Gainesville To-Do

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INTRODUCTION

The city of Gainesville, home to the University of Florida, houses thousands of students, faculty members, and local families. Local residents and tourists often tend to find themselves in repetitive plans due to the lack of knowledge of other activities. Gainesville-ToDo, an interactive web application, aims to provide a resource for these individuals that informs them of events and sights all around Gainesville. Our goal is to notify the people of Gainesville of all the amazing activities that there are to do in Gainesville, ranging from great night life to having a nature walk at Sweetwater Wetlands Park, breaking the endless repetition of the same events week in, week out.

USER REQUIREMENTS

Method

To gather the data our team used Google Forms to create a survey. The questionnaire included the following questions:

General
- What is your gender ?
- How old are you?
- Are you a resident of Gainesville?

Gainesvile Residents
- How long have you been living in Gainesville?
- Which of the following roles will you say best fits your current occupation?

Gainesville Visitors
- What is your primary reason for visiting Gainesville?
- How long will you be staying in Gainesville?

Gainesville Ratings & Interest
- On a scale from 1-5, how interesting do you find Gainesville to be ?
- Which of the options below do you relate with in regards to Gainesville?
- What types of activities are you more interested in?
- What types of activities would you want to be marketed more ?
- How do you find out about different activities in Gainesville?
- Did you know that the Florida Museum of Natural History houses more than 40 million historic objects and specimens ?
- Did you know that Sweetwater Wetlands Park has daily to weekly events that allow you to interact with nature ?

We shared the survey using school chats (Whatsapp) and social media (Instagram and Facebook). After a week of accepting responses, we received 59 responses. Below are the responses to the questions:

General
- What is your gender ?
  - Male: 57.6%
  - Female: 42.4%
- How old are you?
  - 0 -18 : 1.7%
  - 18 - 20: 45.8%
  - 20 - 24: 47.5%
  - 24 - 30: 3.4%
  - 30+: 1.7%
- Are you a resident of Gainesville?
  - Resident: 84.7%
  - Visitor: 15.3%

Gainesvile Residents
- How long have you been living in Gainesville?
  - 0-6 months: 14%
  - 6 months - 1year: 12%
  - 1 year - 2 years: 32%
  - 2 or more years : 42%
- Which of the following roles will you say best fits your current occupation?
  - Local Resident: 4%
  - Student: 96%
  - Local Business Owner: 0%
  - Professor: 0%
  - Environmentalist: 0%

Gainesville Visitors
- What is your primary reason for visiting Gainesville?
  - Student Affairs: 33.3%
  - Visiting Friends and Family: 33.3%
  - Travel: 33.3%
- How long will you be staying in Gainesville?
  - 1-3 days: 55.6%
  - 3-7 days: 11.1%
  - 1-2 weeks: 0%
  - 2 weeks or more: 33.3%

Gainesville Ratings & Interest
- On a scale from 1-5, how interesting do you find Gainesville to be ?

- 1: 6.8%
- 2: 25.4%
- 3: 40.7%
- 4: 25.4%
- 5: 1.7%
- Which of the options below do you relate with in regards to Gainesville?
  - Option 1 (Always doing the same thing): 39%
  - Option 2 (Middle ground): 49.2%
  - Option 3 (Always finding new things to do): 11.9%
- What types of activities are you more interested in?
  - Community Services: 33.9%
  - Night Life: 78%
  - Food Events: 72.9%
  - Academic: 52.5%
  - Outdoors: 66.1%
  - Sports: 45.8%
  - Others: 1.7%
- What types of activities would you want to be marketed more ?
  - Community Services: 36.2%
  - Night Life: 46.6%
  - Food Events: 74.1%
  - Academic: 22.4%
  - Outdoors: 75.9%
  - Sports: 25.9%
- How do you find out about different activities in Gainesville?
  - Radio: 0%
  - Social Media: 44.1%
  - Word of mouth: 52.5%
  - School Ads: 3.4%
- Did you know that the Florida Museum of Natural History houses more than 40 million historic objects and specimens ?
  - Yes: 57.6%
  - No: 42.4%
- Did you know that Sweetwater Wetlands Park has daily to weekly events that allow you to interact with nature ?
  - Yes: 13.6%
  - No: 86.4%

After analyzing the data obtained, 93.3% of our survey participants were young adults. We observed that 96% of the residents that participated in the survey were students, also out of that portion 74% have been living in Gainesville for over a year. On the other hand, more than 50% of the visitors that replied to our survey are planning to stay for a short period of 1 to 3 days and the main 3 reasons for visitors coming to Gainesville were student affairs, visiting family and travel.

Visitors and locals found Gainesville as an average city regarding how interesting it is. Only 11.9% of our participants always find new things to do in Gainesville, showing that there is a lack of communication in the activities happening around the city. Participants expressed that the activities that they are most interested in are nightlife, food events and outdoors.

Resuming the analysis it can be observed that it is more accessible to gather data from young adults currently enrolled in academic services as students residents of the city. Additionally, there is a lack of information for locals and visitors about local attractions like parks and museums, primarily because the main source of activities broadcast is the word of mouth. Furthermore, there is a desire to increase activities in Gainesville like nightlife, outdoors and sports events.

User Requirements
Although our initial online questionnaire did not provide all the necessary data to correctly dictate all user requirements for the app, several requirements of our applications were based primarily on the survey.

To begin, based on our initial survey question regarding Gainesville residency, we got that over 84% of those that participated in the survey considered themselves to be Gainesville residents, thus, they would be the main users for the application. However, there were still 16% percent of survey participants that considered themselves Gainesville visitors, hence, they would need to be accounted for in our user types. Out of the 84% of Gainesville residents, 96% of them considered themselves students and the other 4% considered themselves local residents. Therefore, our three user types were: college students, local residents and Gainesville visitors.

User Types
1. **College students**: these users are in their late teens to early twenties, have vast knowledge of basic technology, and have interest in all fields (interest depends on individuals rather than the group).
2. **Local residents**: these have a wide range of ages [children to adults], may know some technology or none at all, and have interest varying fields depending on age.
3. **Gainesville visitors**: part of the Gainesville community for a short burst of time, mainly come to visit family members and are interested in short term events.

Due to the fact that webapp's main goal was the spread of event information, all users of the application would have two main uses.

1. The first use of the application would be to find new events for which to attend. These events would be based on the interests of those users and may be saved in their personal accounts if they want to keep track of them.
2. The second use of the application would be to provide new events for other users to view. These events would be viewed by all users, and may also target certain users based on the event category decided by the event planners.

Functional Requirements

The main functional requirement, similar to the main goal of our application, is to be able to spread information regarding events around the Gainesville Community. Although our survey did not ask participants on the specific functions they would want to see, we did gather information regarding the types of events the users are interested in. Hence, a functional requirement of our application is that users are able to distinguish between different types of events so that they may not waste time and direct their attention to their interests. In order to fulfill these requirements we created the following six categories for events: Sports, Food, Outdoors, Night Life, Community Service, and Academics. However, as events may have multiple categories or other categories, the categories form was not restricted to only one of these six.

Moreover, based on the questionnaire the two main methods users utilize to find event information were word of mouth and social media. However, as word of mouth is difficult to capture into requirements, we focused on the social media aspect when creating requirements for accounts. The following account and site functional requirements were based primarily on those seen in social media.

Account Requirements
1. As a user, I want to create a personal account so that I am able to save my preferred events.
2. As a user, I want to be able to view all events and their details in order to gage which events I am most interested in.
3. As a user, I should be able to search for any specific events that I want to know more about.
4. As a user, I want to be able to create an event post for any event I am planning. Similar to social media sites, the user accounts will save any post created by the user into their personal account page.
5. As a user, I want to be able to delete or remove any outdated events in my account, whether it be a saved event or an event I created.

Site Requirements
Nevertheless, some users may just use the site to browse events, before deciding to create an account, as is done in social media sites Twitter and Tik Tok. Hence, leading to the functional requirement that allowed users to view all events and search for events from the landing page without having to create an account.

Data Requirements

For this application, the data will be stored in a database using the development platform Firebase. The data is to be stored in two sections into two sections: users and events. Below we list all the elements contained by each of the two sections.
- For users: name, email, password, userID
- For events: attendees (list of all users attending the event), eventID, categories, date, description, time, image url, location, title, userID (ID of the user that created the event)

These data requirements stem from those functional requirements mentioned above.

Context of Use Requirements

In order to be able to use the application, the user must have a smart cellphone or computer (laptop or desktop) with internet connection. Given that it is a web application, the app may be used anywhere with internet connection. However, as the app targets the Gainesville community, the events on the app will solely be based around Gainesville. This requirement served as the basis for our sites color scheme, as we targeted Gator colors.

System Experience Requirements

Lastly to accomodate for all technological backgrounds, the site's front-end design appeals to all users with clearly labeled buttons and sections for users to understand where they are at every step. Having back/cancel buttons all throughout the site, will allow the user to roam at ease as their errors may be reversible.

INITIAL DESIGNS
Our main goal when creating the prototypes was to make a design that is simple and streamlined. We didn't want to flood the user with a million buttons and switches, so we made sure to stick to that this time around too. In both our low-fidelity and high-fidelity designs, most pages only have a couple of elements so that the page never feels overwhelming or confusing. We also made sure to have a bar on the top of the screen for consistency and to give the user an easy way to return to the home screen. As for peer feedback, we did not get much negative criticism which made it difficult to change much about our final design, however, it did assure us that we had created a good design. Most reviewers liked that our design was kept simplistic and highly functional, so we made this a priority when moving our design. Taking this into consideration, we noticed that in the "New event" page we had a lot of unused space, so we split the page into two vertical sections that

each have important inputs. We felt this made the page feel less cluttered, which creates a more positive viewing experience for the user. There was one comment which we felt we could not make a change on, not because of the content of the feedback, but because of unclear wording. The reviewer stated, "I really do feel that the log should be its own page," but we were unsure what element of our project would be considered the "log" and therefore could not change our site to incorporate their feedback. We ensured our design fulfilled the user requirement by ensuring it meets the needs of the seekers, who want to find events, and the providers, who create events. The seekers can easily find events by searching by category or by event name. We also provide the ability to say that they are attending the event if they create an account and log in, although this is optional. Providers can create events by logging in and navigating to the new event page. This setup also allows the providers to search through events to find one to attend. Conversely, a seeker can easily become a provider as long as they have an account or make one.

IMPLEMENTATION DETAILS

Our application was developed using NodeJS for the backend and React for the front end. Regarding the database implementation, we decided to use Firebase from Google. The reason for the selection of these technologies was the flexibility that these platforms offer rapid development and good responsiveness for mobile devices. Among the features that we planned to implement in our project were:

- Register users
- Users can create events adding information like date, time, description, category, and images.
- Display events organized by different categories and most recently created.
- Users can mark if they will attend the events.
- Filter events by category, keywords or popularity.

The back-end implementation was designed using React controllers to maintain a better organization, allow easier modification of the code and increase code reusability. The controllers created were: account, firebase, new event, event page, home, landing, password management, session, sign in and sign out.

The core of the back-end was developed in the Firebase implementation due to the heavy traffic that was required in order to feed all the data to the interface. To improve stability and error handling we created multiple functions to handle the queries. The functions allowed the front-end functionalities like getting user information, filter events by creators, category or the top most popular events.

The successfully implemented features were registered users, create events, filter events by category, display and organize events. The function that was not implemented

was to filter events by popularity. With the functions created in the backend the information required to implement this task in the future.

The front-end styling was done through a front-end framework called React Bootstrap.With Bootstrap different components like buttons, jumbotrons, and forms were imported and then styled to match our high-fidelity prototype. Furthermore, in order to implement our carousel's where events would be displayed, we imported another styling aid called react-slick. Using react slick allowed us to display a continuous array of events based on those in our database.

For most of the controllers, a front-end page was created that illustrated the data stored in the back end. Those components that dealt with the manipulation of the database itself (firebase and session) were not represented in the front-end of the app.

- The **landing front-end page**, illustrated the first view the users would have upon entering the site. This view was made up of a jumbotron with an image of Gainesville on the back, the title of the website, a sign-in button, a register button, and two sliders. This page will allow the users to browse the events without having to create an account. However, if they'd like to save their events they would need to create an account.
- The **home front-end page** illustrated an identical view of that seen in landing but with the user registered and signed in. Rather than just viewing the events, those users who create an account and sign-in, will be able to add events to their profile and keep track of their favorite events.
- The **sign in front-end page** presented the user with form boxes to enter their account information. In the first box, the user will insert the email address they used when creating their account. In the second box, the user will insert their password for the account. Moreover, once the user inputs their information, they may click the login button and go into their account.
- The **sign out front-end page** is utilized in the home page and allows the user to sign out of their account once done. This component is implemented as a button inside the jumbotron for the home page.
- The **account front-end page** displays the users account information along with their stored events. On the top left of the screen, the user's name as inserted during registration will appear. On the top right of the screen, a button utilized for creating new events is displayed to the user and upon click will redirect them to the new event component. Below the top, the two sliders (one with created/attending events and one with suggested

events) appear for the user to view. If the user clicks on one of those events, they will be redirected to the event page for that event.

- The **new event front-end page** displays the different form boxes the user may use when creating their new event. These form boxes include the name of the event, time for the event, place of the event, date of the event, categories for the event, description for the event and a picture for the event. Once the user has completed all the information, they may click the create button and their event will be added to the database.
- The **event view front-end page** displays all information of the event based on data from the database. This information includes the following: title, location, date, time, categories, description and picture. Furthermore, inside this page the user may select whether they will be attending the event to save it to their profile page.
- The **categories front-end page** displays all the events for the given category selected by the user. The events in this page are represented as cards from React Bootstrap and may be selected to go towards that event's page. The title for the category is also displayed at the top of the page.

EVALUATION PLAN

Population
Due to the COVID-19 pandemic, the population for this study was limited to those in our immediate surroundings. Thus, the population may not properly reflect how local residents will use the app.

Ideal Population:
- Gainesville Locals
- Gainesville College Students
- Gainesville Visitors

Access Population:
- Close Family Members

Hypothesis
Primary Hypothesis:
Using our interface, we believe users will be able to share and store event information more quickly than when using Facebook.

(Primary) Null Hypothesis: There exists no correlation between the time taken to share and store event information while using either our interface or Facebook.

Secondary Hypotheses:
1. Using our interface, users will be able to take less time to post an event they are planning than when using Facebook.

2. Using our interface, users will be able to view their saved events in less time than when using Facebook.
3. Using our interface, users will be able to find a desired event in less time than when using Facebook.
4. Using our interface, user satisfaction for creating, searching and adding an event will be higher than when using Facebook.

(Secondary) Null Hypotheses:
1. There exists no correlation between the time taken to post an event when using either our interface or Facebook.
2. There exists no correlation between the time taken to save an event when using either our interface or Facebook.
3. There exists no correlation between the time taken to search for an event when using either our interface or Facebook.
4. There exists no correlation between user satisfaction for creating, searching and saving an event when using either our interface or Facebook.

Study Conditions
Evaluation Paradigm:
The evaluation paradigm we will use in our study will be **Usability Testing**. We believe this paradigm works well with the collection of qualitative data that may be used to disprove each of the null hypotheses listed above. Furthermore, through usability testing, experimenters will be able to control the factors that may affect the users while performing the experiment.

Controlled Environment:
Users will be in a controlled environment in order for our group members to properly measure the time the users take to complete the given task.

Participant Division:
Each member of our group will be in charge of conducting the experiment for two participants. One participant will utilize the Facebook system first and our interface second; meanwhile, the other participant will do the opposite.

Moreover, each of the participants will complete these three tasks by following a given task description. These tasks will be performed in the same order for each of the two systems.

Tasks:
1. Create an event
2. Save an event
3. Search for an event

Participant Procedure
Participants will be asked to perform the evaluation. Upon receiving consent, participants will be signed in to their prospective user accounts for each interface. Participants will be given the following task scripts for them to perform:

1. It's GAME DAY! The Florida Gators are playing the LSU Tigers in the Swamp today (07/20/20). You are Kent Fuchs, an event planner, and you want every Gator fan to attend your tailgate. Kickoff is scheduled for 7:30 p.m. (19:30), therefore, the tailgate will begin at 4:00 p.m. (16:00) and end at 7:00 p.m. (19:00), to give you time to make it for kickoff. The perfect location for the tailgate will be Plaza of the Americas to situate as many people as possible. Go and create this event to make the Gator nation aware.
2. Now, you are Albert the Gator. You are given the responsibility of saving the famous tailgate that Kent created to your account. By selecting to attend the event, you are allowing other Gainesville residents to be informed of this event.
3. As a Gator legend, you are Tim Tebow and must make an appearance at Kent's famous tailgate. Search for Kent's tailgate to be well-informed of the details of the tailgate.

Before participants start each task, the individual performing the experiment will make sure the user is in the home page of the interface, logged in, and will be ready to record time to complete the task at hand. Time is measured using a stopwatch. Time will begin when a user starts the task and finish when the user completes the task. Upon completion of a task, the individual conducting the experiment will document the times. When the When the user has fulfilled all task, the individual conducting the experiment will get feedback about user satisfaction using the following Likert scale:

1. On a scale of 1 - 10, how satisfied are you with the event creation process using Gainesville To-Do?
2. On a scale of 1 - 10, how satisfied are you with the saving an event process using Gainesville To-Do?
3. On a scale of 1 - 10, how satisfied are you with the searching for an event process using Gainesville To-Do?
4. On a scale of 1 - 10, how satisfied are you with the event creation process using Facebook?
5. On a scale of 1 - 10, how satisfied are you with the saving an event process using Facebook?
6. On a scale of 1 - 10, how satisfied are you with the searching for an event process using Facebook?

After asking the user these questions, make sure to thank the user for their participation. By following these procedures, reliability was ensured by performing the evaluation in a structured manner, which tries to create a similar sequence per user. Creating an evaluation plan that measures the hypothesis that the team is trying to measure, the validity of the experiment is covered. By mirroring how a user will share and store information about events in the real world with our evaluation, the ecological validity of is met.

Metrics
Primary Metrics:
- Time taken to complete a task
  - Method of measure: Those performing the experiment will keep track of the time a user takes to complete each of the tasks by recording the time on a stopwatch application. The time will start as soon as they are given the description and sit in front of the interface and will end once they have completed the task.
- User satisfaction for each of the tasks
  - Method of measure: By asking users to rate their experience with each user interface, user satisfaction will be recorded.

Secondary Metrics:
- Errors encountered while attempting to complete a task
  - Method of measure: Those performing the experiment will keep track of user errors as these errors may have a negative effect on task completion time. User errors may include but are not limited to: retracing steps, selecting incorrect path, typing incorrect form format, etc.

RESULTS

FACEBOOK STUDY

■ Task 1 ■ Task 2 ■ Task 3
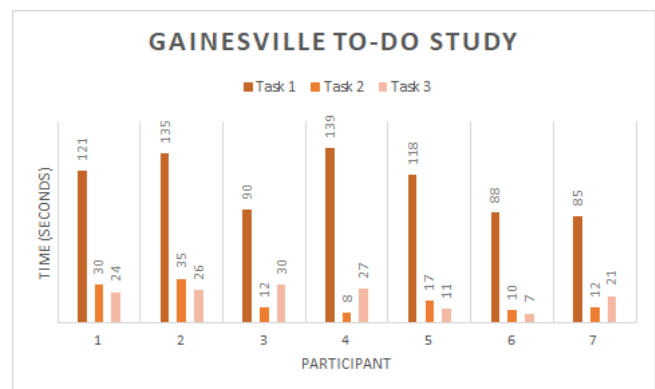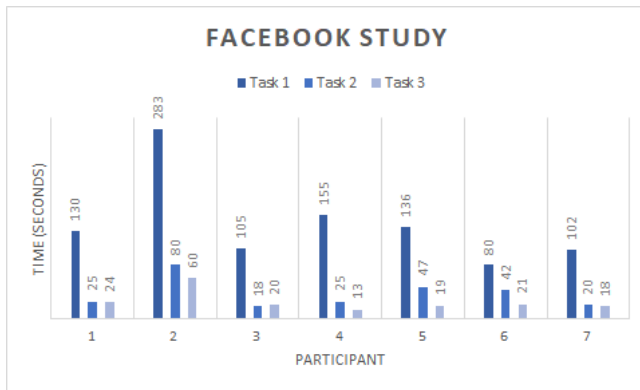
The main takeaways from our pilot study is that users do tend to take less time when creating and storing event information when using our application, Gainesville To-Do. Proving the primary hypothesis that we set for this experiment. From the graphs above, it could be noted that in various participants, Gainesville To-Do yielded faster times when completing a certain task than when performing the same task on Facebook. For instance, the average time when creating an event on Facebook was 141.57 seconds, while Gainesville To-Do resulted in an average time of 110.86 seconds. By reducing the time taken to perform this action by almost 30 seconds in our application, users enjoy the quickness in speed offered by Gainesville To-Do. An interesting finding when conducting the study was that Gainesville To-Do was the site with multiple errors when users performed their tasks. These errors increased the time taken by users to perform their tasks. The errors could be associated with the learnability of the website, as users did not have any problems while using Facebook, because of their experience with Facebook. Therefore, when users pass the learnability curve with Gainesville To-Do, errors will decrease and quicker task times will occur. With respect to user satisfaction, Gainesville college students proved to be persuaded to use the Gainesville To-Do website to organize and schedule their events while attending the University of Florida. In contrast to Gainesville visitors that were equally satisfied by both interfaces.

DISCUSSION

Our primary hypothesis was supported, which indicates that most users completed tasks faster with our interface than with the popular Facebook interface. This is important to our project, but also to the community at large because it shows that a large and popular design can be improved upon. While we are not claiming that our website is better than Facebook, our results show us that we were able to reduce the time it takes users to interact with an event creation interface. With more time and experience, it would be possible to polish the website and create a smoother user experience while retaining the time improvement. Therefore, we should not shrug ideas off simply because it has already been done, because it can always be improved upon.

Our first secondary hypothesis was also supported, so users took less time to create and post events using our interface than Facebook's. This is interesting because Facebook has a more visually appealing and polished experience, yet our rougher system proved to be faster for users to use. This shows that while visuals are important, they can sacrifice efficiency of use. This can also be because Facebook focuses on so many other systems that they cannot put too many resources on their event creation. Since our system specializes in only this use, we were able to tailor it specifically for event creation. In other words, we can improve on a system by removing superfluous aspects and optimizing it for one specific use.

Our second secondary hypothesis was also supported. This is partially influenced by the inclusion of the "My Events" scroll bar present in the account page which allows the user to quickly search through newly created events. This element is absent in Facebook's event home page, which makes users take longer by having to go through other pages to find their event. The simple addition of this element had an effect on users, which shows that it is important to make your tools easily accessible.

Our third secondary hypothesis was also supported, with users taking an average of roughly 21 seconds to search for the event and taking an average of 25 seconds with Facebook. This is despite the fact that we do not have autocomplete, which could further decrease the time taken to search for the event. This is another example of having tools being presented to the user in a way that makes it more obvious can have them access it in a faster manner.

Our fourth secondary hypothesis is the one that has the most controversy. Some users preferred Facebook while others preferred Gainesville To-Do. This can partially be attributed to Facebook's more polished look which improves the user experience. This shows that while quantitative improvements are important, the user's satisfaction also depends on qualitative data such as personal preferences and style.

What worked out as we anticipated was that users took less time to create an event using our system than they did when using Facebook. Since our system is created solely for the purpose of creating and viewing events, everything is slightly more straightforward and streamlined. Facebook's event element is only one part of a complex website that has multiple uses. An unexpected aspect is the different satisfaction levels from Gainesville visitors and Gainesville residents. While we had not thought of this, the difference could be because residents see Gainesville To-Do as more appealing since it is made to be used in the city that they live in. It could also be that because most of the residents we interviewed were younger, they were more open to change than the older population which is usually more set in their ways.

CONCLUSION AND FUTURE WORK

After the pilot was performed the results showed that Gainesville To-Do provides a faster way to perform the tasks evaluated compared to Facebook. Nevertheless, based on the observation performed during the Pilot study, there are some revisions that our team considered that would have a positive impact on the user experience.

The task that consumed the most time to the participants was the event creation. This was an expected result because the users have to input information about the event and there are some factors that influence this like typing skills and data validation (inputting the correct date format). Our team believes that providing the users with controls that provide autocomplete options or data restriction will drastically decrease the time necessary to create an event. For example, that date input field could be a date picker controller that allows users to either click to select the date or type it with a regex formatted field. Additionally, the location field could be improved using Google Maps API to provide recommended autocompletion. These improvements are used by Facebook while the user is creating a new event and even though the input of each specific field was not measured in time we think that it would affect the final result.

In the case that our team counted with one more semester, we would like to modify the Gainesville To-Do App to become mobile friendly and perform the same Pilot study but this time using multiple platforms. We believe that the device in which the App is used will influence the experience of the users. Additionally, some of the participants are more familiarized using mobile with touch inputs than a conventional PC with a mouse and keyboard input.

Lastly, if our team would count with a year to perform more research we would like to increase the amount of data in our database. During the initial pilot, we created a series of events to simulate that the database was fully populated. Nevertheless, over time the number of events and users in Gainesville To-Do will increase, having similar events that will cause a possible increase in time in some functions like search events or mark attendance to an event. This increase in the data will have a more realistic reflection on the results obtained in the pilot studies.

Overall, we believed that even though Facebook provides a wide gamma of tools to create events, discover activities of interest, etc it can be overwhelming sometimes to find simple information like what scholar activity is happening in Gainesville tonight? Our app was demonstrated to provide a faster way to find local activities and that users that are not familiarized with it were able to operate it in a similar time that they used one of the most well known social networks, Facebook.

APPENDIX

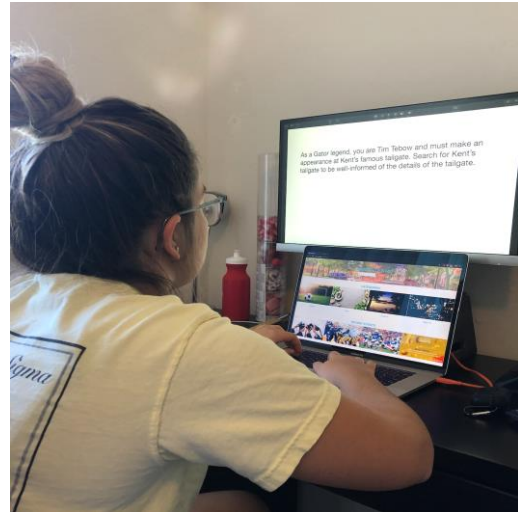**Pilot Study Participant Photos**

Figure 1: Participant 1
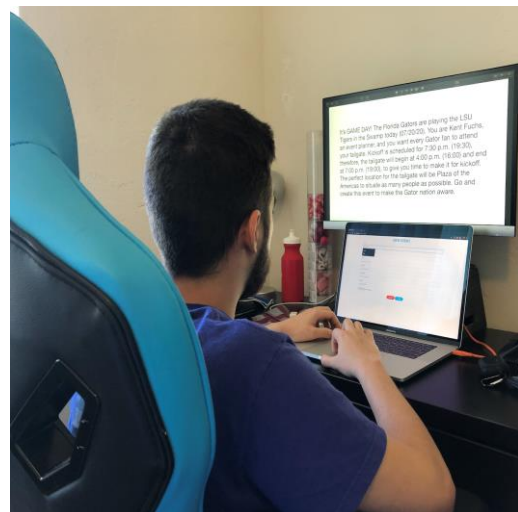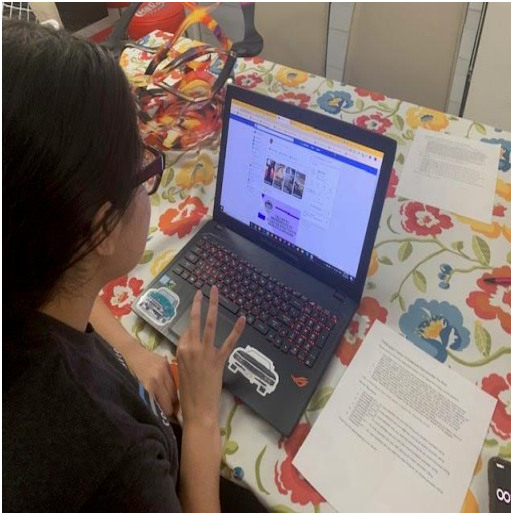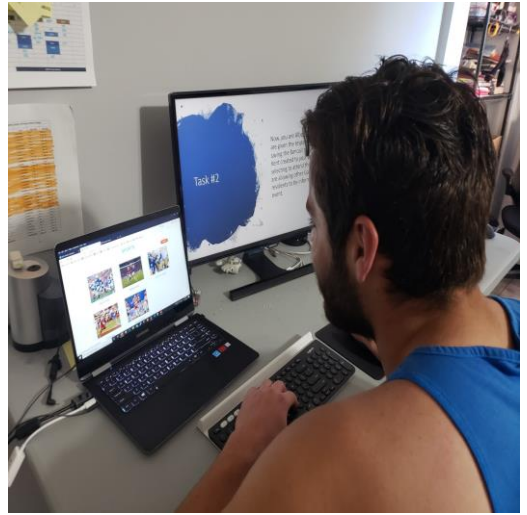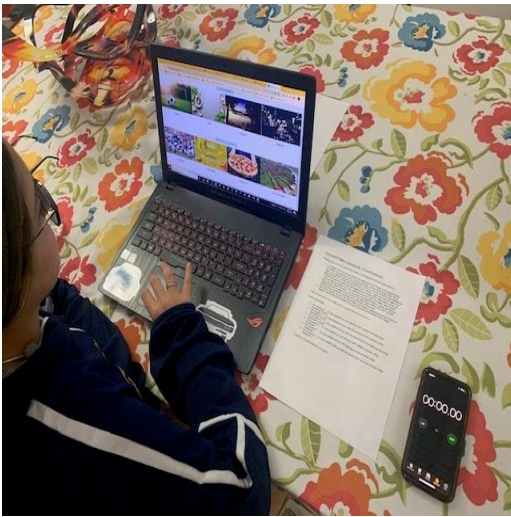

Figure 2: Participant 2

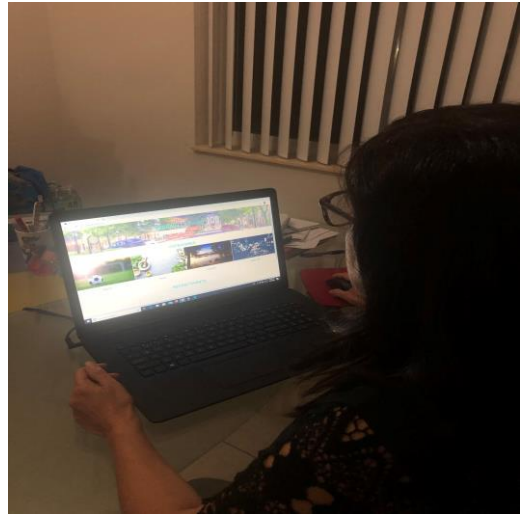Figure 3: Participant 3

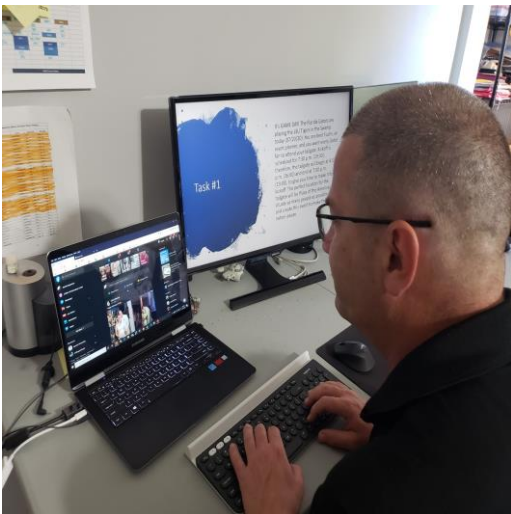Figure 6: Particpant 6
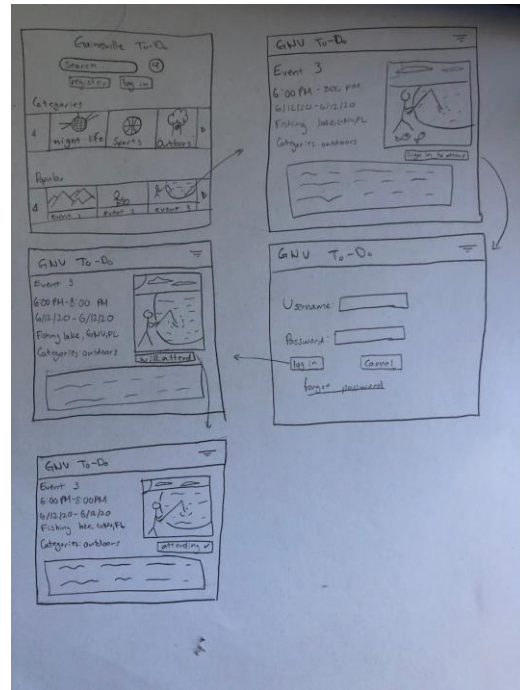

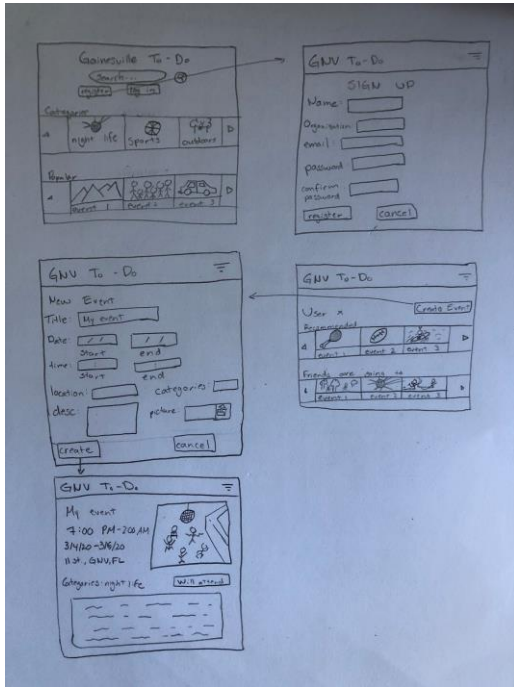Figure 4: Participant 4

Figure 7: Participant 7

Figure 5: Participant 5

Final Low-Fidelity Prototype

Final High-Fidelity Prototype

Link: https://xd.adobe.com/view/4cb6b1fc-16c4-42fe-5ab9-8b09586cbcb8-3a87/screen/b0b6d145-e4c1-40f8-b118-53db56f89e51/Home-Page?fullscreen&hints=off