



# Arty

## Arty

Arty is a mobile application developed for the art community and aims to bring more awareness and attention to artists, their art, and their creative process. A developed prototype of Arty can be found at <https://github.com/DarenDunaway/Arty>. From this link, you can also clone the repository and run the application yourself. Following the creation of our working prototype, we set out to evaluate and assess our design through various user tests. The protocols for these tests, justifications for what was tested, and results are described below.

## Evaluation and Test Protocols

We completed several tests in order to assess our implementation of Arty. These tests include a heuristic evaluation, cognitive walkthrough, predictive evaluation, retrospective test interview, and think aloud evaluation. The think aloud evaluation also included a post-evaluation questionnaire. Before every test involving users, we told users the purpose of Arty and the general background of this project. We also asked some general questions (this info will be revealed in the User Demographics section).

The heuristic evaluation and cognitive walkthrough were performed by other students in CMSI 370. The same users completed both tests. Before completing the heuristic evaluation of Arty, we reminded users of the 10 basic usability heuristics. We instructed users to perform the core features of our app, which are posting, viewing posts/comments, and editing their profile. While testing these features, we had users evaluate Arty according to these 10 principles and write down any user-interface elements that failed to conform to these principles. If a principle was not discussed when evaluating a feature we understood that principle as being met and satisfied. Following the heuristic evaluation, we also wanted these users to perform a cognitive walkthrough. While again completing the task of creating a post, we had them write out their thoughts for every atomic action they were to perform. We told users to write down if they understood the task and desired outcome, if they were able to notice the desired outcome and result, and any other additional thoughts they had. For the heuristic evaluation, users were given a piece of paper with the tasks to be tested and a list of the atomic actions required to complete each task. The list is defined below. Information and results were recorded

on a google document.

### Instructions for Heuristic Evaluation

After opening the app, perform the following:

- View older and newer posts
  - Navigate to the home page by clicking the house icon on the bottom tab bar
  - Tap screen and swipe up to view 'lower' or older posts
  - Tap screen and swipe down to view 'higher' or newer posts
- View comments
  - Navigate to the home page by clicking the house icon on the bottom tab bar
  - On any post, tap the green button that reads "Comments"
  - Tap the text box that reads "Comment"
  - Type 'This is a comment' to see how you would add a comment
    - You won't be able to post a comment yet
  - Click the green button that reads "X" to exit the comments section
- Create a post
  - Navigate to the home page by clicking the house icon on the bottom tab bar
  - Tap the white plus (+) sign located on the top right of the screen
  - Tap the text box under the header Composition
  - Type 'Hello everybody. This is my first post. Arty seems like a cool and interesting application'
  - Tap the text box under the header Caption
  - Type 'Post #1'
  - Tap the red button that reads "Post"
    - Notice your new post at the top of the home page
- Edit your Profile
  - Navigate to the profile page by clicking the person icon on the bottom tab bar
  - Tap the pencil icon located on the top right of the page
  - Tap "Name"
  - Type your name and hit OK
  - Repeat the last three steps for both your occupation and bio

The predictive evaluation was performed by our team. We executed a Keystroke Level Model analysis of Arty's post feature. This analysis and the justification for using this model are explored in the Predictive Evaluation section located further down in the document.

The retrospective test was performed by potential users and customers. We asked them to create a post and to edit their profile page. Before the test, we told them only how to navigate to the home page and profile page, and what their goals were. During the test, if they became stuck we provided hints. Following their completion of the desired tasks, we gave them a 5 question retrospective test. The questions were asked and answered orally. The questions we asked these users are provided

below. Answers to these verbal questions were recorded on the same google document used for the heuristic evaluation and cognitive walkthrough.

#### Questions for Retrospective test

1. How did posting go? What issues did you have, if any? Did something not make sense? Etc.
2. How did viewing comments go? What issues did you have, if any? Did something not make sense? Etc.
3. How did editing your profile go? What issues did you have, if any? Did something not make sense? Etc.
4. What was navigating the app like?
5. Did you have any issues starting an action? (posting, viewing comments, starting to edit profile)

The think aloud test was performed by a different set of potential users and customers. For this test we only had users create a post; however, we required these users to talk out loud while they attempted to complete the task. Before testing, we only told users how to navigate to the homepage and their goal/task. If they couldn't figure out how to perform the task or got stuck at some subtask, we provided verbal hints. We instructed these users to continually talk out loud, saying what they were doing, thinking, planning, etc. We recorded what these users said out loud, as well as our assessment of their success completing the task, on the same google document used to store the results of previous tests. Following this think aloud test, we gave this same set of users a questionnaire. This survey was delivered in the form of a Google Form. The results were gathered and organized by Google. The questions that were included in this post think aloud evaluation questionnaire are provided below.

#### Questionnaire given to think aloud participants after their evaluation:

1. What was your overall feeling about Arty, it's current features, prospective features, design?
2. Would you recommend this application, once complete, to creators or artists you know?
3. Arty could greatly improve artist outreach, provide a platform for disproportionately represented artists, and allow artists a chance to receive constructive feedback.
4. Rank the following features or pages in order of what you would like us to work on next:
  - a. Posting pictures
  - b. Posting videos
  - c. Posting audio files
  - d. Community Page
  - e. Adding Tags/comments
  - f. Further customization of the Profile Page
5. Is there anything you think we should add to Arty?
6. What social media interface do you like the most?
  - a. Instagram
  - b. Twitter

- c. Tik Tok
  - d. Reddit
  - e. Facebook
7. What current social media platform do you think Arty most resembles? Why?

### User Demographics

The heuristic evaluation and cognitive walkthrough were performed by 3 students also in CMSI 370. All students were Computer Science Majors and experienced with social media applications like Instagram, Twitter, etc. All students also understood the 10 heuristic principles and the general requirements for an effective, efficient user interface.

The retrospective interview test was completed by 5 individuals between the ages of 20 and 24, with 4 of the 5 currently enrolled in college. The college students were STEM and business majors, while the person not in college was a mechanic. All 4 out of the 5 used social media avidly, with one college student having limited experience with it. 2 of the individuals were aspiring artists and hope to start posting creations on social media soon.

The think aloud evaluation was performed by 5 individuals (each also answered the following questionnaire) also between the ages of 20 and 24. All of these individuals were experienced with social media applications and currently attending college. 3 of these 5 individuals were artists, 2 of whom are studying/majoring in some form of art in college. All 3 of these individuals have posted their versions of art to a platform previously.

### What we Tested and Asked

The features we tested were creating a post, viewing posts/comments, and editing the profile page. We tested these features to evaluate the current system and measure both its learnability and efficiency. We wanted to know how easy it was for users to understand the process of creating a post and editing the profile page. We also wanted to know, after obtaining knowledge on how to complete these tasks, how quickly users could execute each task. Our questions, especially the retrospective test questions, aimed to expose any issues test users had with the learnability and efficiency of Arty's current implementation.

We also wanted to achieve some measure of satisfaction from users when they used our app. The questionnaire that was provided to the think aloud participants contained several subjective questions, which allowed us to measure the user group's feelings and general impressions of our system. We also asked the other user participants their general feelings about our product following their evaluations.

### Predictive Evaluation

We completed a Keystroke Level Model evaluation of our creating a post feature (specifically, a text post). Although our application is designed for mobile devices and should be evaluated using the Touch Level Model, we are currently running and testing the application on our laptops. Because of this, combined with the lack of baseline measurements for the TLM model, we decided to do a predictive evaluation using the KSLM model. For this analysis, we assumed Arty was already opened and on the home page. The list of actions, followed by the prediction times for these actions, is provided below. One more assumption we made was that pressing a single key took on average .35 seconds (operator **K**).

**H** (Home on mouse)  
**P** (Point to '+' icon in top right of page)  
**P<sub>1</sub>** (Click icon)  
**P** (Point to text box below section 'Composition')  
**P<sub>1</sub>** (Click inside box)  
**H** (Home on keyboard)  
**K** (Type a letter) x  $n_1$  (number of characters in your composition)  
**H** (Home on mouse)  
**P** (Point to text box below section 'Caption')  
**P<sub>1</sub>** (Click inside box)  
**H** (Home on keyboard)  
**K** (Type a letter) x  $n_2$  (number of characters in your caption)  
**H** (Home on mouse)  
**P** (Point to 'Post' button)  
**P<sub>1</sub>** (Click button)

**Measurements:**  $H = 0.40$ ,  $P = 1.10$ ,  $P_1 = 0.20$ ,  $K = 0.35$  (average),  $n_1$  = number of characters typed in composition text box,  $n_2$  = number of characters typed in the caption text box

**Total:**  $5H + 4P + 4P_1 + Kn_1 + Kn_2 =$   
 $= 5(0.40) + 4(1.10) + 4(0.20) + 0.35n_1 + 0.35n_2 = \mathbf{7.2 + .35(n_1 + n_2) \text{ seconds}}$

## Results

Comments made during the heuristic evaluation were focused solely on Arty's violations of the 10 heuristic principles. The experts who evaluated our app claim we have a few potential visibility of system status violations. The lack of a notification telling users the creating a comment feature isn't implemented, and the lack of a notification informing users their post was successfully created causes Arty to fail in upholding the visibility principle. One evaluator also said we should have more information on the posting page to tell users what the page and individual features are used for (another violation of the visibility principle). The inability for users to exit the first popup menu generated when trying to edit the profile page was argued by one evaluator to be a violation of the user control and freedom principle. All evaluators argued the ability to create a post without a composition or caption (a post with no content) caused Arty to violate the error prevention principle. Some evaluators said the poor default values in each text box located on the posting page caused Arty to fail in upholding the flexibility and efficiency of use principle (one said

it was also in violation of the visibility principle as it didn't tell users what the purpose of each text box was). Finally, all users believed Arty was potentially violating the aesthetic and minimalist design principle as our UI color scheme (mainly red and green) could cause issues for color-blind users.

The cognitive walkthrough was based on the evaluator's progress through creating a post. All users, because of what they wrote down as they progressed through this action, understood the general task and were able to achieve a level of understanding that allowed them to successfully create a post. One issue that was brought up during this evaluation was that the button to initiate posting is only located on the home page. A different issue that one user talked about in their walkthrough was the lack of information on what should go in each text box. This evaluator didn't really know what to put in the composition text box. Two of the users also believed the Add a Tag button was unnecessary (instead, just add tags in the boxes). Users also thought having no notification telling the user their post was successful was an issue to consider solving. As noted previously above, users revealed in their walkthroughs that they were concerned with the ability to create posts without entering text in either text box.

The retrospective test was carried out after having future consumers post, view comments, and edit the profile page. The users testing the platform all felt the posting button should be more clear. One commented on how the 'Post' button was the same color as the navigation tool at the bottom of the screen, which they found made the screen blend together. All users liked the comments overall, as they were 'simple but effective', as one of the users said. Moving to the profile page, one user commented on the proximity of the cogwheel for the settings page and the pencil to edit. This user felt editing should be contained within the settings. Another user commented on the kind of pop-up itself. They asserted that they felt the IOS pop-up did not fit the style of Arty as a whole and would have preferred something similar to the comments. For the app overall, most users enjoyed their experience, as it is simple and 'flows well logically'. Other than the comments described above, the overwhelming response was positive. The color scheme, simplicity, and logic of the app made it easy to use and enjoyable to navigate.

The think aloud test was focused on creating a post. Only one user was confused about how to get to the posting page, forcing us to give them a hint. Once on the posting page, the majority of users were slightly confused about where to start. 3 of the users verbally asked what the Add a File and Add a Tag buttons did and interacted with both buttons first after reaching the posting page. Once realizing they had to add a caption and composition, which came with verbal clues that this was their understanding, each user started to type in each text box. All but 1 user started in the composition box. This user was confused at first as to what the differences were between each box. We helped clear up this confusion through a verbal hint. Once each user was happy with what they had in each text box, they naturally hit the Post button. Each user was excited that they saw their post on the main page (their excitement was exciting to us). Overall, each user understood the task of creating a post and was able to complete it with minimal confusion.

The post think aloud questionnaire revealed some interesting information regarding the overall feelings towards our current implementation of Arty. All participants commented that their overall feeling of Arty was positive and that the application was interesting. Some noted they wished there were more features implemented and that they would be willing to test the application again after further development. Two users said they like the overall design but weren't convinced the current color scheme was a good color scheme for our application. All 5 participants said they would recommend this application to creators or artists and all 5 users also said this app would greatly improve artist outreach, provide a platform for disproportionately represented artists, and allow artists a chance to receive constructive feedback (3 agreed [a numerical response of 2] and 2 strongly agreed [a numerical response of 1]). 3 of the 5 users admitted they most enjoyed Instagram's UI while the other 2 said they most enjoyed Twitter's UI. All users also said they believed Arty to be most similar to Instagram or Twitter. The average ranking for what features these test users would like to see implemented next was, from 1 to 6: posting pictures, posting videos, posting audio files, adding tags/comments, the community page, and, finally, further customization of the profile page. Only 3 users thought of anything we could add to Arty. These recommended features were dark mode, basic audio files that don't require video or static pictures, the ability to customize the text in text posts, and the ability to customize photos/videos in the app.

### Synthesis, Conclusion, and What's Next

Our evaluation results revealed tons of information about our design, what we can improve, what features currently work well, and what features need to be addressed or fixed. The heuristic evaluation and cognitive walkthrough specifically revealed information about the technical shortcomings of Arty. From these tests, we learned Arty needs to provide users with a greater knowledge of the status of the application and the purpose of individual pages/features. We also learned we need to provide both better control of the system, especially with exiting the edit profile feature, and better error prevention. We learned solving and preventing certain errors, such as being able to create posts without a composition or caption, should be one of the next things we tackle or work on. We also gathered that our color scheme may need to be changed/tweaked, especially because it can cause problems for color-blind users.

From the retrospective interview, we learned that some users do indeed like the current color scheme of Arty. We also learned some users have issues with the button that initiates creating. We learned of one perspective that identified the "+" button, and its color, as problematic. From the user study of the profile page, we learned some users thought we should redesign the edit profile popup and move the edit profile feature into the settings cog button.

From the think aloud evaluation and questionnaire that followed this evaluation we learned several other useful pieces of information. We gained similar insights into the current implementation of the create a post button. We learned that more users had problems with the lack of information supplied on the posting page. Some users agreed the color scheme could be improved while others thought it was fine. Perhaps the most important thing we learned from the questionnaire was that our app looks and feels most similar to Instagram, which also happens to be the most liked social media UI, according to our test subjects. This test and questionnaire revealed some user preferences as to what we work on next and some other features that users want to be implemented in Arty. From these recommended features we learned that a few new features we should implement are the ability to customize text posts, photos, and videos (visually).

Overall, and despite all the problems revealed from these evaluations, we learned Arty's current implementation is well-liked, an application these users could recommend to others, and most importantly, an application that could greatly improve artist outreach, provide a platform for disproportionately represented artists, and allow artists a chance to receive constructive feedback. We also learned that Arty and, specifically, the posting feature are very easy to learn (good learnability). Finally, we also learned that once users were experienced with the app they were able to efficiently work its features, features such as the create a post feature and edit profile feature.

Everything that we learned from these tests allowed us to create a roadmap for the future. The next new feature we want to implement (based on what the users would like to be implemented next) is the ability to post pictures. Our next efforts, however, will be solely focused on error prevention and experimenting with the color scheme. After improving our error prevention, we aim to provide more information on each individual page so users won't get confused when attempting to execute a desired task. Following this, we want to overhaul the profile and settings pages so users have more control and less confusion when on these pages. After this, we will then implement the posting pictures feature, followed by the posting videos feature. Following all these changes and additions, we will then execute another round of evaluations and determine our next efforts based on the results of those tests.