Usability Testing of DSAsolution - Mobile app for helping students with Specific Learning Disorders (SLD)

Roles

Test 1:

- **Facilitator:** Mitra
- **Observers:** Marika and Francesca
- **Analyzer:** Alessandra

Test 2:

- **Facilitator:** Francesca
- **Observers:** Alessandra and Mitra
- **Analyzer:** Marika

Test 3:

- **Facilitator:** Alessandra
- **Observers:** Marika and Francesca
- **Analyzer:** Mitra

Test 4:

- **Facilitator:** Marika
- **Observers:** Alessandra and Mitra
- **Analyzer:** Fracesca

Participants

- **Participant 1**: 20 years old, Student with Dyslexia
- **Participant 2**: 24 years old, Student with Dyscalculia
- **Participant 3**: 21 years old, Student with Dyslexia
- **Participant 4**: 25 years old, Student with Dyslexia

Location

All usability tests were conducted on the same day at **Politecnico di Torino**, with the entire team present. All usability tests were conducted on the same day at Politecnico di Torino, with the full team in attendance. The participants agreed to take part and traveled to the university, as it was the most convenient location for both participants and facilitators.

Equipments

1. **Laptop**: For running the app
2. **Ipad**: For taking note and questionnaire
3. **Notebook and Pen**: for taking note
4. **Screen recorder software** installed on the laptop

Artifacts

1. Printed list of tasks for participant
2. Consent form
3. SUS questionnaire
4. Script

Tasks List

The **Think-Aloud** method was applied for immediate feedback from participants, focusing more on the user experience rather than just speed.

#	Task	Success Criteria	Methodology
1	Among the existing study groups, search for the group named "Economics for beginners" and join it.	The group is added in the "My Groups" section.	Think-aloud
2	Filter a group based on preferred level and SLD and after checking the information of the groups join one.	User uses the filtering option and joins a group. The group is added in the "My Groups" section.	Think-aloud
3	Among your groups, start a chat in the "Machine Learning Basics" group.	User chats in the specified group (messages are sent and received by the user in the chat section.)	Think-aloud
4	Start "Supervised Learning Challenge" from the challenge section of the "Machine Learning Basics" group and complete the challenge.	User completes the challenge and gets score at the end	Think-aloud
5	Generate a new challenge in the group "Machine Learning Basics" for a specific topic and	New generated challenge is added to the challenge section.	Think-aloud

	material.		
6	Upload a new file in the Material section of the same group ("Machine Learning Basics").	Selected material is uploaded and available in the material section.	Think-aloud
7	Create a new group.	User creates a new group by filling the form and the newly generated group is added to the "My Groups" section.	Think-aloud
8	Go to the group that you created and edit the information of the group.	The information of the group has changed.	Think-aloud
9	Leave from one of your groups.	The group is removed from the "My Groups" section.	Think-aloud

Critical and Non-Critical Errors

- **T1:** Search for the group named "Economics for beginners" and join it.

  Critical Errors:

  - The participant fails to search for the group and find it.

  Non-Critical Errors:

  - The participant types the group name incorrectly and retries multiple times.

- **T2:** Filter a group based on preferred level and SLD, check the group information, and join one.

  Critical Errors:

  - The participant fails to apply filters.
  - The participant cannot access the group information.

  Non-Critical Errors:

  - The participant applies filters incorrectly but eventually corrects them.

- **T3:** Start a chat in the "Machine Learning Basis" group.

  Critical Errors:

  - The participant is unable to send a message in chat.

  Non-Critical Errors:

  - The participant navigates to the wrong section before finding the chat.

- **T4:** Start the "Supervised Learning Challenge" in the "Machine Learning Basis" group and complete it.

  Critical Errors:

  - The participant cannot complete the challenge.

  Non-Critical Errors:

  - The participant completes the challenge but misunderstands parts of it (e.g, without confirming answers.)

- **T5:** Generate a new challenge in the "Machine Learning Basics" group for a specific topic and material.

  Critical Errors:

  - The participant is unable to generate a new challenge.

  Non-Critical Errors:

  - The participant struggles with the challenge settings.

- **T6:** Upload a new file in the Material section of the "Machine Learning Basics" group.

  Critical Errors:

  - The participant fails to upload the file.

  Non-Critical Errors:

  - The participant selects the wrong file but uploads the correct one after retrying.

- **T7: Create a new group.**

  Critical Errors:

   - The participant is unable to create a new group.

  Non-Critical Errors:

   - The participant struggles with group settings but successfully creates it.

- **T8:** Go to the group you created and edit its information.

  Critical Errors:

   - The participant is unable to edit the group information.

  Non-Critical Errors:

   - The participant struggles with the settings but eventually completes the task.

- **T9:** Leave one of your groups.

  Critical Errors:

   - The participant is unable to find the option to leave the group.

  Non-Critical Errors:

   - The participant hesitates, unsure of the consequences of leaving, before proceeding.

Script

Intro:

Hi,<name of participant>. My name is<name of facilitator>, and I'm going to be walking you through this session today. Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

As you may know, we're asking people to try using a mobile app that we're working on so we can see whether it works as intended. We simulated the mobile app in a web app format for testing purposes. The session should take about an hour.

The first thing I want to make clear right away is that we're testing the app, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the app, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve it, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone sitting next to them to help. But if you still have any questions when we're done I'll try to answer them then. And if you need to take a break at any point, just let me know.

With your permission, we're going to record what happens on the screen and our conversation. The recording will only be used to help us figure out how to improve the app, and it won't be seen by anyone except the people working on this project. And it helps me, because I don't have to take as many notes.

Do you have any questions for me, now that we're done?

Consent:

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to record you, and that the recording will only be seen by the people working on the project.

Tasks:

Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud. As I mentioned before, try to think out loud as you go along.

[Start of recording screen and audio]

The app is designed to help students with SLD in the learning process. You can create or join existing study groups. In the study groups you can share useful materials with each other and chat together. There is an AI that helps you to generate challenges based on specific topics related to the group subject and materials uploaded. The AI will also correct the challenge you perform and give you feedback.

[List of Tasks]

Thanks, that was very helpful.

Do you have any questions for me, now that we're done?

Please fill this questionnaire form based on your experience while using the app.

Post Test Questionnaire

We used SUS questionnaire which is a standard questionnaire that measures the overall usability of a system.

Please enter your name: _____

System Usability Scale (SUS)

This is a standard questionnaire that measures the overall usability of a system. Please select the answer that best expresses how you feel about each statement after using the website today.

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

How likely are you to recommend this App to others? (please circle your answer)

Not at all likely   0   1   2   3   4   5   6   7   8   9   10   Extremely likely

Results

Test Results

- Number of Criticall Error(s): 1
- Number of Tested Tasks: 38
- **Success Rate: 97.37%**
- **Percentage of Critical Errors: 2.63%**

Scores

Participants' ratings were as follow:
- Participant 1: 85
- Participant 2: 82.5
- Participant 3: 95
- Participant 4: 80

Average SUS score: 85.62

First Participant:

Please enter your name: *Amir Zand*

System Usability Scale (SUS)

This is a standard questionnaire that measures the overall usability of a system. Please select the answer that best expresses how you feel about each statement after using the website today.

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

How likely are you to recommend this App to others? (please circle your answer)

Not at all likely   0   1   2   3   4   5   6   7   ⑧   9   10   Extremely likely

Second Participant:

Please enter your participant number: ویں لَع ن ٤٥

System Usability Scale (SUS)

This is a standard questionnaire that measures the overall usability of a system. Please select the answer that best expresses how you feel about each statement after using the website today.

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

How likely are you to recommend this App to others? (please circle your answer)

Not at all likely   0   1   2   3   4   5   6   7   ⑧   9   10   Extremely likely

Third Participant:

Please enter your participant number: Alice

System Usability Scale (SUS)

This is a standard questionnaire that measures the overall usability of a system. Please select the answer that best expresses how you feel about each statement after using the website today.

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

How likely are you to recommend this App to others? (please circle your answer)

Not at all likely   0   1   2   3   4   5   6   7   ☒8   9   10   Extremely likely

Fourth Participant:

Please enter your name: *Fereshte*

System Usability Scale (SUS)

This is a standard questionnaire that measures the overall usability of a system. Please select the answer that best expresses how you feel about each statement after using the website today.

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

How likely are you to recommend this App to others? (please circle your answer)

Not at all likely   0   1   2   3   4   5   6   (7)   8   9   10   Extremely likely

Consent Forms

First Participant:

Usability Testing Consent Form

      I acknowledge that I am voluntarily participating in a usability test for the DSAsolution app. During this session, I will be asked to complete specific tasks while my interactions with the app may be recorded (including audio, video, and/or screen activity). All collected data will remain anonymous and will only be used to enhance the app's development.

      I understand that my participation is entirely optional, and I can choose to withdraw at any time without any consequences. While there are no significant risks or financial compensation involved, my feedback will contribute to improving the project.

      By signing below, I confirm that I have read and understood this information and agree to participate in the usability test.

Signature: _Amir Zand   twistet_

Date:_____11 / 2 / 2025_____

Second Participant:

Usability Testing Consent Form

       I acknowledge that I am voluntarily participating in a usability test for the DSAsolution app. During this session, I will be asked to complete specific tasks while my interactions with the app may be recorded (including audio, video, and/or screen activity). All collected data will remain anonymous and will only be used to enhance the app's development.

       I understand that my participation is entirely optional, and I can choose to withdraw at any time without any consequences. While there are no significant risks or financial compensation involved, my feedback will contribute to improving the project.

       By signing below, I confirm that I have read and understood this information and agree to participate in the usability test.

Signature: _Vincent Leonardi_

Date: _11 | 02 | 25_

Third Participant:

Usability Testing Consent Form

I acknowledge that I am voluntarily participating in a usability test for the DSAsolution app. During this session, I will be asked to complete specific tasks while my interactions with the app may be recorded (including audio, video, and/or screen activity). All collected data will remain anonymous and will only be used to enhance the app's development.

I understand that my participation is entirely optional, and I can choose to withdraw at any time without any consequences. While there are no significant risks or financial compensation involved, my feedback will contribute to improving the project.

By signing below, I confirm that I have read and understood this information and agree to participate in the usability test.

Signature: _AliaSeven_____

Date: _11/02/2025_____

Fourth Participant:

Usability Testing Consent Form

       I acknowledge that I am voluntarily participating in a usability test for the DSAsolution app. During this session, I will be asked to complete specific tasks while my interactions with the app may be recorded (including audio, video, and/or screen activity). All collected data will remain anonymous and will only be used to enhance the app's development.

       I understand that my participation is entirely optional, and I can choose to withdraw at any time without any consequences. While there are no significant risks or financial compensation involved, my feedback will contribute to improving the project.

       By signing below, I confirm that I have read and understood this information and agree to participate in the usability test.

Signature: _Fereshte Alizadeh_

Date: _11 / 02 / 2025_