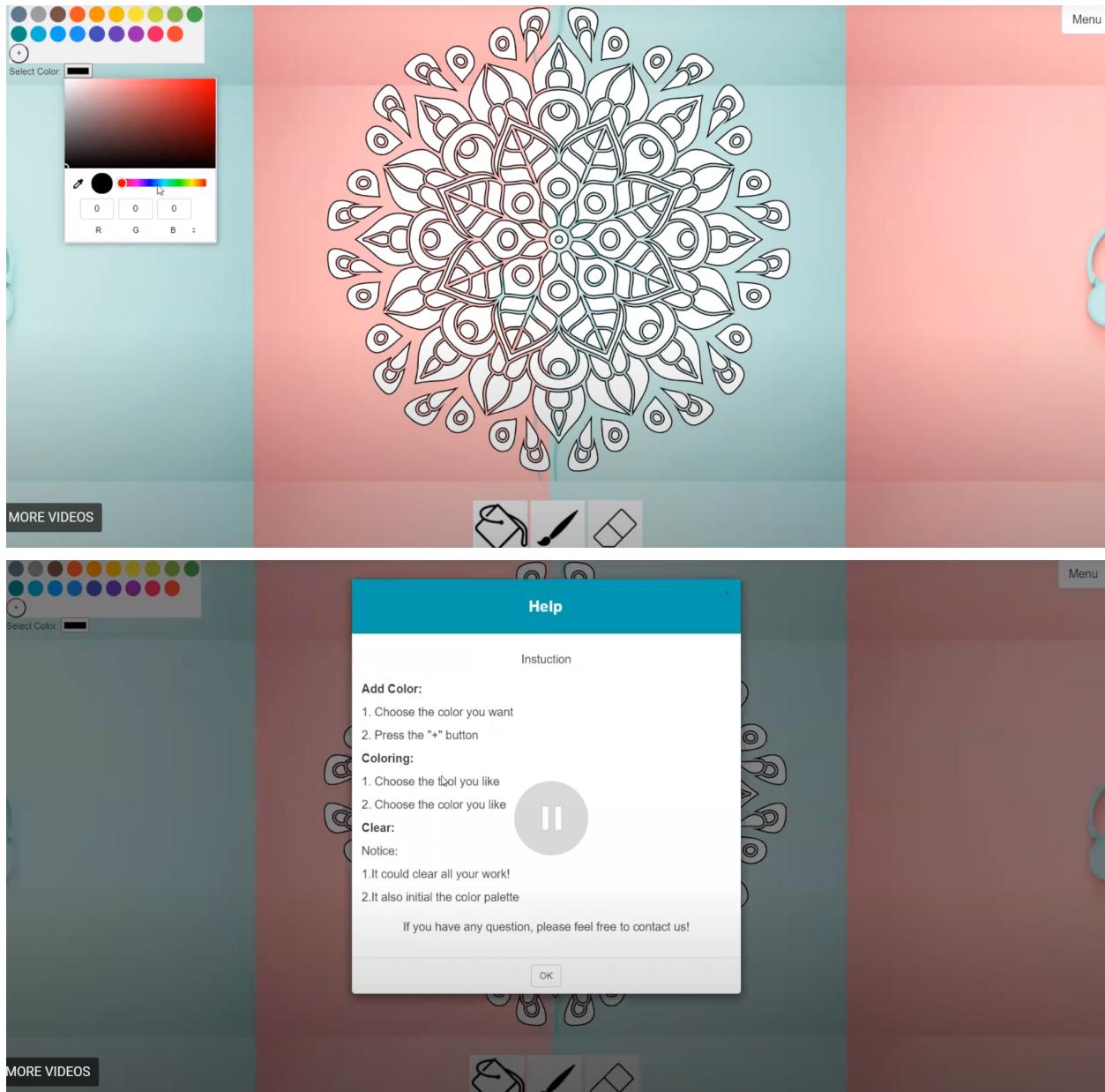
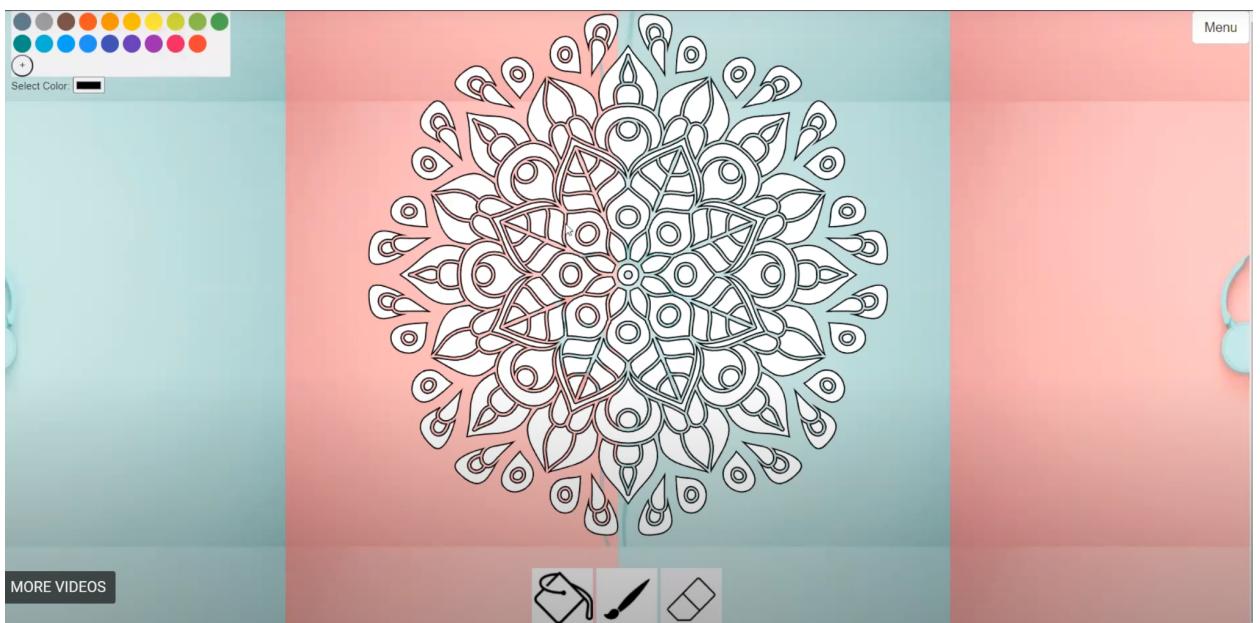
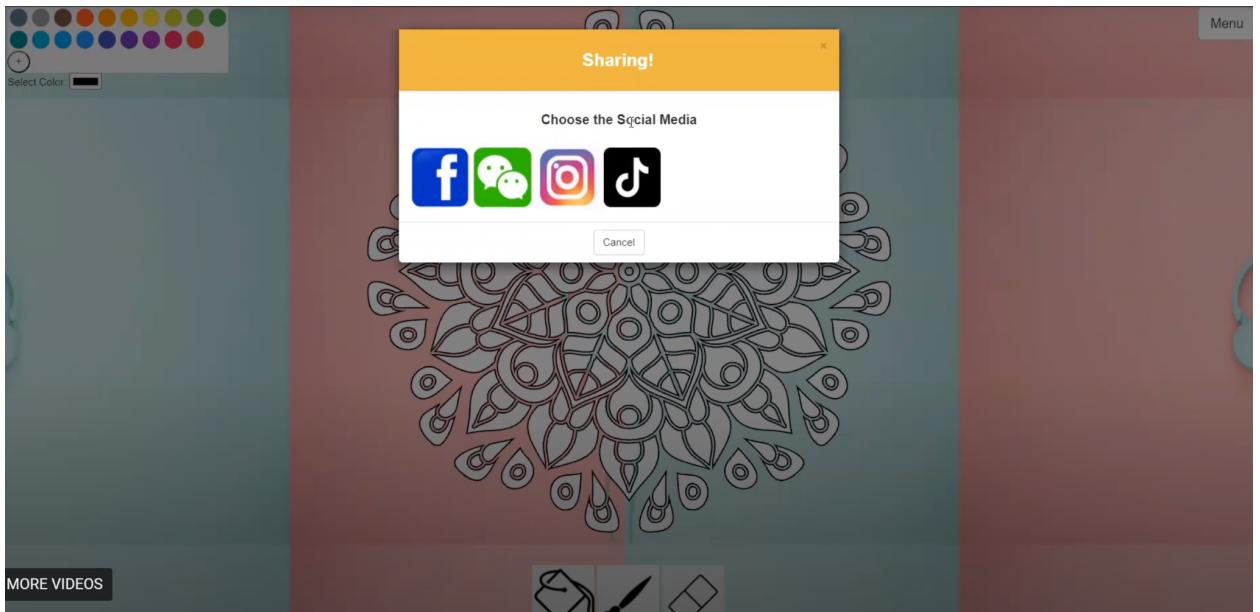


CS160 PROJECT 3 FINAL REPORT

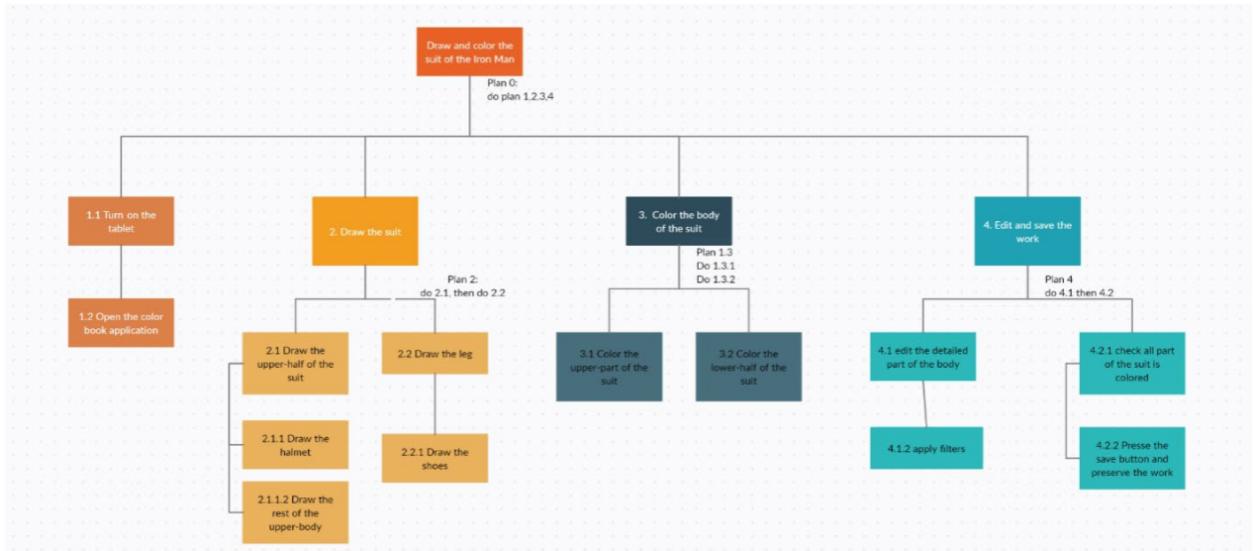
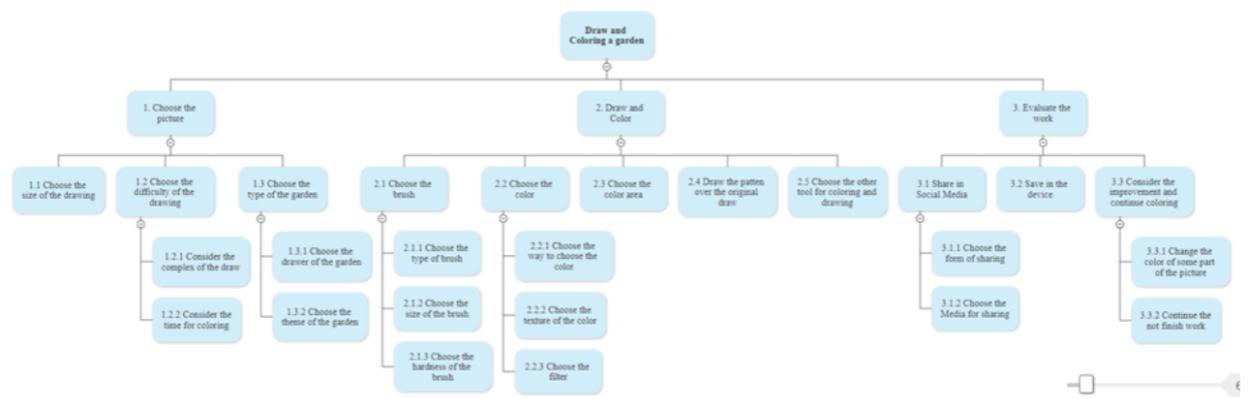
Authors: Yixin Chen, Shengxian Chen, Minhui Liang

- “Hero” screenshots of the website





1. Hierarchical Task Analysis tree (checkpoint 3.1)



2. Observational Study Protocol (checkpoint 3.2)

- v. How do you feel about this image/task?
- vi. Do you think the color is enough for you?
- vii. Do you want to add something to the drawing?
- b. Give them an extra color and time:
 - i. Do you think the color is enough?
 - ii. Do you want to change the color you just finish?
- 5. (2 mins) Look at the completed image together
 - a. Ask them to describe it briefly
 - b. How do you feel with your work?
 - c. Would you like to share in your social media?
 - d. Would you like to improve your work? Or change the color of your part?
- 6. (1 min) Thank them for their time
- 7. (1 min) Take a picture as a record
- 8. Observe different interpretations of the same half-outline

OBSERVATIONAL STUDY PROTOCOL

Observing Coloring a Half-Completed Drawing

1. (1 min) Introduction

2. (4 mins) Ask about creativity and their experiences with art

a. Do they consider themselves creative?

b. Do they consider themselves an artist?

c. Do they prefer to work on structured or open-ended projects?

d. When was the last time they completed a creative project?

e. How often they colored?

f. How long they colored?

g. How many colors do they need to draw a picture? What are they?

h. What kind of tool you need?

i. What type of picture they would like to color?

3. (2 mins) Explain task: Here is a half-completed drawing, we'd like for you to color it in 5 minutes. Please talk about your process as you go.

4. (5 min + 3min) Task: Coloring

a. Questions to ask during the task:

i. What does this image look like to you?

ii. How do you plan on coloring this?

iii. What colors do you think you'll use? Why?

iv. Ask why/why not they chose to complete the outline

Observational study protocol

Question:

1. Introduction of ourselves:

Hi, my name is Shengxian Chen, I am currently designing a coloring app which allows users to conveniently color any images that they want. We are currently participating a class project that asks the following questions:

2. What kind of colors will you most prefer when you are trying to color an image?
3. When is the last time that you coloring an image?
4. Do you have any past experiences with: markers, crayons, digital?
5. Given the following image, how would you color it?



6. How do you think you'll approach coloring this?
7. How do you feel as you are coloring?
8. Then, give them our apps, and let them color this.
9. Given them extra color, Will you use it? How? Where do you decide to incorporate it?
10. How do you feel about the artwork you produced?
11. Do you think our app is useful when you are trying to color this?
12. Thank you so much for your time, hope you have a great day.

Observation study protocol

1. (1 min) Hi, my name is Yixin Chen and I am a 4-th year CS student. I am collecting info for coloring interaction and designing a coloring app.
2. (1 min) Have you ever participate in coloring activity or use color app?
3. (3 min) a. What is your favorite color
b. When is the last time you colored
c. What is your past experiences with coloring digital ware
4. (3 min) explain think aloud and show example with my pen.
5. (4 min) Show the participant an image of iron man suit and observe their coloring behavior
 - a. how do you think you will approach coloring this
 - b. what are the colors you will use for coloring
 - c. what part of the suit do you think is necessary for coloring
6. (3min) How do you feel about the artwork you produced
7. (1min) Thank participants for their time
8. (1 min) save their drawings

3. Recruiting Message (checkpoint 3.3)

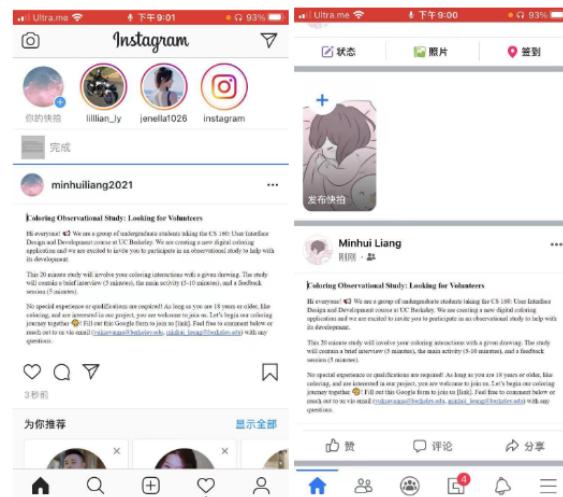
Coloring Observational Study: Looking for Volunteers

Hi everyone! 🎉 We are a group of undergraduate students taking the CS 160: User Interface Design and Development course at UC Berkeley. We are creating a new digital coloring application and we are excited to invite you to participate in an observational study to help with its development.

This 20 minute study will involve your coloring interactions with a given drawing. The study will contain a brief interview (5 minutes), the main activity (5-10 minutes), and a feedback session (5 minutes).

No special experience or qualifications are required! As long as you are 18 years or older, like coloring, and are interested in our project, you are welcome to join us. Let's begin our coloring journey together 🎨! Fill out this Google form to join us [link]. Feel free to comment below or reach out to us via email (vuksavanna@berkeley.edu, minhui_leung@berkeley.edu) with any questions.

Screenshot:

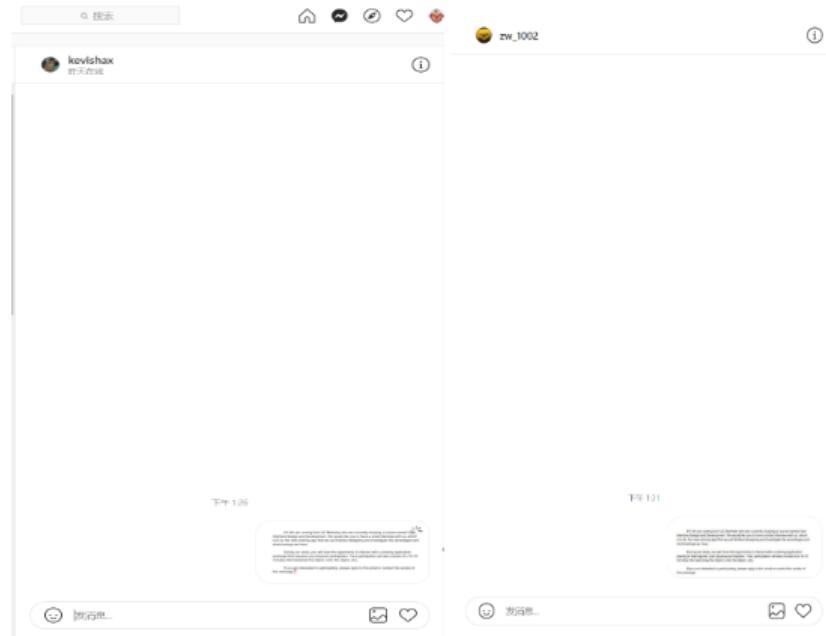


Hi! We are coming from UC Berkeley who are currently studying a course named User Interface Design and Development. We would like you to have a small interview with us, which is to try the new coloring app that we just finished designing and investigate the advantages and shortcomings we have.

During our study, you will have the opportunity to interact with a coloring application prototype that requires your physical participation. Your participation will also consist of a 10-15 minutes interview(draw the object, color the object, etc).

If you are interested in participating, please reply to this email or contact the sender of this message.

Screenshot:



4. Findings from the Observational Study (checkpoint 3.4)

IV. Finding according to the study

Finding 1:

Comparison between different colored images - one of the participants says: "Coloring gives image spirit, sometimes I prefer an uncolored image so it could give me more space to creatively imagine what could this image be like with color. I suggest that the app can support a function for users to perform colored image comparison so we can choose which image expresses more feelings and which image best represents our attitude." This is a thought-provoking quote that gives us a clearer direction of what our app will look like. We decided to support a version tracking function that enabled users to test their different coloring schemes and choose the best looking picture of their choices.

Finding 2:

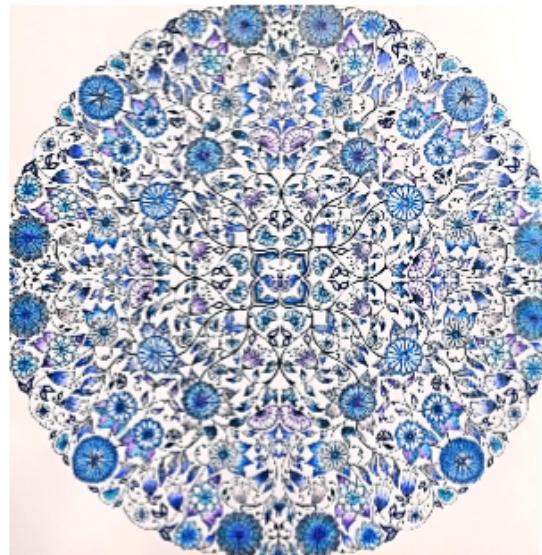
Depending on the users, one might choose to use less color, while the others will prefer more colors. So I think our apps should choose between these types of users and give them more personalized functionality such that they can use our app easily. Also, we can support different nibs of the drawing pens and brushes, which allows users to achieve their artistic objectives and outcomes efficiently.

Finding 3:

Difference from physical coloring – One participant mentioned that it would be great if the virtual coloring application can have more options of emulated coloring tools(brush, assorted color panel, pencil, etc.). Also, he said that it is cumbersome to zoom in to draw details in a virtual coloring setting(using the colorfy app), and sometimes he unintentionally colored regions that he did not want to color, because he was moving the drawing pen with his finger the entire time.

III. Images/screenshots of coloring artifacts

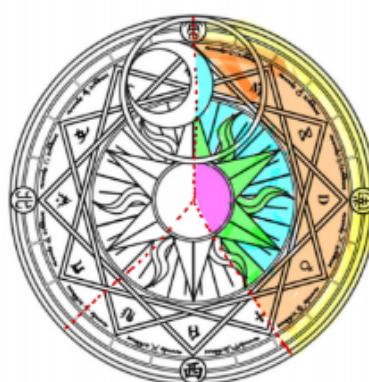
Screenshot 1:



Screenshot 2:



Screenshot 3:



1. Creative? No, I don't think so.
2. I like coloring because it is very stress-reducing. I would have a strong sense of accomplishment after finishing coloring work.
3. Structured.
4. Yes.
5. Sometimes.
6. Around half an hour.
7. Green, yellow, red, blue, brown
8. Color pen
9. Simple landscape painting
10. I think it is a tree house.
11. I would like to start with the leaves, branches, and trunk. Then birdcages.
12. Green for leaves, brown for branches. The other color will be used on birdcages.
13. No. Since there is not enough time, I choose the small pieces to color first.
14. I like this image. I think it would be very beautiful after coloring.
15. Yes. I think it is enough.
16. No, I don't want to draw anything else since I don't know what I could add.
17. Improve? No. Everything is fine right now.
18. Share? Yes, I do.
19. I want to complete the whole coloring.

Third participant:

1. In terms of coloring, I do not consider myself that creative.
2. Yes. I like drawing.
3. Structured.
4. Yes.
5. Once in a while.
6. A few hours.
7. Red, yellow, etc. They brought positive vibes.
8. Paper, tablet, pigment, pen, brush, etc.
9. Simple drawing.
10. Now the participant starts drawing.
11. This image looks like a magical symbol to me.
12. I am planning to color the sides first, and then the center.
13. I will use light colors, such as light orange, light blue, and light yellow.
14. After coloring, this image seems smooth and looks good to me.
15. Not enough. It's half-completed.
16. No
17. Yes. The color is enough.
18. You can add more coloring options, sidebars, crayon menu, etc.
19. Yes. I can post this to my snap story.
20. No. (Coloring finishes)

I. 1-2 sentence description of each user I recruited

First participant:

First participant does not consider himself as being creative. He took a coloring course during his high school years. Compared with coloring, he prefers images without color because he thinks coloring restricts creativity.

Second participant:

The second participant is a CS student from UCLA. He is interested in playing games including the coloring game.

Third participant:

The third participant I recruited is an EECS student from UC Berkeley. He is interested in the design of coloring applications and possesses some experience in coloring.

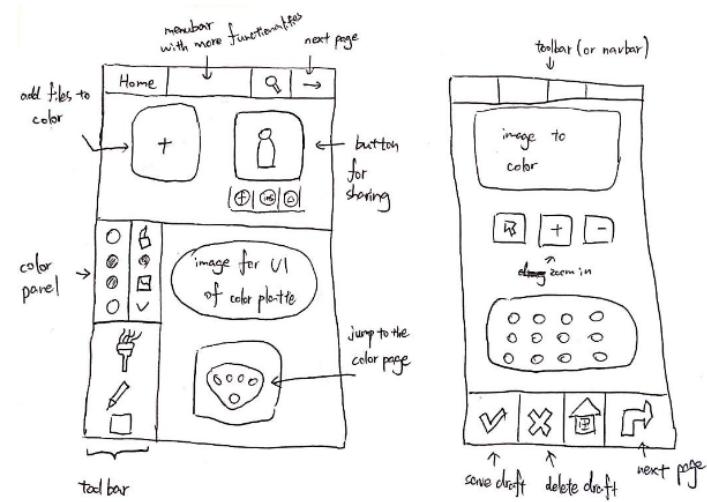
II. Rough transcript for the participants (Participant responses of 3.2 questions)

First participant

1. No
2. Just so so. Coloring will change the feeling of an black-white image.
3. open-ended/
4. Yes
5. 2 years once
6. 30 minutes
7. Black, blue, white, purple
8. brush
9. Complex drawing
10. Not enough
11. No
12. Yes
13. Red as the background
14. More types of tools. Add more color options
15. Yes
16. Yes

Second participant:

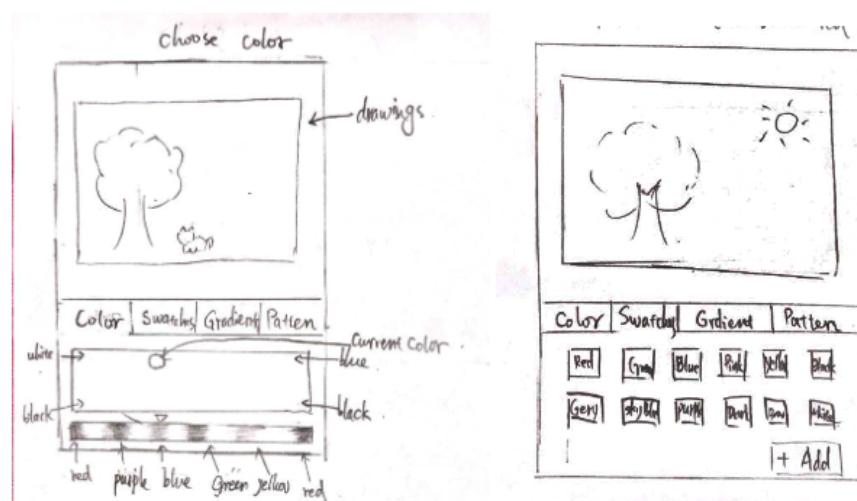
5. Design Concept (checkpoint 3.5)



Synthesis

1. aspects of the sketches that are similar:
 - All of our sketches include color palette, toolbar, navigation bar, etc.
 - Users could customize a series of tools and colors they like.
2. aspects that you think are particularly effective:
 - In terms of convenience, the image and file management design is particularly efficient for tracking our editing history.
3. aspects that you could change in a future iteration:
 - We can simplify some views and functionalities.

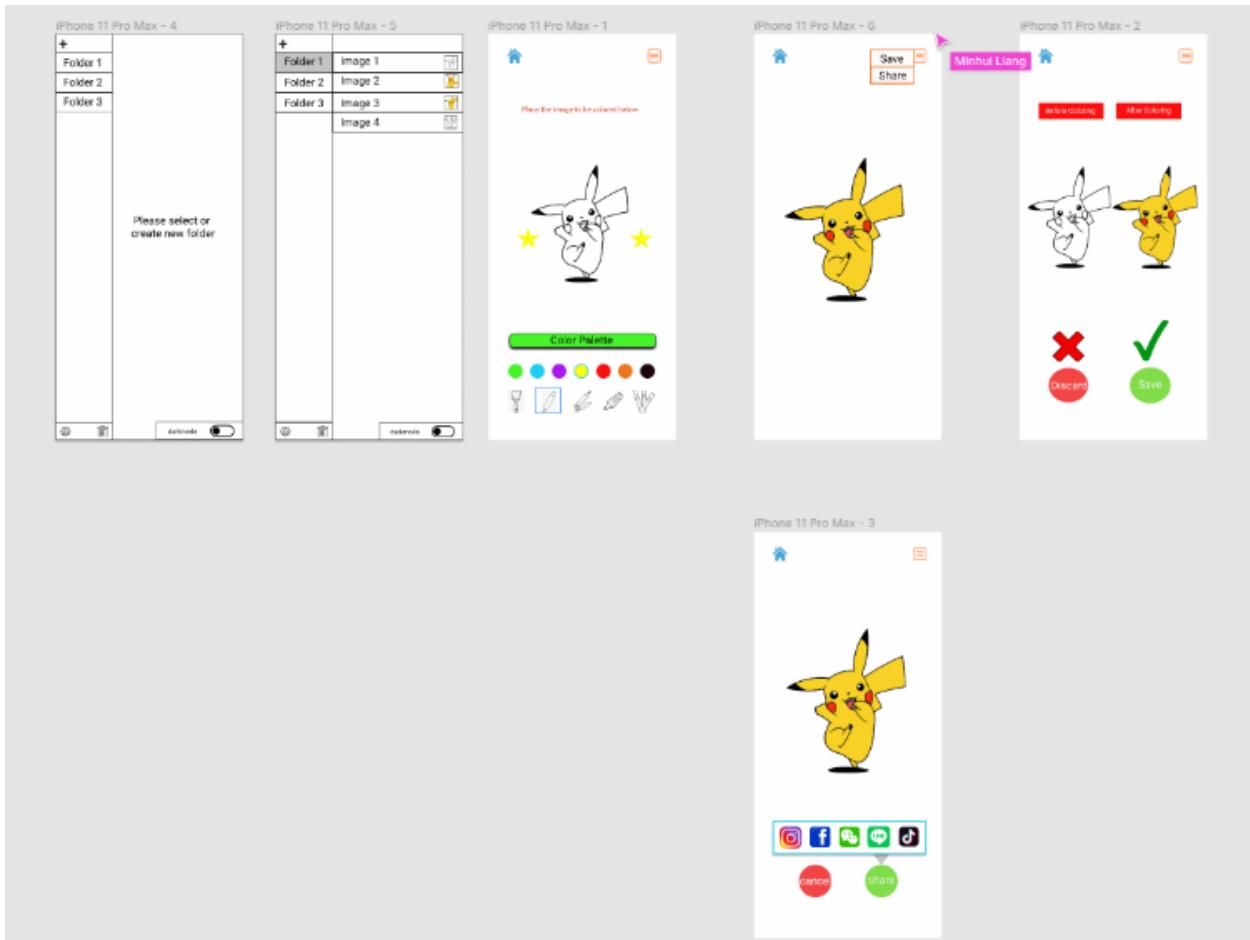
Description: Users can add folders/files and view their historical edited images in the main menu. According to the findings of an observational study, users hope to add some details to the drawings with small brushes and different colors. Therefore, in our design, we add the function of adjusting the brush size and the colors. Users can have a variety choices of coloring and drawing with different sizes of crayons.



6. Figma Prototype (checkpoint 3.6)

Link:

<https://www.figma.com/file/zLmqjn7w1onQIYUoJ2SrtR/proj3.5-prototype?node-id=0%3A1>



7. Findings from Usability Study (checkpoint 3.7)

10. Any other thoughts?

- a. Is it possible to add an eraser, so I can delete anything we incorrectly color?
 - i. Yes. We will support that later
- b. Is it possible to delete folders?
 - i. Yes, if you look at the icons on the main menu, there is a trash can icon you can use to delete either a folder or an image file

11. Thank you so much for your time, hope you have a great day.

12. Reconvene with partners.

Reflection & Synthesis

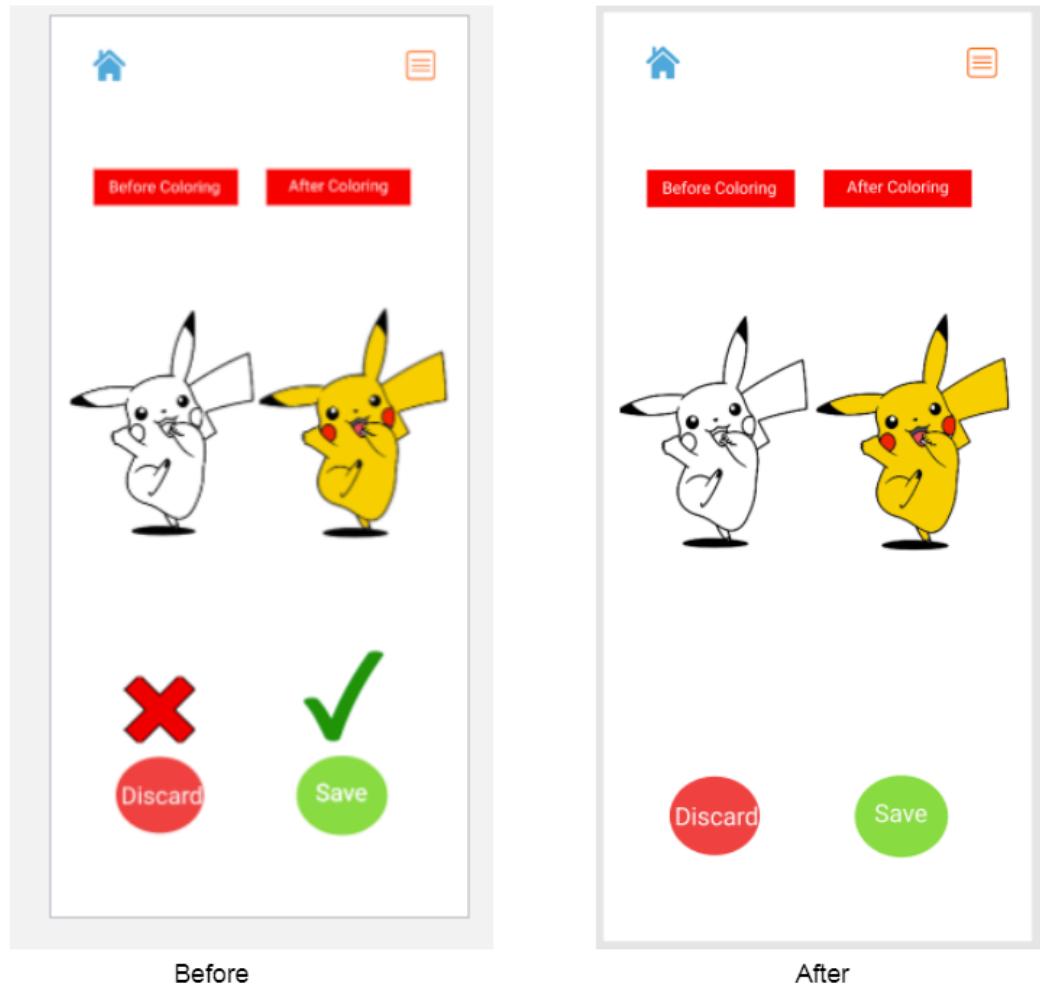
- What did you learn from how the user interacted with your prototype?
 - This is a really helpful interaction on enhancing our app functionality and users' experience. We learned that we didn't correctly interpret users' needs such as more color options, erasers, and redundancy of icons. Also, we didn't have a help button for users to inquire about possible confusions or misunderstandings. In our actual implementation, we will pay more attention to some detailed aspects and try to meet the users' needs as much as possible.
- What parts of your interface worked well and allowed the user to achieve their goals?
 - I think our app is clean and easy to understand for users. Also, the demo is really helpful for users to visualize what it will be like when they actually use our app.
- Did the user say or do anything surprising or unexpected? (If so, what?) Did they use the prototype in a different way than intended?
 - The user gives a lot of useful suggestions on our app. He unexpectedly tells us the redundancy of some of the icons which we think are really useful. No, I think they use our app in the way we intended.
- Did the user request any features or functionality that you had not previously thought of?
 - Yes, eraser, this is really important but we forgot about that.
- How will your learnings help inform the next iteration of your prototype?
 - We should pay attention to some detailed aspects of our prototype.

<https://www.figma.com/proto/zLmqjn7w1onQlYUoJ2SrtR/proj3.5-prototype?node-id=9%3A2&scaling=scale-down&page-id=0%3A1>

Notes during usability testing:

1. Introduction of ourselves:
 - a. We are currently doing a usability test of our new designed app. We hope to learn more about the improvements that we can make of our app. And our app is not fully implemented yet, so we hope to get more unfiltered feedback.
2. Ask about the questions that users might have:
 - a. Q: Can we add images that we are interested in coloring with?
A: Yes, we can.
3. Ask about the initial thought that the user has:
 - a. I think the app is simple, clean, and easy to use. The UI is organized and directly implies the functionality of each part. I think I will like this app.
4. Let's imagine a scenario where you want to use this app to color this Pikachu's picture. Can you walk me through how you would go about doing this?
 - a. I will definitely use yellow to color his body, and red/pink to color his tongue/cheeks.
5. What do you think would happen when you click on the menu button?
 - a. I think something interesting will pop up
6. What do you think would happen when you click on the share button?
 - a. I think we will go to a list of selections telling us what the social media is currently available which allowing us to share our colored image
7. You mentioned that the "+" sign is a bit confusing:
 - a. Q: The "+" button is supposed to add something into the app, but when I click on it, nothing happens. Why is that?
A: This "+" button can add a new folder if no folder is currently selected. If a folder is currently selected, then it is supposed to add a new image into that specific folder. Also, we will inquire the users what is the name that would like for the newly created folder/image.
8. You mentioned that we do not have more color options:
 - a. Q: I try to add some pink color into the Pikachu's mouth, but I can't find any pink in the selection folder.
A: We will prompt the users to customize their color selection folder when we actually implement the application, so you can add the pink color there. The reason why we don't have pink is because this is an incomplete demo.
9. You mentioned that the Save/Check, Discard/Cross icons are redundant:
 - a. Q: I think they are redundant since everyone knows the check mark represents consent and the cross mark represents cancel/decline, there is no need for the app to redundantly mention what their respective meanings are.
A: Agree, we will keep only one of the pairs. Thanks!

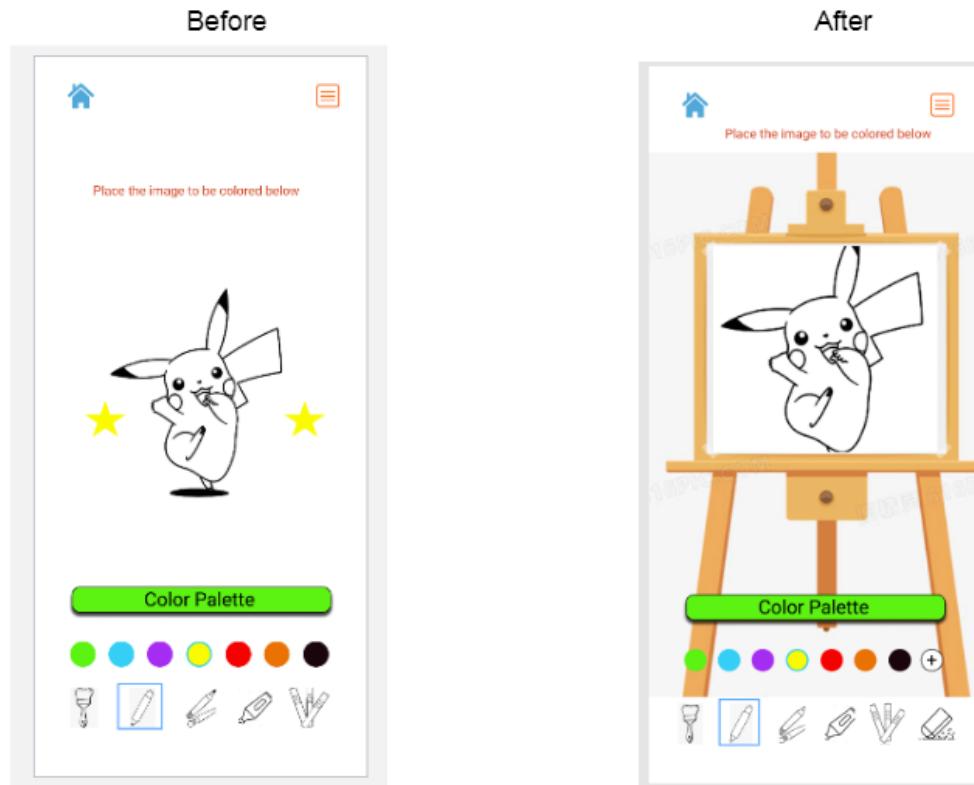
8. Revised Figma Prototype (checkpoint 3.8)



<https://www.figma.com/file/zLmqjn7w1onQIYUoJ2SrtR/proj3.5-prototype?node-id=0%3A1>

Three changes we made:

1. Add an introduction screen
2. Add an eraser
3. Delete redundant confirming icons.



9. Documentation of the Interactive Django Prototype(checkpoint 3.9)

Name: Embellish

Tagline: Color the images! Draw your dream!

Description: Users can choose the image that they like to color on. The website supports filler and brush with any colors that users like to use. Users can use an eraser to delete the work that they just made. Also, users can save their work, and users can clear their work. Users can also share their work onto the social media that they want.

Pain points: Our design has not been able to implement the functionality of zooming the size of the canvas, adjusting the size of the brush, and deleting the color of the palette. We need to provide more categories of images for users to choose.

Github: <https://github.com/cs160-summer-2021/p3-starter-code-shengxianchen11>

Video: <https://youtu.be/BtuhApQ26TQ>

Reflection: We successfully implemented brush and filler, also we are able to have pop up windows when users click the “save” button. We are able to add colors that the users want. This is the main idea of our website because this is great to use. We didn’t implement the actual file saving part. Also, our design has not been able to implement the functionality of zooming the size of the canvas, adjusting the size of the brush, and deleting the color of the palette.

10. Links to Github and video (checkpoint 3.10)

Github: <https://github.com/cs160-summer-2021/p3-starter-code-shengxianchen11>

Video: <https://youtu.be/BtuhApQ26TQ>