

3.2 Takeaways

The participants overall had difficulty finding the location of the queue initially. There were no indications of where it was located, and Participant 2 found it by trying random touch gestures.

The touch actions themselves were intuitive to the participants—the long press or three-dot menu to access the "Play Next" or "Play Last" buttons made sense, as did the draggable episodes in the queue. Deleting by swiping to the left and clicking the red "Delete" button also was intuitive.

Most of the confusion seemed to be focused on finding the queue and the distinction between "Play Next" and "Play Last."

3.3 Controlling for biases

To control for observer and social desirability biases, I conducted the exercise by following a neutrally written script. I gave the participant instructions in the beginning and would remain silent throughout their interaction with the app. I would only prompt them to start the next action as soon as they completed the previous action in the script. This kept me from revealing any indications of the "correct" or socially desirable answer during the exercise.

4 DATA INVENTORY

4.1 Who are the users?

This is a question I failed to answer, as my survey questions were more focused on listening habits rather than the listeners themselves. Although the user types targeted by my problem space includes all users regardless of age, experience level, or frequency of listening, I failed to actually identify that demographic information in the survey. To fix this, I would add questions such as: How old are you? Where do you live? How long have you been listening to podcasts? How

long have you been using your selected podcast app? How would you characterize your general ability to learn or navigate smart phone interfaces?

4.2 Where are the users?

As indicated by the responses to survey question 7, *"When I listen to podcasts, I am usually…"*, users are most often in a car, in the kitchen, or seated at a desk. However, I could improve on answering this data inventory question by explicitly asking their physical location, as these locations are inferred from the contexts of the users' activities.

4.3 What is the context of the task?

Similar to *4.2 Where are the users?*, survey question 7 shows that 52% of users are driving, 32% are cooking, and 28% are working/studying while listening to podcasts. In general, most users listen to podcasts while doing another activity simultaneously.

4.4 What are their goals?

The responses to survey question 5, *"On average, how many podcast episodes do you listen to in a single listening session?"* indicates that some users want to listen to multiple episodes at a time. However, this is a more general answer to the data inventory which can be improved by specifically tying it to the queuing feature. An additional survey question can be added to poll if and why users use a queuing feature.

4.5 What do they need?

Users need to know the status of their queue: How do they access the queue? How many episodes are currently queued? As shown by the participant observation and think-aloud exercises, this information is not always readily discoverable or available.

4.6 What are their tasks?

From the participant and think-aloud exercises, users' tasks include creating a queue, accessing the queue, and editing the queue. However, these tasks were predefined in the participant and think-aloud exercises. An improvement could be to leave the interactions more open-ended, allowing the participant to naturally gravitate towards their own method of playing multiple episodes.

4.7 What are their subtasks?

Users need to select their desired episode and decide between "Play Next" or "Play Last" to add the episode to the queue. To edit the queue, they need to find the queue and drag episodes around or swipe to delete them.

5 DEFINING REQUIREMENTS

1. **Functional Requirement:** The interface support contexts/environments where users may not be able to readily interact with the app via touch.
   Evaluation factors: Users are able to queue episodes via an alternative hands-free method.
2. **Learnability Requirement:** The interface should include an easily discoverable method of finding the queue.
   Evaluation factors: Decrease the average time (in seconds) in takes to find the queue for a new user. A majority of users should agree with the statement, "The location of the queue and actions to access it are intuitive."
3. **Learnability Requirement**: The "Play Next" and "Play Last" buttons should be redesigned so that users are not confused by the difference.
   Evaluation factors: Decrease the average time (in seconds) for new users to interpret the available queuing options and select the correct option for their needs.

6 CONTINUED NEEDFINDING

Continued needfinding activities would include another survey and an evaluation of existing interfaces. The additional survey would supplement the existing survey to better identify users' demographic data and complete the data inventory.

Because almost half of survey respondents use applications other than Apple Podcasts, I would also evaluate those applications' existing user interfaces to identify how they currently implement a queuing feature.

Lastly, I am interested in whether or not a queue is the best way to play multiple episodes in one listening session. These initial needfinding activities were focused on the existing queuing feature, but I would like to explore potential alternatives to a queue via focus groups and interviews.

7 APPENDICES

7.1 Side-by-side thumbnail comparison

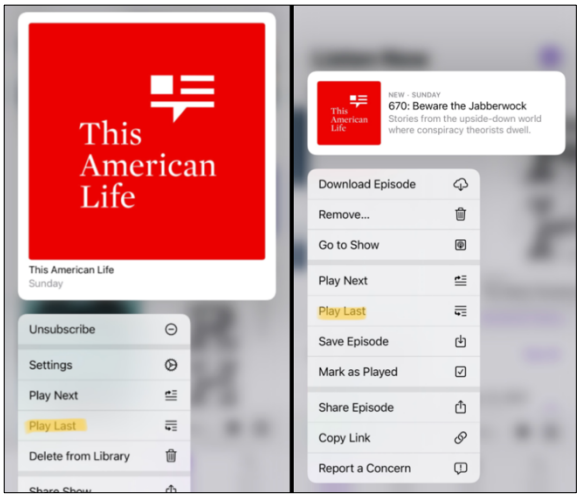

Figure 1 — Thumbnail for a whole show (on left) versus thumbnail for episode (on right)