12/8/2020

Final Report

Course: ITEC 3230 B

Group: Team Invincibles

Project Task: Kordz – Music for everyone (music streaming application)

Group Members:

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1. Requirements

1.1 Overview

With the fast-paced advancement in technology, users' expectations of mobile apps have become dynamic and it's vital to have up-to-date functionality. Music streaming mobile apps lack such latest functionality as searching artist information, viewing song's lyrics, and synchronizing music across devices. Kordz – music for everyone – is a music app that addresses this issue. It will be used by artists to upload their information and the general public at large to listen to music. Other stakeholders include; the developer team and the organization/owner of this app.

1.2 User Characteristics

Stakeholder Type	Stakeholder Name	Stakeholder Actions	Educational level	Computer Expertise	Age Range	Frequency of Use
Primary	Music Enthusiasts (students, adults, elders)	They use the app actively in the course of their lives to listen to music	High school to university level	Medium to high	12+	High
Secondary	Artists (music composers)	Their music is uploaded to these apps. Plus, their information such as upcoming concerts is also posted.	High school to university level	Medium to high	18+	Medium
	Developer Team	They constantly work on the app to maintain it and render updates.	University level	High	20+	Low
Tertiary	Organization Owner	The app's success affects the organization's profitability.	University Level	High	20+	Low

1.3 User Requirements

<table>
<tr><td>Use Case Name:</td><td>View artist information.</td></tr>
<tr><td>Scenario:</td><td>View an artists next concert time and location.</td></tr>
<tr><td>Triggering Event:</td><td>User wants to see information about an artist.</td></tr>
<tr><td>Brief Description:</td><td>When the user searches for music, the song’s artist name under the song name is hyperlinked which they can click to see that artist’s upcoming concerts, albums, & top songs.</td></tr>
<tr><td>Actors:</td><td>User (music enthusiast).</td></tr>
<tr><td>Related Use Cases:</td><td>Display playlists, search music/artist, show/hide song panel.</td></tr>
<tr><td>Stakeholders:</td><td>Primary – user.</td></tr>
<tr><td>Pre Conditions:</td><td>User is logged in.</td></tr>
<tr><td>Post Conditions:</td><td>User is on the ‘artist information’ page, artists top songs, upcoming albums & concerts information is visible on this page.</td></tr>
<tr><td>Flow of Activities:</td><td>
<table>
<tr><td>Actor</td><td>System</td></tr>
<tr><td>1. User types artist name in search bar.
2. User clicks ‘artist name’ link from results shown.
3. User clicks on ‘top songs’
4. User clicks on ‘albums’
5. User clicks on ‘upcoming’</td><td>1.1 Searches the database and displays results
2.1 Navigates to ‘artist information’ page
3.1 Displays top songs
4.1 Displays albums
5.1 Displays upcoming albums and concert details</td></tr>
</table>
</td></tr>
<tr><td>Exception Conditions:</td><td>The artist the user is searching may not exist or they misspelt the name.
Internet connection may get interrupted.</td></tr>
</table>

<table>
<tr><td>Use Case Name:</td><td>View lyrics of song playing.</td></tr>
<tr><td>Scenario:</td><td>Sing along with song currently playing by reading the lyrics.</td></tr>
<tr><td>Triggering Event:</td><td>User listening to new song and wants to learn the lyrics.</td></tr>
<tr><td>Brief Description:</td><td>When the user is on the main song panel on the ‘now playing’ page, there are two controls they can use to toggle viewing/hiding of lyrics of the current song that is playing. The lyrics get highlighted as they are played to keep track of where the song is.</td></tr>
<tr><td>Actors:</td><td>User (music enthusiast).</td></tr>
<tr><td>Related Use Cases:</td><td>Open main song panel.</td></tr>
<tr><td>Stakeholders:</td><td>Primary – user.</td></tr>
<tr><td>Pre Conditions:</td><td>User is logged in.
The song panel is not hidden.</td></tr>
<tr><td>Post Conditions:</td><td>The user is on the ‘now playing’ page and the lyrics are getting highlighted as the song continues playing.</td></tr>
<tr><td>Flow of Activities:</td><td><table><tr><td>Actor</td><td>System</td></tr><tr><td>1. User clicks on the album image in the song panel.
2. User clicks on the ‘eye’ icon
3. User clicks on the ‘crossed eye’ icon</td><td>1.1 Navigates to ‘now playing’ page
2.1 Shows lyrics
2.2 highlights lyrics as song progresses
3.1 hides lyrics of song playing
3.2 displays album/song image</td></tr></table></td></tr>
<tr><td>Exception Conditions:</td><td>Internet connection may be interrupted.
The lyrics were not added by the developer team.
The artist never provided the lyrics.</td></tr>
</table>

<table>
<tr><td>Use Case Name:</td><td>Synchronize music across devices.</td></tr>
<tr><td>Scenario:</td><td>User is hosting a party where people sync their apps and play the same song at the same time.</td></tr>
<tr><td>Triggering Event:</td><td>User wants to listen to music with a friend(s)</td></tr>
<tr><td>Brief Description:</td><td>The user has the ability to send connection requests and accept requests to/from other devices to sync the music and listen together</td></tr>
<tr><td>Actors:</td><td>Users.</td></tr>
<tr><td>Related Use Cases:</td><td>None.</td></tr>
<tr><td>Stakeholders:</td><td>Primary – users.</td></tr>
<tr><td>Pre Conditions:</td><td>User is logged in.
User knows username of person(s) to sync with.</td></tr>
<tr><td>Post Conditions:</td><td>Music is synchronized with multiple devices.
The username, device name, and location is displayed under ‘Connected Devices’ for the external parties the user is syncing music with.</td></tr>
<tr><td>Flow of Activities:</td><td><table>
<tr><td>Actor</td><td>System</td></tr>
<tr><td>1. User clicks on ‘wireless devices’ icon.
2.1 User types username in text box and clicks ‘request to connect’ button.
2.2 User accepts request.</td><td>1.1 Navigates to sync devices page.
2.1.1 Sends the request to connect.
2.2.1 connects to device.
2.2.2 shows connected device’s details under ‘connected devices’</td></tr>
</table></td></tr>
<tr><td>Exception Conditions:</td><td>User enters incorrect username.
Internet connection is interrupted.
External party disconnects their device.</td></tr>
</table>

2. High Fidelity Prototype (use your York University email address):

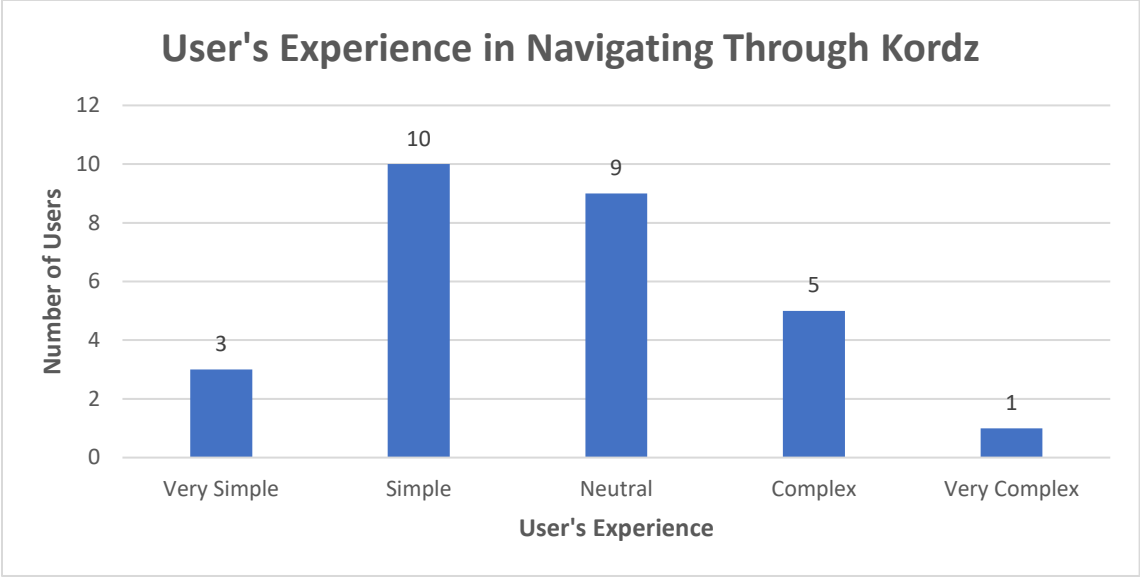
https://drive.google.com/file/d/1t-zAfg3M7bZt3QChYoAvLa_5ETcXAZlu/view?usp=sharing

3. Phase 1 Evaluation

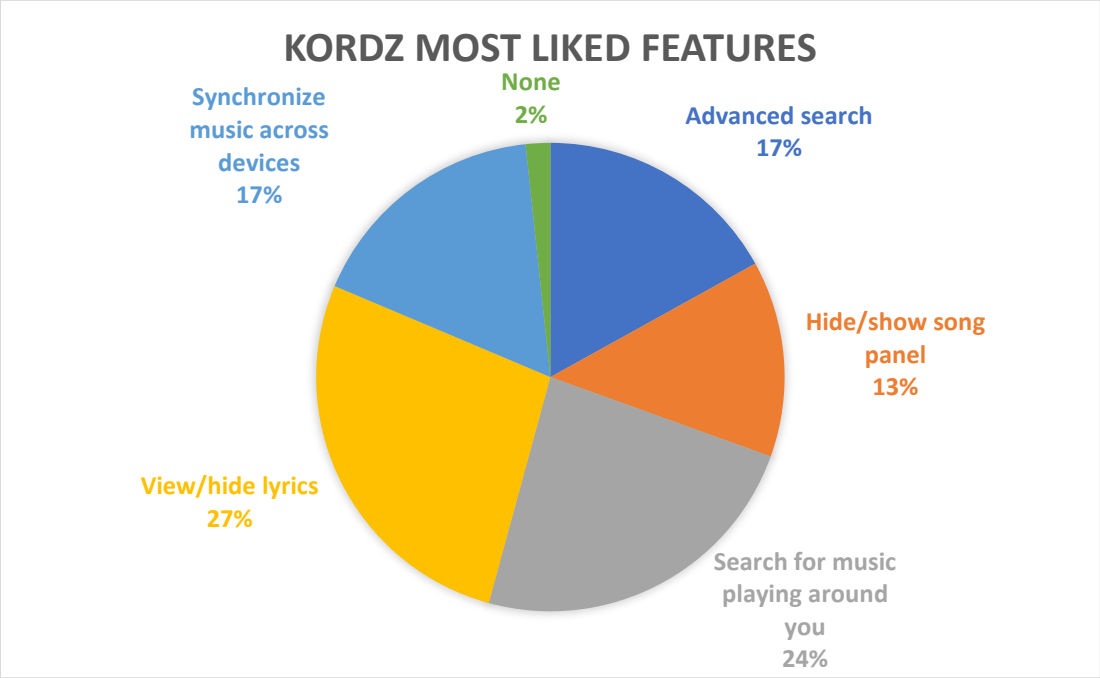
Qualitative Data:

Comments from Questionnaire/Verbal Feedback		
Quote	**Nielson Category**	**Response**
"You have playlists but I don't see a list of all the songs that the user likes."	Visibility of system status	Made the user generated playlists such as the 'Liked Songs' playlist more visible on home screen/page.
"The black and white color theme might not be the best for music app."	Aesthetics and minimalistic design	Used different shades of orange for the user interface instead.
"Heart and download kind of close to each other."	Aesthetics and minimalistic design	Added more white space between these elements.
"I feel as though the "hide" option for the song that's playing is unnecessary."	Flexibility and efficiency of use	Made the hide/show panel button subtle and also made it visible by default.
"Very good work but I am not convinced yet to join your app compare to what I use Apple Music."	Consistency and standards	Followed platform and industry conventions as much as possible.
"I think as another tab you should have a list for all the songs you want to listen too."	User control and freedom	First playlist displayed under user-generated playlists is user liked songs.

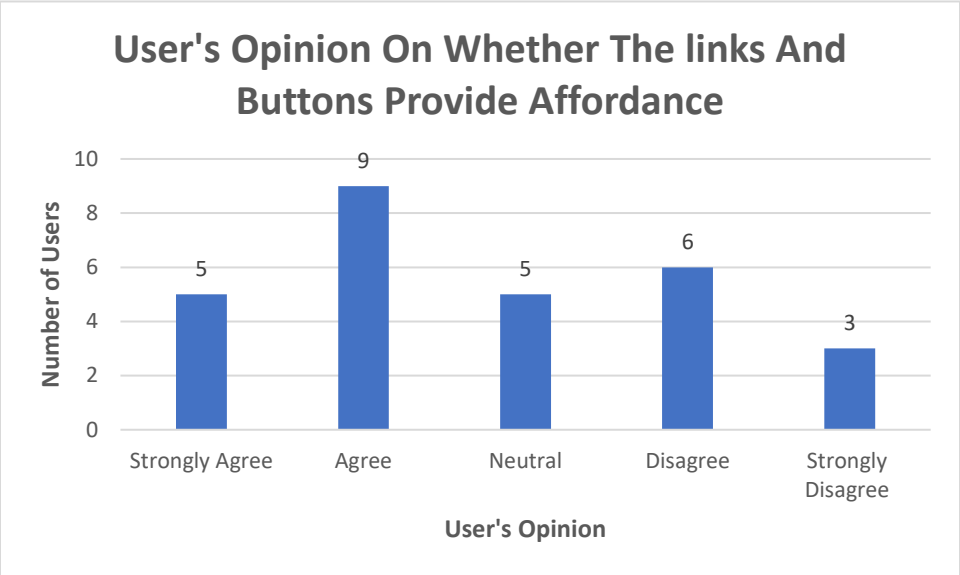
Quantitative Data:



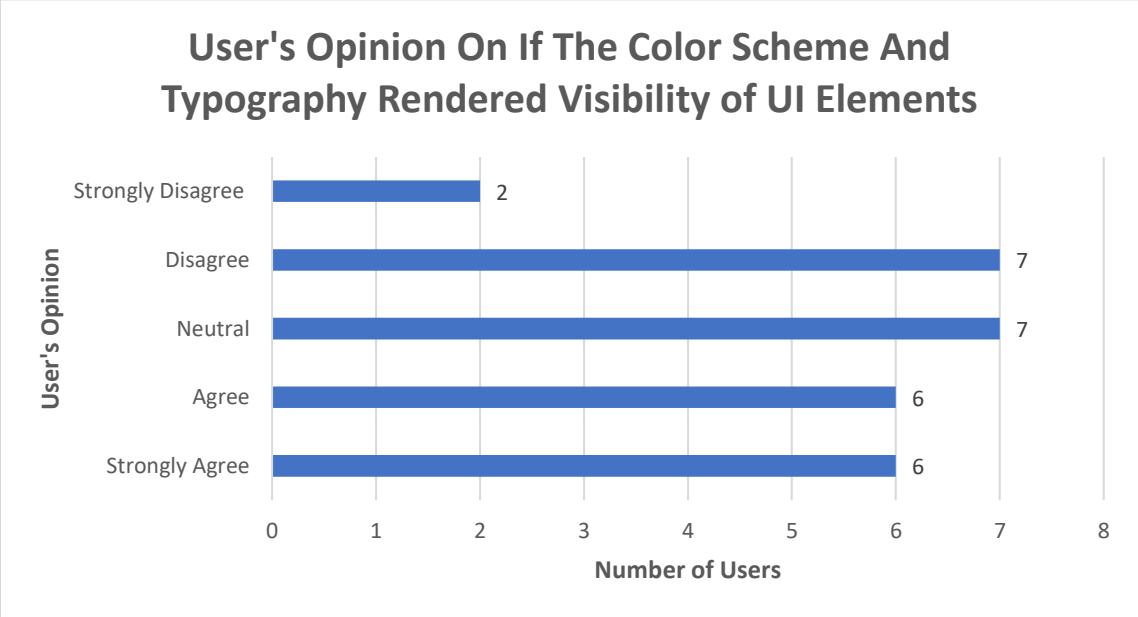
From the bar graph above it is seen that majority of the users didn't have trouble navigating through Kordz user interface. Thus, we can conclude that our user interface implements simplicity efficiently.



The pie chart above indicates that all new features added to Kordz are valuable to its user base and therefore we can conclude that no feature needs to be removed.



The bar chart above suggests that majority of the users were able to recognize links and buttons in the application. Hence, we can conclude that the principle of affordance is effectively applied in Kordz user interface.



The bar chart above implies that typography and color scheme implementation wasn't the best choice as many users thought it hampered visibility. As a result, we can conclude that the user interface needs a change in color scheme and typography.

4. Phase 2 Evaluation

4.1. Overall Evaluation Design

1. Learnability
    - Overall goal is to let the user perform the given tasks as fast as possible. Testing criteria involves time taken to complete the tasks. Less than 30 seconds at max per task is ideal.
2. Efficiency
    - With enough interaction with the Kordz UI, those same tasks can now be performed withing few seconds. Testing criteria involves number of clicks attempted to complete tasks. 5 clicks maximum is ideal.
3. Effectiveness
    - Our UI design allows the testing user a nice smooth and consistent flow throughout the app. Testing criteria involves number of errors made when completing a task. 1 error is acceptable at max.
4. Satisfaction
    - The app design is fairly simple and easy to navigate. Hence, they will not be distracted by additional content. Testing criteria involves body language and user expressions when doing the tasks.

4.2. (Hypothetical) Field Study

i. What you are evaluating?
    a. Learnability
        - We want to see how quickly the user can perform given tasks.
    b. Efficiency
        - The number of clicks required to complete task.
    c. Effectiveness
        - Gather information based on number of errors made while doing a task.
    d. Satisfaction
        - Get the overall feedback from the user on how much they liked/disliked our app design.

ii. Where/How it would be conducted?
    - The field study can be conducted at any local school, university or a college.

iii. Who would participate?
    - Students mainly as they represent large number of groups who use music applications. A sample of anywhere between 40-70 students will give us an overall idea.

iv. How long would it take?

- It should take approximately 2-4 minutes. We want to value their important time.

v. What data you would collect and how. Talk about specific data acquisition technique(s) and how they it to criteria you derive in 4.1. 4-5 sentences here?

- Performance Measures:
  - **a.** how long it takes for the user to complete a certain task. We will be keeping track of the time on a stopwatch. It aids in analysing learnability.
  - **b.** the final number of touches/mouse clicks that were required to finish the task. We will keep track on a tally table and helps in analysing efficiency.
  - **c.** the number of errors made by the testing user. We'll also use a table for this and it illustrates the effectiveness of our UI.
- Observations:
  - **a.** Body language and facial expressions, aids in analysing user satisfaction.
- Interview:
  - **a.** After completion of each task, we ask the participant questions to get their opinion on the task. This also targets the goal of user satisfaction.

vi. What analysis you would do with the data.

- The data that we get will be used to compare it with data from competing user interfaces. We'll generate bar graphs and box plots to help us understand better on how we can make necessary changes to improve the overall experience of the user.

4.3 Usability Experiment

4.3.1 Experimental Design

i**.** What are you evaluating (goals are taken from 4.1).

- Learnability
- Efficiency
- Effectiveness
- Satisfaction

ii. What are the independent variables of your experiment?

- Amount of time taken to complete a given task
- Number of errors made (when selecting options)

- Amount of user input required/screen touches (mouse clicks in this case)
- Which tasks were completed successfully, and which failed?
- Time spent looking for the right icon

iii. What are the dependent variables of your experiment? Answer specifically and associate each dep. variable with an evaluation goal of (i) above and criteria you discussed in 4.1.

- Time taken to complete a given task is dependent on time spent looking for the correct icon
- The number of errors made is dependent on the success rate of the app and the design of the interface
- The amount of user input is dependent on the number of task performed and the time spent looking for the correct answer
- The number of tasks completed successfully is dependent on the number of errors made and the overall success rate of the app
- Time spent on looking for the icon is dependent on the number of options given and the success rate of the app

iv. What experimental design are you considering among within-subjects, between-subjects or matched-participants?

- Within subjects seem like the best option to consider, the reason being that the within-subjects design allows the same user to be exposed to different treatment/ condition of the interface. The user is able to interact by attempting different tasks, increasing the learnability of the app and improving efficiency (as the user will become familiar with the function of the app).

v. What is a drawback (a confounding factor) that comes with your choice in (iv) and how do you deal with it?

- The drawback of having a within-subject design is that it may get the participants exhausted. Having participants conduct the same feature can create a sense of learnability where they get familiar with the interface and its features. But this also makes the participant bored or simply not interested after completing a task multiple time. This also affects the performance of the interface as future tasks seem more practiced and affectless.
- We plan to deal with it by using more participants during the evaluation of the interface. This would allow for less practiced input and more effective results.

vi. What is the procedure/treatment i.e. what are your subjects supposed to do based on the design of choice?

- Based on the design of choice the participants are supposed to perform certain tasks as well as provide feedback along the process.

vii. What shall be measured (times, self-report etc). Data must include both quantitative and qualitative. Here are the ideas:

- Time spent looking for the correct icon (seconds)
- Amount of time taken to complete the task (seconds)
- Amount of wrong options selected until success (integer)
- Amount of user input/ number of screen touches (integer/ ordinal categories)
- Enjoyment of using the app (feedback rating)
- Articulated comments by the user while performing a task (feedback)
- Body language and facial expressions (feedback)

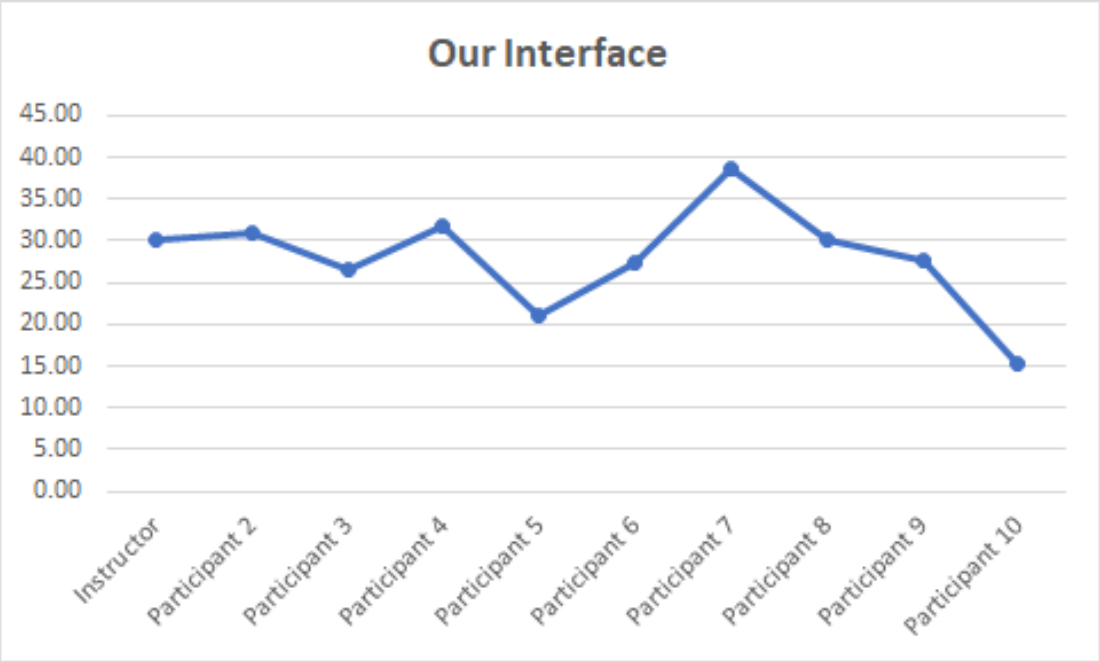
4.3.2 Results and Analysis

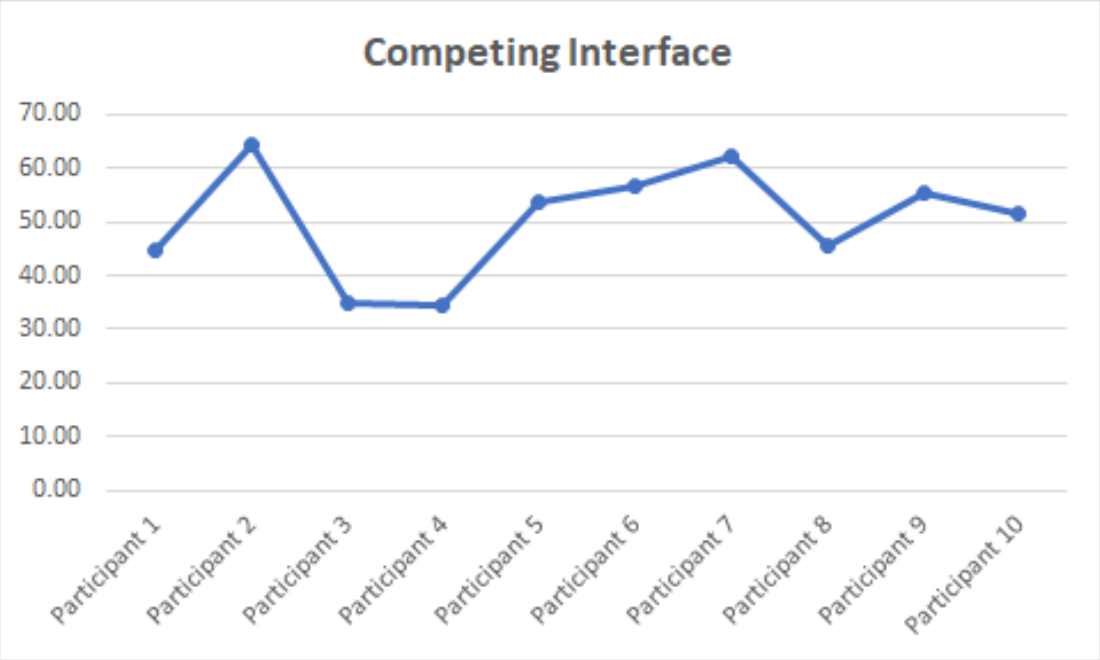
Quantitative Analysis:

Quantitative Measure: The amount of time it took to find the "Listen for Music" button.

Your System	Quantitative Measure
Instructor	30.00
Participant 2	30.84
Participant 3	26.46
Participant 4	31.71
Participant 5	21.03
Participant 6	27.33
Participant 7	38.61
Participant 8	30.09
Participant 9	27.66
Participant 10	15.41
Competing System	Quantitative Measure
Participant 1	44.75
Participant 2	64.21
Participant 3	34.96
Participant 4	34.63
Participant 5	53.64
Participant 6	56.62
Participant 7	62.34
Participant 8	45.53
Participant 9	55.21
Participant 10	51.61

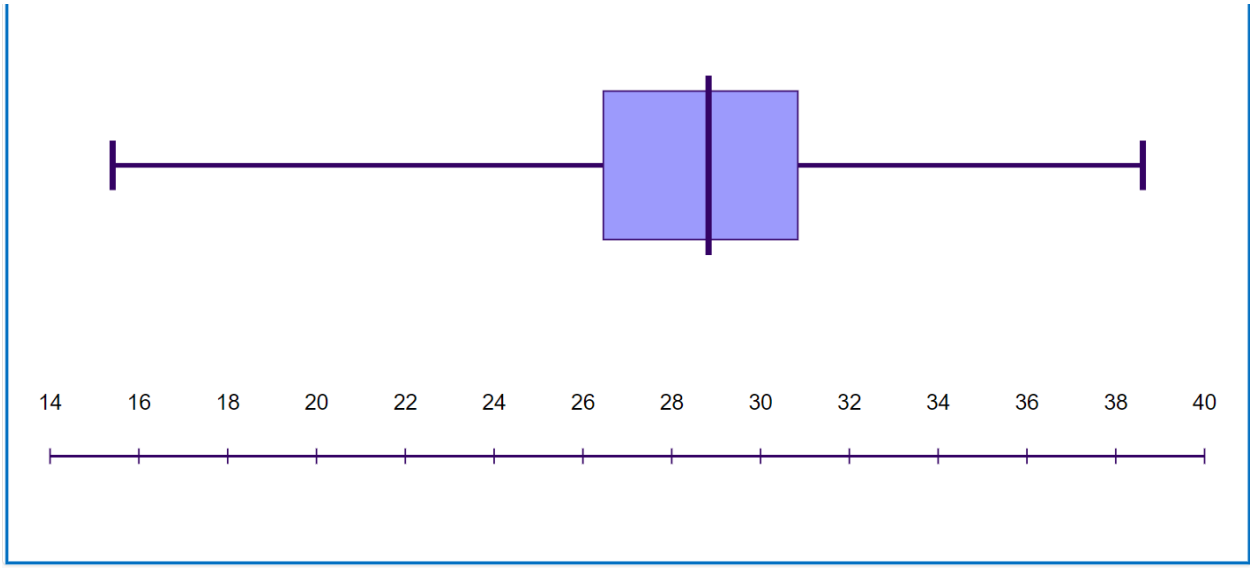
Line Graph Comparison



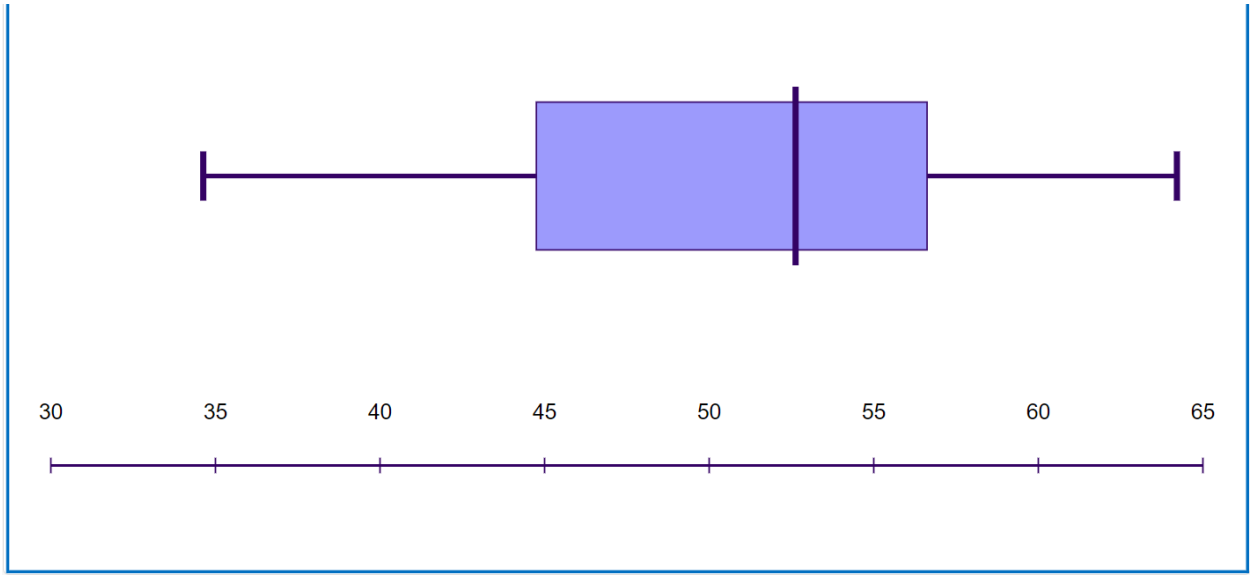


Box Plot Comparison

Our Interface:



Competing Interface:



This quantitative analysis suggests that participants were able to complete tasks more quickly compared to the competing interface, as a result, our interface renders more learnability and efficiency.

Quantitative Measure: SUS questionnaire

Questions

1. I think I would frequently use this system frequently
2. I found the system unnecessarily complex
3. I thought the system was easy to use
4. I think that I would need to support of a technical person to be able to use these systems
5. I found that Various functions in this systems were well integrated
6. I thought there was too much inconsistency in the system?
7. I would imagine that most people would learn to use the system very quickly
8. I found the system very cumbersome to use
9. I felt very confident while using the system?
10. I needed to learn a lot of things before I could get going with this system

Scale

1 – Strongly Disagree

2 – Disagree

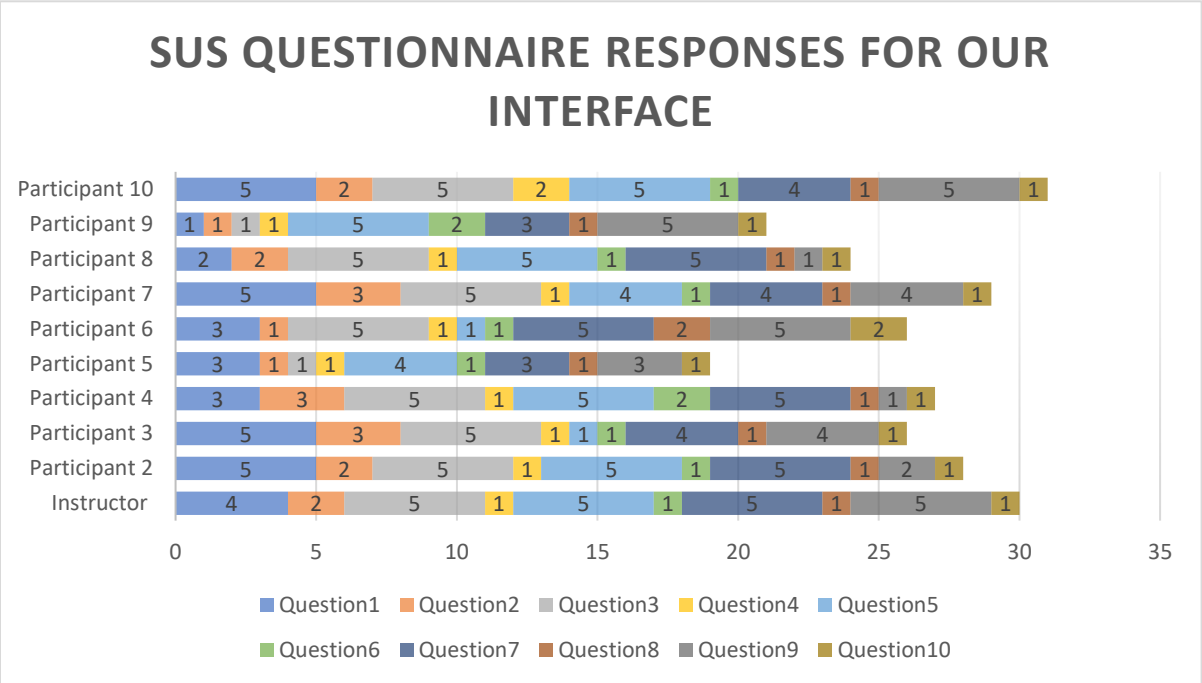
3 – Neutral

4 – Agree

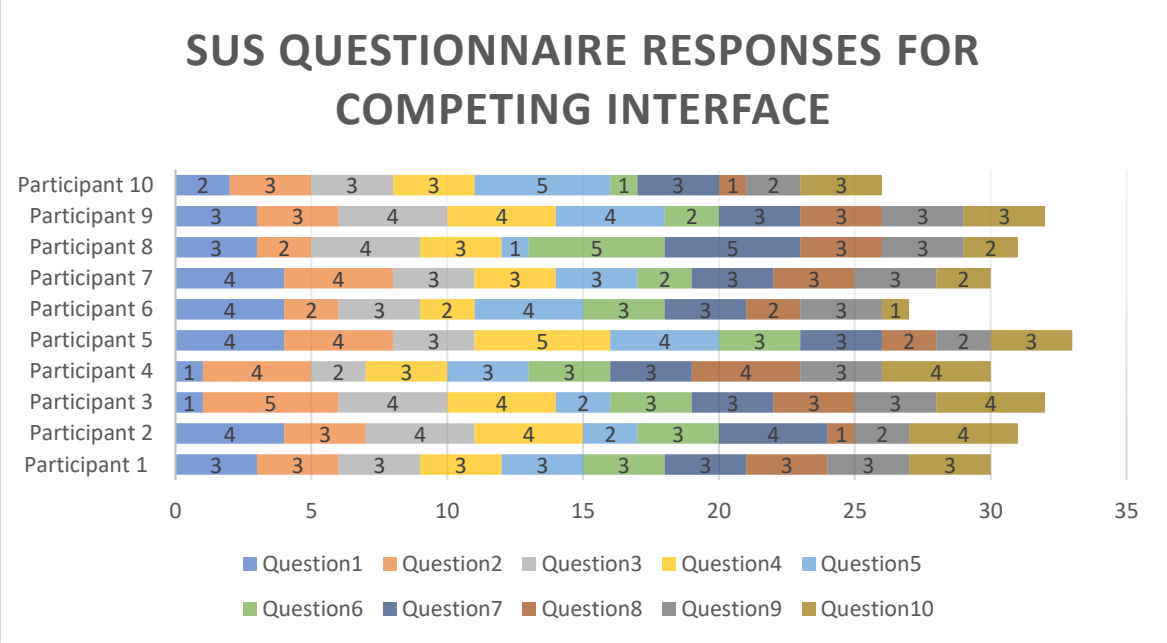
5 – Strongly Agree

Stacked Graph Comparison

Our Interface:



Competing Interface:



This quantitative analysis implies that our interface was slightly better than our competitor's in terms of simplicity, learnability, satisfaction, effectiveness and efficiency as the above charts depict participants for our interface gave better scores for every question.

Qualitative Analysis:

Interview during the usability test:

Question 1: By looking at the navigation bar at the bottom, which page do you think you're on?

Answer: "I can tell I am on the home page"

Question 2: Did the blurring of the background enable you to see the search results better or Would you prefer to see the results on a separate screen?

Answer: "I don't find much difference between blurring and seeing on another screen. I would prefer being able to click on the blurred area to go back to previous page."

Question 3: What difference do you notice between the first and second result on the screen?

Answer: "In the first result there is a filled heart icon and in the second it is empty."

Question 4: Could you tell that the application was searching for the song while you waited?

Answer: "Yes the icon was blinking so I think it suggests it is searching for a song."

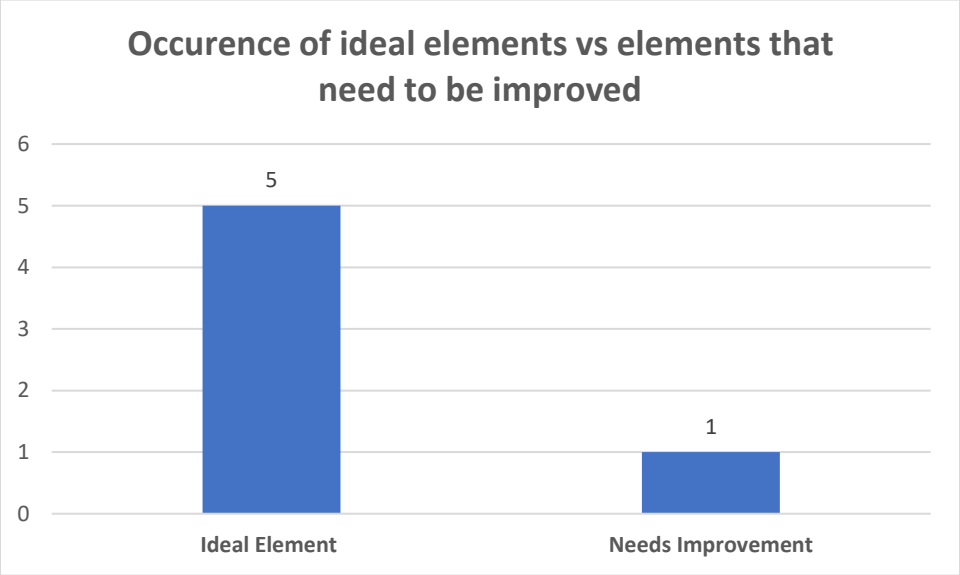
Question 5: Looking at the lyrics displayed on the screen, what line is currently being played?

Answer: "The lines which are highlighted are the current playing, so the 3rd line."

Question 6: How many devices are currently connected and what type of device are they?

Answer: "Two devices are connected, one is a mobile and another is a tablet device."

Categories for content analysis	
Ideal Element	**Needs Improvement**
"I can tell I am on the home page"	"would prefer to click on blurred area to go back"
"filled heart vs empty heart"	
"blinking icon suggests searching"	
"highlighted lines currently playing"	
"two devices connected"	



After conducting a qualitative analysis of the interview that took place in the usability testing session we realised our interface is ideal overall. The participant was able to tell he was at the home page which highlights feedback. He didn't have any problems identifying the differences between the liked songs icon and unliked songs icon which indicates our interface integrates affordance well. The participant successfully navigated between pages and was able to explain what features exist and their functionality, hence, learnability is prominent in our interface. Although, we realised we need to add the principle of user control and freedom where they should be able to click on the visible constraints and go back to previous page. Overall, as the graph above depicts our interface has more elements that are conveyed well and only one improvement, we believe Kordz has a successful user interface.

Consent Form for Usability Testing

You are being invited to participate in a User Interface Testing program. This test will be conducted in an online environment. This study is being conducted by Kordz, a group of students from the ITEC department of York University.

This form explains why we are doing the study, and what the nature of the environment would be. It tells you what will happen in the study. This information will help you to decide whether or not you wish to be a part of the study.

Purpose of this study:

The main purpose of doing this study to ensure the interface is at a usable stage.

Description of the study:

In this study, you will be given a series of tasks. These tasks will help test the usability of the interface.

Nature of study:

For this study, the participant will be attending a ZOOM meeting. Where the usability test will be conducted and recorded.

Confidentiality Requirements:

1. No other participants will appear in the study
2. The recording is not to be shared outside of the meeting
3. The recording is not to be used for any other purposes other than the completion of the assignment
4. The recording of the study will be destroyed at the end

I confirm that I _____
have read the consent form and agree to participate in this study.

Signature: _____

Date: _____

Please do remember we are not testing you, but the usability of our interface. Thank you.

Instructor's Response to Questionnaire

I found the system very cumbersome to use

	1	2	3	4	5	
Strongly Disagree	◉	○	○	○	○	Strongly Agree

I felt very confident while using the system?

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	◉	Strongly Agree

I needed to learn a lot of things before I could get going with this system

	1	2	3	4	5	
Strongly Disagree	◉	○	○	○	○	Strongly Agree

Do you have any suggestions for improvements? Please list based on high priority first

.....

Overall, what was your impression?

	1	2	3	4	5	
Poor	○	○	○	◉	○	Awesome

Submitted 25/11/2020, 12:10