

Surprising Students Through Usage Time of Social Media

Project Report

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Abstract

The aims of this project are to find out whether students are aware of how much time they spend on social media. This dissertation considers the design, development, findings and conclusion of the project. To do this an Android application has been built into order to collect the required data from users, the planning, development and challenges of the application are discussed. Finally, the data is used as a part of a usability study to discover and evaluate whether the participants were aware of their results and if not, were they surprised by them.

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1. Introduction

Social media is becoming more of a necessity to individuals and people are becoming dependent of them. Whether it be talking to one another, sharing images and events, or viewing what others are doing in their day to day lives. Social media can be used by many age groups in different locations. In June 2017, an article shown in [6] states Facebook has recorded over two billion monthly active users whom are all sharing their lives on this platform whether they are well-known, an icon or just an average individual. There are many social media platforms, all of which take up an individual's time to "check in" to their online lifestyle.

1.1 Brief Overview

The more embedded users become into social media, the "more time" out of their lives is wasted. Currently the average person will spend more than five years of their lives on social media, which the article [5] declares. In this article only watching television came ahead of it. This is proving to be a problem because according to this web article users will spend more time in their lives than they do socializing and taking care of themselves, which I believe is unhealthy for individuals.

This project will devise what the individuals think of the impact social media has on their daily lives by seeing it in physical form. This project is targeted at young adults, specifically students, determining how long they spend on average of day to day activity on social media within their everyday life, at university and at home. This will be carried out by using an application that will register when a participant uses a social media application and will record how long they are spending on it. This will store quantitative data (Time) from a select amount of social media apps the user has such as Facebook, snapchat, twitter, Instagram and Facebook messenger. The information and data that is gathered will be used to analyse if the use of social media is an increasing problem or not; Is it harmful to their lifestyle, do they know how much time they spend on it and are the participants okay with their results.

1.2 Structure

This project will split into the areas of:

- Background/ Literature review
- Study design
- Code implementation
- Findings
- Conclusion

The background will consist of reading and research that has been gathered that relates to the study I will be performing. This will take information on how the other existing studies produced their study and what the results were. This can also be used as a potential comparison between this study and prior research

The study design segment will discuss the overall aim and methodology to finding out what the outcome may be. Talks on how the methods used were chosen and why. This section will also include mock up designs created to visualise the project. This chapter will describe the plan of the project, its purpose, its design and its development, documenting every issue that was found and overcome.

The code implementation will highlight specifics of the development process during the build of the application tool. This will describe problems and areas which I found to be difficult as well as how the application works.

The findings will be the analysis of the data received by participating individuals and their response to the results. This will result in finding a definitive correlation to between participants and their awareness of social media.

The conclusion chapter will summarise each chapter defining what has been learnt within this study and why this study was necessary to perform. This chapter will also elaborate on what changes could be made to improve the study.

1.3 Summary

To summarise this introduction the reasoning behind undertaking this project have been identified. A basic overview of the objectives of this project have been established and the structure included in this report.

2. Background/Literature review

In this literature review a range of past projects, studies and reports that are relevant to this scope will be examined. These projects and studies will give an overview to whether the use of social media is having a negative or positive effect on users. These projects will also detail their methodologies and evaluations which identify what they gained by implementing them and from this how they can be used to influence the methods used in this study. The background will also include an analysis of applications that can measure an individual's active time on social media platforms to act as an aid to building an application for this project, considering what is good about them and what can be avoided for this study.

2.1.1 Perceptions of School Children of Using Social Media for Learning

By Robert Blair, David Millard and John Woollard [1]

A study on children using social media for learning. The paper discusses and reports how often they use social media and what they use it for, does it affect their education, and whether it produces problems or benefits them. The main methodologies used in this project were online surveys which are used to gather the quantitative and qualitative data. Quantitative data being a compulsory result from taking the survey in numbers and qualitative data from leaving comments about the question in hand. To find out 384 children's perceptions of social media usage, surveys were given to each year group with boys and girls. These surveys used a language that spoke simply for the children for more clarification. The questions ranged from "Do you think social media is important in everyday life?" to "What is the likelihood of using social media for :..." and "How many social media platforms can you list". Their findings showing that the lower years didn't gauge in social media too much, but the higher years sat at average usage. The main reason for using social media was talking to friends. Sharing homework was last on the list.

This project is important to review as it shows how to acknowledge and understand a target audience. This project provides many graphs showing certain contradictions between questions. Using both qualitative and quantitative data meant anything that may have been invalid for quantitative data such as selecting the wrong answers, the qualitative data was still usable as it developed an understanding that numbers could not. This understanding could see what kind of things these school children have experienced on social media sites.

Something to take from this project is that they focused on the whole collective of a school, whilst this is good for numbers and data gathering, the data that's collected is based on an estimate as not all children may have adequately performed. This style of collecting data is not individual. Within my study it would be better to focus on individual studies. By focusing on studying individuals despite the lack of participants, it would provide a better response because with this, the project becomes more personal. By conducting more of a personal study this may influence the participants results to be a true representation to their awareness of social media, rather than a dismissal of their outcomes.

2.1.2 Social Media & Mobile Internet Use Among Teens and Young Adults

By Amanda Lenhart, Kristen Purcell, Aaron Smith and Kathryn Zickuhr 3/2/2010. [2]

This project reports that in 2010 social media accounts in teens and young adults was increasing, stating that 73% of adults who have access to Facebook, use it. The use is becoming ubiquitous between subjects and study. The information they gathered was obtained by surveying through a telephone interview which included asking users of each gender, different educational backgrounds and varying locations. What they found was a social media increase over a year, as participants were starting to have multiple different kinds of social media accounts too. Some of the questions about active use of social media were basic for example “Do you use twitter?” or “Do you send messages to a friend within the social networking site?”.

This project provides a deep and broad coverage of how social medias were beginning to rise in popularity especially in young adults dominating the platforms. The surveys given were very detailed covering most of an individual’s online activity from what they use to what for. This report states that teens did not use social media as much as young adults however it was still high. As this study took place in 2009-2010 it will be interesting to see if teens who are now young adults in 2018 are as active as young adults in 2010 were.

Another thing to account for is that this is fairly dated now, in 7 years smart phones have become more prominent. The majority of teens and even some children have the benefit of owning one. Because of this the project would now have different outcomes as increasing amounts of social media applications are available across all smart phones, thus snowballing how much youth use social media applications. The range that they choose is interesting as they chose to study were in higher education as it may give a different outcome. This is something the dissertation project could take in the sampling of participating as some participants may use it more or less.

2.1.3 Social Media Usage: 2005-2015.

By Andrew Perrin 8/10/2015 [3]

This report compares social medias range from 2005 to 2015 in user activity. These users range from age 18 to 65, different genders, race, areas and education covering all types of individuals. Within the decade the amount of social media users has increased in every age group. The examination that Pew research centre has conducted states that from 2005 there were 7% of Americans actively on social media, in 2015 however there were 65% of the nation’s population active on social media. Pew research centre found that the most prominent users are young adults (18-29) by a massive margin of 90%. Adults come in behind at 77%. This project consisted of surveys and interviews among adult internet users. 8 This study gives guidance to my study as Pew research centre not only monitor ages of young adults but also those that are either in higher education or have attended it. Therefore, this may give an indication to how much a student uses social media and how often, as this information more updated than the social media & mobile internet use among teens and young adults [2] paper, having these ranges could be used to compare from 2015 to 2018 to

discover how if the rate is still climbing. In 2015 Pew research discovered that those who attended higher education above high school are more likely to use social media than those who don't.

2.1.4 Negative Effects of Social Networking Sites for Students. [4]

This blog article argues that social media has negative effects on students. These effects range from reduced learning to influencing an individual's mental and physical health. Acknowledging the growth of social media within in the last decade, this article blames the negative effect of learning on how attractive these sites are to kill a student's boredom, whether it may be chatting to a friend or browsing pictures. This time has been lost from studying as their focus is directed towards social media instead. This negative aspect on learning may impact their grades.

The article also states that social media can have a negative effect on a student's motivation as they are more comfortable in a virtual world as opposed to a practical knowledge gained off-line.

This article demonstrates some issues with spending an excessive amount of time on social media which can be tested during the process of this dissertation project. However, there is no real evidence here, as this article is not backed up by any study or procedure to prove this judgement. This blog cannot be used for understanding what effects can occur without a study to test this. Even so these issues could feature as questions to answer from the perspective of a subject.

2.2 App research

This section will review existing applications that perform data monitoring. This may provide useful information for the study app. These existing applications may contain key ideas or features that if implemented may benefit the study tool.

2.2.1 App Usage - Manage/Track Usage. [10]

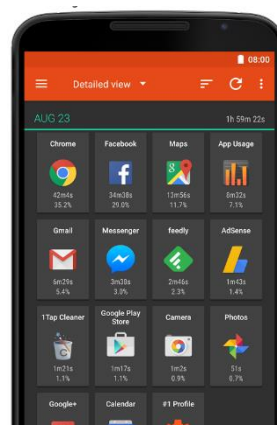


Figure 1
App Usage -Manage/Track Usage
in app view mode

“Manage/Track Usage” is an application that was reviewed because of its many features. This app allows users to track how long they spend per day on individual apps which is

shown in figure 1, allowing a user to understand visually if they may be spending too much of their time on certain applications. This gathers critical information if a user wanted to cut down on this, for example they would know what to remove. This app also tracks what the user's activity looks like such as the amount of times they check their phone and the history of the day which displays the order of what they use and can set an overuse tracker.

This application is complex and offers a wide variety of features, however this app is not able to send said data or store this data outside of the app as it uses local storage which is private from the rest of the device. This is the goal of the social media recorder for this project.

As this application gives a clear view about the usage stats for multiple applications a user may look any time they wish. If a participant were to use this app the data would be seen before the study is over which may affect the outcome as they can monitor usage to a respectable amount. This methodology is the complete opposite of the social media recorder for this project.

2.2.2 AppUp - App Usage Phone. [11]

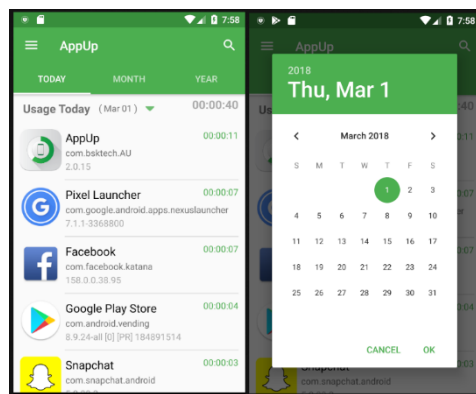


Figure 2 AppUp select day screen

Another app that was reviewed was AppUp, a similar app to the previous one, capable of many of the same features however features some of its own. This Application allows users to check their data on a selected day during the month and year. Having this feature is important as looking at the history can show if they can see signs of change in their awareness. Plotting this data over many days could be a feature of the social media recorder for this project for reference, despite the span of the study being only over a short period.

AppUp has features that would be beneficial to the project, however this app does not have a function to transfer data so that the data can be assessed to analyse and display to a participant. AppUp is not a system that could be used as participants could view their own findings before the data is evaluated potentially skewing the study.

2.2.3 App usage tracker. [12]

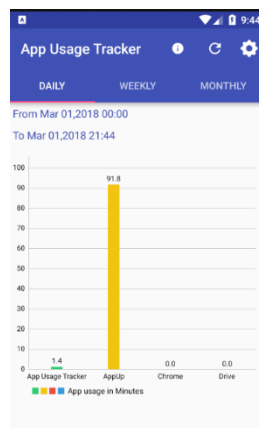


Figure 4 Visual graph

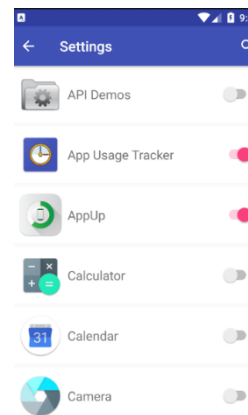


Figure 3 App Selection

The final application that was reviewed was 'App usage tracker'. This was a much more basic app that aids users in tracking their app time usages. The main feature of the application was that data collected by the device was depicted into a graph shown in figure 3 This gives a different visualisation to the previous applications that have been analysed. Another feature of the app usage tracker was the ability to select particular applications shown in figure 4. The application shows that users can select the button for the application they wish to monitor. For the social media recorder, both of these features could be implemented to the study as both features would improve the social media project.

By adding visual graphs, this could give the project a greater understanding of the active time on Facebook for example, making seeing usage between the applications easier and allowing the participants to gauge the results. However, this visualisation would have to be kept from the participant until the interviewer shows them first hand as viewing the data result before the interview may change outcomes which will not show a true study.

As there are many different types of social media , Facebook and google plus being two examples, by adding a similar feature such as the application selection shown in figure 4 users could select all of the apps that they use on a daily basis increasing the variety of data. For instance, if there were only a select amount of apps that were being measured and the participants most used app wasn't one of those, the data would be perceived in the wrong way as the participant may use their device a lot more than the data shows.

2.3 Questionnaire methods

As this study will use questionnaires at the beginning and end of the study it is important to research what specific kinds of feedback can be gained by the different types of questionnaire. From researching these questionnaires this will provide a choice as to what questionnaire types if any the study should inherit.

2.3.1 Importance questions

Importance questions are a type of closed format question. A closed question will guide the user to reach a specific answer. Within importance questions, participants would be asked to give a rating on a list numbered 1-5. This list contains a scale which participants judge of importance for statements like “how important Facebook to you is”. Doing this could give an insight to what the user may think their data will show which may be a good comparison after they are told about their data results.

This type of question will allow a general overview of the topic to be made. While this provides insights into what a majority think, the study will be investigating into opinions on an individual basis

2.3.2 Leading Questions

Leading questions are a format of questions that guides a participant into a specific answer, fixing the response. These questions will be structured so that even if one doesn't personally agree with the question the participant will have to try to produce an answer. For example, “why is climate change developing so quickly?”. This question poses that even if the participant doesn't think it is they will come up with a reason for it.

This type of question would not be used in the study as the evaluation has to be as nonconflicting as possible so that finding out whether social media awareness is an issue or not. If a leading question was used and answers were similar then nothing would be proved as these are bias question types.

2.3.3 Dichotomous Questions

Dichotomous meaning the dividing of two branches follows a simple format where participants answer ‘yes’ or ‘no’ to a question posed. This clears a middle ground for an answer which can be seen as a disadvantage. An example of a question could be, “do you enjoy spending time on Instagram?”, then followed by a ‘yes or no’?

As discussed this can be treated as a disadvantage to learning what an individual can respond with, however for the purpose of the study having a yes or no outcome may force a participant to choose an answer they are happy with, thus making it clear rather than avoiding a true answer if they are undecided.

2.3.4 Likert Questions

Likert questions offer a range of answers for the topic in question. This topic can be easily gauged through the answers given. A Likert scale will include: always, often, sometimes, rarely and never. This is a very popular questionnaire format that is widely used proving its success and by using this scale across participants a general opinion would be found.

This could be used in the study but only beforehand, for example a question posed could be “do you think you use Instagram a lot?”. Using this the answer could be compared with the final results to determine how aware the participants are to their activity timings.

2.3.5 Open Ended Format

This is a format which opens the question up to the participant allowing a free response as there is no aid in a predetermined question types. Giving the participant the ability to expresses one’s self naturally may result in findings that were not expected, not only this but these findings are also real proposals that are described. Open ended questions are more popularly placed towards the end of a questionnaire, this is so that some accuracy can be drawn from the questionnaire as a whole and often provide as a conclusion to it.

By including this in the study, answers that may be unexpected could be found and as this study will test multiple individuals and the amount of answers will vary. These answers will give an insight to if students are aware of how long they are on social media. Some may be and some may not. An open-ended question will give a reason.

2.4 surprise method

This is a method that I have devised to feature as a key part of the study. This method will require the study to hide all aspects of data gathering from the participant. By implementing this the study will not interfere with a participant, which allows the data gathered to be natural and uninfluenced to provide pure data from the participant. If the participant were to have some form of interaction this may alter the data through unnatural behaviour. This unnatural behaviour may stem from interference of the study or the ability to monitor their own data. If an unnatural behaviour is used within study the results and findings may not describe the information expected to be seen.

This method should be implemented as I instinctively believe that the data gathered will show a contrast between the perception of what the participant may believe they use and the reality that the data provides. Why I am assuming this is because of the prior research as the other report papers were not trying to gather data to contrast perceptions of their data and I think this would be interesting because when providing results, it naturally forces participants to think whether the data is good or bad.

3.Study design

This chapter contains details of how and what decisions were made during the development of this study and provides reasoning on the choice of these decisions. This will explain what type of participants will be selected and the justification as to why. With the development of this study also came the build of an application to aid the study, this design will highlight the key objectives that must be implemented to gain the necessary data for the study. Application prototypes, engineering problems and key code components will be presented and discussed here.

3.1 Study methodology

To gather the research, a sample of 3-5 participants will be using the application recorder over two weekend days and two-week days. All participants will be students of Lancaster university, of which may range in gender and age. Using this range of participant will allow for a diverse variety and outcome, whether it is their age or gender this sample range could describe any differences.

After Informed consent forms are completed, the participant will understand the terms of the study and the type of data that will be gathered by the application from each device. All data samples will be kept anonymous as to keep privacy.

The aims of this study are to collect usage data and retrieve results. This data, from monitoring the participants use of social media, will tell how long they have spent on social media day to day. Here a reaction will be perceived further into the study in the form of questionnaires. Implementing the surprise method is necessary as a participant may change their usage amount if they have been informed of the data beforehand, so results will only be given after the set days. Otherwise the surprise of the results the participant receives will be broken, breaking a key part of the study.

Upon meeting participants for the first time, the study is conducted. First, they are asked to complete the consent form. Second, participants are asked a question to find out if they are currently aware of how much time they are taking on these social networking sites. The first question asked will be that of a Likert question. The second question will ask which app they in particular think they spend the most amount of time on. As previously stated, this will find out if the participants of the study know which applications they use most frequently or if they are so submerged in social medias this can be a scale as to how unaware the participant is.

After this the study will begin and participants will download and install the social media recorder application. I will give them a brief which will describe what the experiment consists of but not what it reveals, along with some instructions on how to use the application however it is designed to be very easy to use and familiar.

Once the participants have installed the application the process to obtaining the statistics for their usage shall begin and data will be retrieved from their phone each day. Participants need to access the app once a day to allow data to be sent for analysis.

Once the four days have finished and the application has gathered data from the participants device analysis can begin. This analysis can read the data received and adapt it into a readable view so that it can be displayed to the participants. The data will give each social

media application a total time for each day, determining the overall activity time over the four days. The data will also discover which app is used most commonly by a single participant or over all. These findings may be helpful for any participant concerned about their activity time as it will break down where they are potentially spending so much time.

After the data has been analysed an interview for each participant will commence. Within this interview they will be asked what they think their average application time per day was. This will find if their thoughts have changed since the Likert question at all and gauge if they followed the study which may show guilt already. After this, participants will be given the surprise from the surprise method which details how long they spent over the 4 days as a total and this will be visually rendered in graphs, so that understanding where and which applications involved may have been a particular issue. The participants will then be asked a dichotomous question to whether they think their results are reasonable or not, here despite the answer only being yes or no can show body language signs of hesitation or remorse in their decision. Depending on the answer, an open-ended question of why/what the reasoning for the decision is will be used as the final question. This open-ended question will give each participant an opportunity to explain what they may have thought about during the Likert question, clarifying an exact reason for their acceptance or not of their results. The open ended question will act as a summary for each individual, and will help discover the overall consensus to whether students are aware of their involvement in social media.

3.1.1 Study issues

For this study participants will be needed to see how an individual may react to understanding of their time spent on social media to do this. It was necessary to gauge possible problems that may occur whilst creating the study thus avoiding flaws and gaining good evaluation from one's data.

The first instance of this occurred at the beginning of the design, as the idea to measure social media usage data through an app which displayed the information in time for each specific social media type directly to the user. While this function would be user friendly this design may have encouraged the outcome to become unnatural. To adhere to the surprise method, an unnatural component in a study can skew the data the data in a negative way as this hinders the possibility of finding the true, natural results. The unnatural data would be a result of the user being conscious of the applications purpose, as the information is being displayed on the application a participant may acknowledge the data from the application and become conscious of how their activity time is accumulating, therefore skewing natural data as participants may feel guilt when they see the current results. This breaking the surprise method.

To disregard the possibility of unnatural results and keep to the surprise method, the problem has to be broken down to find a resolution for this particular problem. This problem exists from when a user begins to use the app, for example: A participant will engage the app to see the data and report this back to the study each day. As the user will see the data whenever they run the application, this is can be deemed as the common problem, however it is crucial to get this data. An alternative way of structuring the application may fix this. By changing how the participant uses the application a method to avoid the data being seen can be implemented, for example if the user only had to start the application, sending the data to the

analyst automatically this bypasses the user seeing any data, therefore keeping the study natural as this would be kept in the background away from the participant.

However, there are some issues with this method, here the second instance occurs. This second problem occurs from how the data is sent, as there are a wide variety of devices that all work differently, some may be able to completely use the application in the background where as others may not have the ability to do so. There is also the issue of placing the trust into the participants hands as they may not know if the data is being sent. If the participants phone runs out of battery and upon revival they do not start the application again then the current/future data may become corrupted/incomplete. To avoid this problem, there needs to be a feature that allows the participant to gauge use, to know if the data is being sent or not. This could occur within the application, for instance if the user presses a Facebook button the data will be sent and supply the user with a message or information that the data has been saved/sent. This keeps the natural aspect of not knowing what the foreground time of an application is and acts as a safeguard for participants that may not have known whether the process has been successful.

3.2 Requirements

3.2.1 Study requirements

For this study there will be a number of requirements from the participants, these requirements are to keep the scope of the study and provide clear structure of the developments.

1. Participants must be students; any other type of participant may be regarded as an anomaly.
2. Participants must have an android operating system running their device.
3. Participants must be able to download packages from unknown sources.
4. Participants must access the application installed once a day.
5. Participants must be available to conduct this study over two-week days and weekend days.
6. Participants must attend the final meeting to discover results.
7. Participants must answer all questions asked at the interview, not answering will be an invalid result.
8. Participants must not interact with raw data gathered by the application until analysis

If a potential participant is not able to fulfil all of the requirements stated, they will not be chosen to take part in this study as this would give results that are not a part of the scope study, giving an invalid suggestion to the question. Only those who can confirm that all requirements can be met will participate in this study. This is to make the study balanced by using similar components that stick to the environment made.

3.2.2 Application requirements

Like the participants, the application also has to meet certain requirement to ensure functionality and consistency across the study keeping to the scope.

1. The application must be able to read data gathered from the phones internal storage
2. The application must be able to run on multiple devices; therefore the applications operating system should be of age. The devices must have Android Jelly bean operating system or higher as 96% of devices meet this criterion.
3. The application must be small in size so that the participants device is not affected greatly from installing the phone, the idea is to remain in the back ground.
4. The application must be user friendly and familiar to use, avoiding any possibility of struggle.
5. The application must include a help screen which will provide a contact email if any queries or problems occur, this help screen will also offer a brief understanding of the application.
6. The application must be able to store the acquired data within the phone internally or externally for the analysist to receive it.
7. The device must be able to send the outputted data to the analysist.
8. The device must be able to convert the data in a readable format in the outputted file.

If the application meets all of these requirements, it will prevent any application issues when live that are known. The study will be able to gain the correct usage data from each participant.

The application is a tool in this study. Without it there would be no data that is precise and relevant to the scope. The application is very important to the study as it is the only connection between this premise and its evaluations. If any of these requirements were not met this could change the outcome of the results as the study conditions may not be the same or were not intended.

3.3 User interface

The applications main function is to access specific data stored on the phone whilst organising this data in to a readable format. When designing the application UI, an easy to use system was the main priority.

The UI will consist of three separate sections:

A main screen that the user first sees, with links the other pages this servers as a navigation screen, this screen will describe some basic functions clarifying the users understanding of the application.

A help screen which consists of a more detailed information on what the study is doing and a link to contact for any questions that a user may have. This contact link could be a link to a website, an email address to copy, a telephone number to add to the dial etc. This will be accessible through the main screen age.

A data recorder screen which will layout out the buttons of each social media platform, once pressed they will display a message that does not reveal any of the results attained. This screen shall be organised in a linear fashion where each button will have spacing between the next and where the message shall be displayed.

The user interfaces priority is functionality so the UI may not look too aesthetically pleasing for the user however if there are major problems causing confusion, this could be changed to have graphics in the background, include animations and themes.

3.4 Application design mock up

To visualise this system design, mock up prototypes are displayed below to present a specific area of the application design. Figure 5 as seen below was an attempt at a prototype before issues of unnatural data were acknowledged.

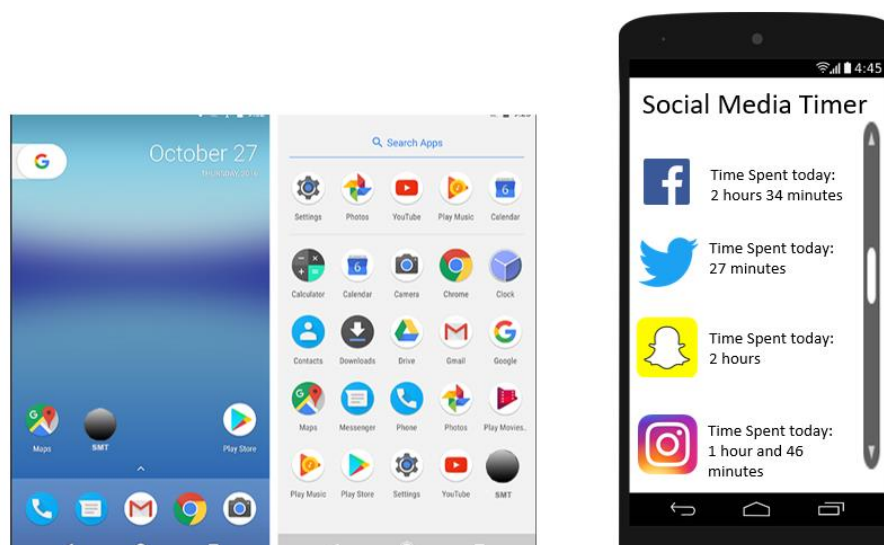


Figure 5 Application prototype

While this prototype is not to be used, some aspects will be similar, such as the icon for the

home screen will be easily recognisable to participants. The scroll layout will be used to navigate all the social media applications and the layout will be similar.

Each prototype screen is loosely designed around some existing applications already, of which were discussed in chapter 2, AppUp is a prime example for this case [11]. These researched applications have clarity, well-structured layouts and readability. The general styling shall also be used to avoid confusion as a participant may not understand what they are looking at, this styling will consist of colours fonts and layout themes.

This application will have three different views as it is only a simple application with one job. One initial screen used to navigate the application, one help screen used to provide participants information of the app and where to find out more and the main part of the app is where the data is recorded.

The start screen will consist of two links to lead the participant to the other views, because of which these links will be labelled by with buttons a participant can interact with. By using a button there is less hesitation than there would be a hyperlink for example as a button can be recognised easily. Each button will be labelled to correspond with the view that it is linked to.

The help screen will consist of text information written clearly in an understandable font with a proportional font size, so all types of user can read the text on different devices. This screen will also contain a button that will allow users to contact the interviewee giving them the freedom to ask any questions or share any concerns. An example of this method of contact 20 Figure 4 principles prototype would be a button that would copy the interviewees email address to the user's clipboard. Once copied they can then use an alternative application to send an email to receive contact. By implementing this method or a similar one this creates less effort on the user skipping out having to remember the entire email address.

The social media recorder view is accessed through the main screen which will consist of the applications that are being recorded, a scrollable layout to uncover the applications and text views that will respond to the user creating a data document through the application. The icons will be image buttons that correspond to each social media platform it represents creating clarity to the user. Once clicked the data can be acquired by the application and saved. The text view will then display a response clarifying that after the button has been pressed the data is gathered in some way. The scroll view is necessary to view the select amount of text views that are linked to the social media image buttons.

4.Implementation

This chapter will discuss how Android was used to build and develop the application for this study. This chapter will outline and detail key parts in the application that are a necessity in completing the applications needs and requirements. This chapter will also discuss some unexpected requirements met whilst in the process of building the application.

Having never used Android development and not having built for a mobile device before, the first steps into development for the application were difficult to begin with. Understanding java meant that this was not too foreign to me however, there was a lot of time lost through many mistakes made in the process of building this application. To start I began by using Android Studio [16]. Android Studio is an integrated development environment(IDE) which is specifically used for Android operating systems. This IDE provides user interaction, code management and integrated emulation.

4.1 XML layout

The first stage towards building this application I implemented was creating a basic user layout, as by doing this I could have a physical application to work with. To do this Android Studio provides a feature which allows developers to create a layout user interface for a mobile screen. This layout feature is known as an activity page where developers can create the type of layout, widgets, incorporate images and stylistic features, all of which the application will implement for this particular screen.

When creating a java class, each java class will come with a provided activity page to implement the user interface of said class. I began by creating a main screen and learning how to create paths to other activity pages, this gave me the freedom to play around with Android Studio and explore its many features.

After creating many different attempts at a three-screen application and figuring out how to build the app, I finally built a user interface which executed on the emulation and stuck to the layouts designed similar to the mock-up. However, this process took too much time to complete, this development should have been left to a later time as this application is only a tool in study, getting the usage stats was the key part to this project.

4.2 Usage stats. [13,14]

From prior research I knew that android development had a specific import that would allow me to gather the usage stats of individuals.

```
public static void printFacebookStats(List<UsageStats> usageStatArray) {  
    for (UsageStats use : usageStatArray) {  
  
        if (Objects.equals(use.getPackageName(), "com.facebook.katana"))  
        {  
            Log.d(TAG, "App Name: " + use.getPackageName() + "\nForeground Time: " + use.getTotalTimeInForeground());  
        }  
    }  
}
```

Figure 6 Usage Stats extraction

In figure 6, this displays screen shot of my code that creates the means to capture Usage stats. Through the use of UsageStats and UsageStatsManager libraries provided by android, these libraries provided the tools to capture the current data of the application and a history of the data in a users' device. UsageStats library provided the tools to obtain package name and foreground time. In the early stages of development, I had created the code to list all of the package names and all of their total foreground times, and when run provided a giant list of information on the logcat. This was unanticipated as my assumptions were that only external applications would be gathered however, this output provided internal and external application on the emulator.

To bypass this problem the application package names for each application in the study were found from this list. Upon gathering all the required packages names, filtering of this list could begin where an if statement was used to find said package name and only get the details for this application from the array list containing all the package names.

Within this if statement, getTotalTimeInForeground method from the Usage Stats library is used to acquire the stats on an individual app. This method measures in milliseconds. Each application has a method to print out the stats it gathers. These methods can then be implemented into the user interface individually for each button.

```
public static List<UsageStats> getUsageStatsList(Context context){
    UsageStatsManager useStatsMan = getUsageStatsManager(context);
    Calendar calendar = Calendar.getInstance();
    long endTime = calendar.getTimeInMillis();
    calendar.add(Calendar.YEAR, 1);
    long startTime = calendar.getTimeInMillis();

    List<UsageStats> usageStatsArray = useStatsMan.queryUsageStats(UsageStatsManager.INTERVAL_DAILY, startTime, endTime);
    return usageStatsArray;
}
```

Figure 7 Usage stats manager daily usage.

UsageStatsManager Library provides access to device usage history and statistics, by implementing time by using the calendar library. This gives the UsageStatsManager the ability to interpret each day. The usage stats manager uses a method queryUsageStats, as shown in figure 7, creates a daily interval of the usage stats for each application. These daily intervals will run over a week from when the participant install the application and enable the monitoring. This will allow analysis of the data to be split up between each day and the participants will only have to send the data once the after the study days are complete.

4.3 User permissions

After creating a first attempt at obtaining the usage stats, I thought I would receive some output feedback from the usage stats given, here I encountered a problem of not having the permissions from the device to be able to view this data. To be able to access this data, implementation of the manifest is required. The manifest describes information that is essential to the Android build tools and operating system. Figure 8 shows the required code to perform usage stats retrieval, this is needed because this is a protected part of the system. Once enabled, I could now see results from the code that has been written.

```
<uses-permission
    android:name="android.permission.PACKAGE_USAGE_STATS"
    tools:ignore="ProtectedPermissions" />
```

Figure 8 User permissions code

Having learnt that permissions are required before changing something on a device, when outputting a file to an external source I knew to implement user permissions for this too. Therefore learning this problem and overcoming it was worth while.

In figure 9, this shows what all the device will displays will look when the participant first sets up the phone, thus proving that user permissions have been integrated into the application.

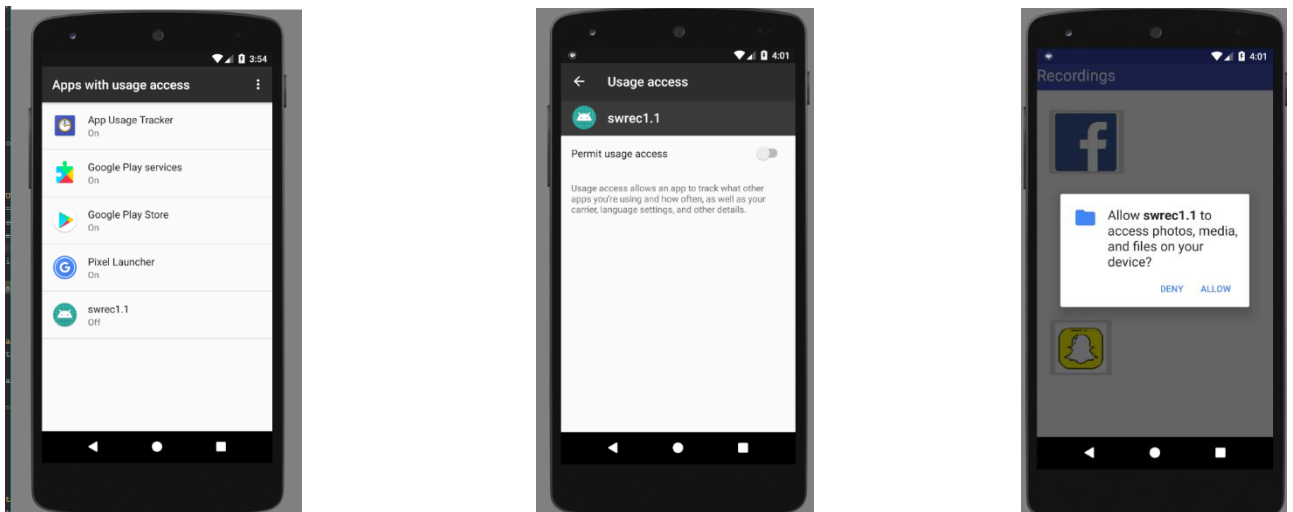


Figure 9 Accepting permissions examples

4.4 Creating a physical text file. [15]

After the application was made and capable of gathering the required data, a method to be able to read this data, without interrupting the study had to be devised and implemented into the study. To do this I decided that sending the data files would be possible from the user's phone to my computer, however to do this the information in the log needed to be stored and captured permanently. Initially I thought that creating an output file would be simple, however like everything else in Android development this was not the case. To store a file within the device requires specific permissions. I first tried to store this data in a text file internally as I presumed this intended the memory of the phone, however upon testing it I found this to be within the application, and only viewable by the application.

Because of this, external storage was used in order for the application output to be visible and physical to interpret, which allows the information I require to be sent to me for assessment. Although the data can be accessed by the participant this data will not make sense to them as the output is not formatted in any particular way, therefore providing no risk of ruining the surprise method they will receive in their analysis.

4.5 Development challenges

4.5.1 Timing

The overall timing it took to create this application took much longer than anticipated, after many setbacks and learning how to use the IDE and Androids implementation of java, to overcome the challenge of writing this application some key parts of the code took weeks to implement. I believe I lost far too much time trying to create a foreground aspect of the application which was prioritised over the background necessities. If the background had been developed more the outcome and build of the application may have provided a better system for analysis. I spent a large amount of time trying to implement user permissions as there were problems with API as well as getting the output file to an external area. Getting the usage data to provide a response that was usable also took some time to implement as the data was printed to the logcat which took weeks to provide filters for each application.

4.5.2 Android studio

Android studio overall was a good IDE to use, especially for beginners. However, this IDE caused a lot of problems through its ability to randomly change code, not build the Gradle or XML layouts and crash on multiple occasions. Android Studio seemed quite clunky, its user interface design was very temperamental as it would completely erase certain things such as widgets if you tried to move them on the design view. After abandoning the design view and coding each input area manually to the user interface, development started to become easier.

If Android Studio was not such an issue this would have saved a great amount of time and personal frustration with the IDE. However, it still provided the ability to complete the application to a respectable standard even with its flaws.

4.5.3 Android Emulation

The emulation used with Android Studio provided the ability to create and emulate to see how the application would look on a physical device which was good for gauging how the app would work and why something would not. The ability to see the error when something did not execute was also a bonus when using the emulation. However, this emulation was very slow, to run and compile. The small application took a far more time than it should have and as this was demanding on processing power, it would be regular to close the emulation when testing had finished, therefore taking an even greater amount of time to update the app.

One issue found after the study was due to the emulator. After the study had finished and the data had been acquired, the data managed to successfully interval daily, displaying each day in separate segments through the Usage stats source code. However, when testing this in the emulation the intervals did not appear, only the foreground time of the day would show. Had the emulation shown this the study could have been prolonged getting more data with a better average.

4.6 Using the application (walk through)

Through the implementations discovered in the application review section in the background chapter, I was inspired to create and design a structure similar to these apps. This was done as they all have a similar structure and incorporating this into my system I could take advantage of what is already a successful approach to this type of study. The overall flow and structure of the application that has been created can be seen in figure 10.

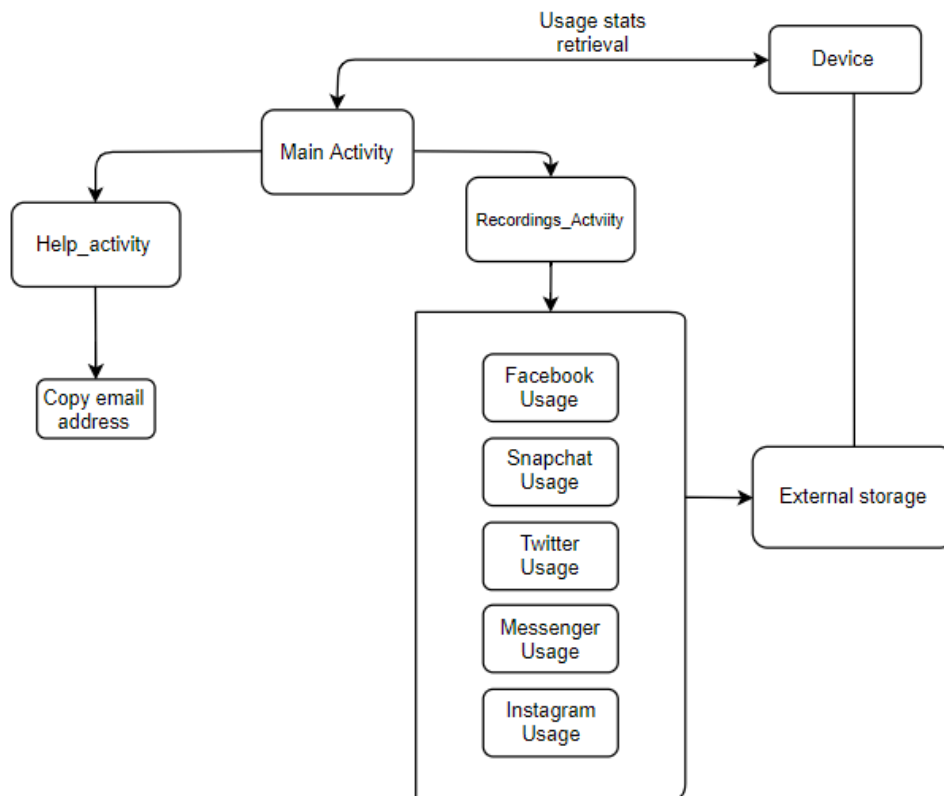


Figure 10 Application flow chart

This flow chart shows each of the activities and the features they implement. Recordings activity containing the main areas of the applications needs, this contains separate usage components for each application package. When implemented the component will get its relative usage data from the device, this is represented by the doubled headed arrow as the application can read the devices data. This will then extract the data and implement it into a physical copy in the external storage. This flow describes how easy this application is to use from a participant's perspective and how easy it is to visualise from a developer's perspective. As this app is made to be integrated as little as possible into the participant, only a basic structure is necessary to accomplish the study goal.

4.7 Comparison with researched apps

The software recorder contains some similarities with existing applications, such as the ability to store and view usage statistics data. The structure and activity pages are also similar. The structure of the software recorder lays out image buttons corresponding to the data being retrieved, existing apps also do this to clarify the data.

Other apps however invest a lot of effort into the aesthetics of the user interface, with matching themes, ordered layouts and displays detailing the usage statistics onto graphs. The software recorder has a much less complex build, mainly due to the fact that it was built within a short time frame. If more time was available and it had not have been scratch I would have been able to implement a more polished look to the software recorder.

When compared to existing apps it is clear that the software recorder needs improvement as other applications certainly handle the user interface much better. However the purpose of the social media recorder was rather different. The social media recorder does complete the requirements needed to complete the interviews, and as this is the most crucial part of the study. I would deem the development of this application a success.

5.Findings

This chapter describes the details and results of the study. The original data output is set in milliseconds however this will be translated into an appropriate format such as seconds, minutes and hours so that the visual data is understandable. In the figures below, the y axis should be interpreted as minutes.

5.1 Usage data

The information gathered from each participant obtained the usage stats of each specific application. As mentioned in chapter 4, these applications have their own “packages” assigned to them, for example Facebook has a package name of ‘com.facebook.katana’, this is how specific data is gathered.

An average of the total usage times can describe what applications are used the most and if outcomes are tight, the days can split the results.

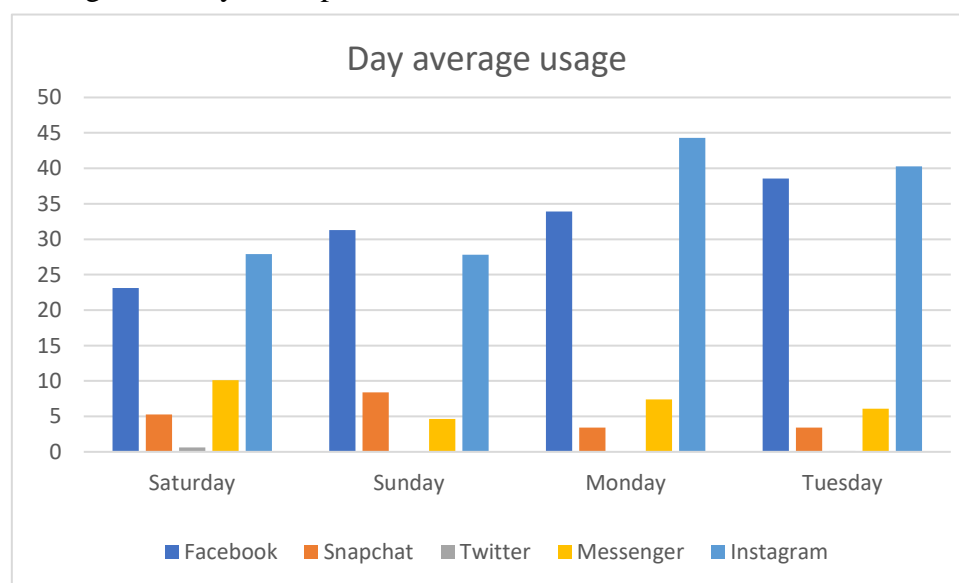


Figure 11 Overall average usage times in minutes

In figure 11, the data shown defines average usage stats on each day and each application. The averages show that Instagram is used by participants the most and close behind is Facebook. With Instagram being the most used application across all but one day, spans from 28 mins to 44 mins a day which compared to snapchat which peaks at 10 mins is a significant difference. The reason for why the social media platform comes to question as this is an average amount of data, therefore the correlation between users must span from the structure of the application.

5.2 Application details

If the structure of Instagram is the common denominator behind to why the application is used more than the others, it is necessary to review what could be the common factor within this app. Instagram features a feed like layout, this feed consists of images and videos that users can view and like. Instagram's feed is endless as users can keep scrolling through the feed and see older images that were uploaded previously. This layout may be the cause of high activity timings, as users can explore new videos and pictures by scrolling through, this scrolling aspect will keep users interested as when they scroll new content will appear keeping a user's attention retained for a longer period of time.

This layout is also found in the Facebook application. The 'feed' supplies content with which the user subscribes to, with a more formats available to what content Instagram has, and where videos will play automatically after one another. Recommended content is given after viewing something and games can be played also. As Facebook has the second largest activity time average according to the data this correlates with application layouts keeping the participants using the app for a longer time. Snapchat and messenger however do not use this layout and the data shows that these apps were not as prominent in use.

Snapchat is an application that in the name specifies, "snappy". Users share live images and videos with each other for a very short amount of time as these images only last ten seconds at maximum. As Ten seconds is the longest amount of time an image can last for users may exit the application straight after this as there is nothing more to do. This quick use system may be the cause as to why the activity timing of Snapchat was so small.

Messenger is a system made by Facebook that groups messages from friends or groups of friends together, this service will pop up with a notification saying who sent the message and what the message was. This meaning that the application system is hidden in the background and used when necessary, this may be a particular factor as to why this application was used less than Facebook or Instagram.

Twitters data results show that this application is barely used, however the article [17] twitter has over 330 million active monthly active users. So why this is barely used is either a poor selection of participants or a common theme in students. Twitters layout is slightly different to Facebook as less private posts are shared and seen by users all over, depending on who the user follows they see what they enjoy and so on. Therefore, this application has the means to keep users occupied like Facebook and Instagram, but it is not used so doesn't.

5.3 Weekend and week day

Through figures 12 ,13 and 14 (In the next sub heading) a visualisation can be seen that on the week days and weekends, the difference in app data is very slim, and the difference of certain application usage is greater on the week day. Before the study had started it was assumed that the usage data from the weekend would be far greater than that of the week day as participants would have more free time on the weekends due to university courses during the week days. The data results in figure 14 show that this assumption is quite the opposite, as the average data displays each weekday being greater in activity time.

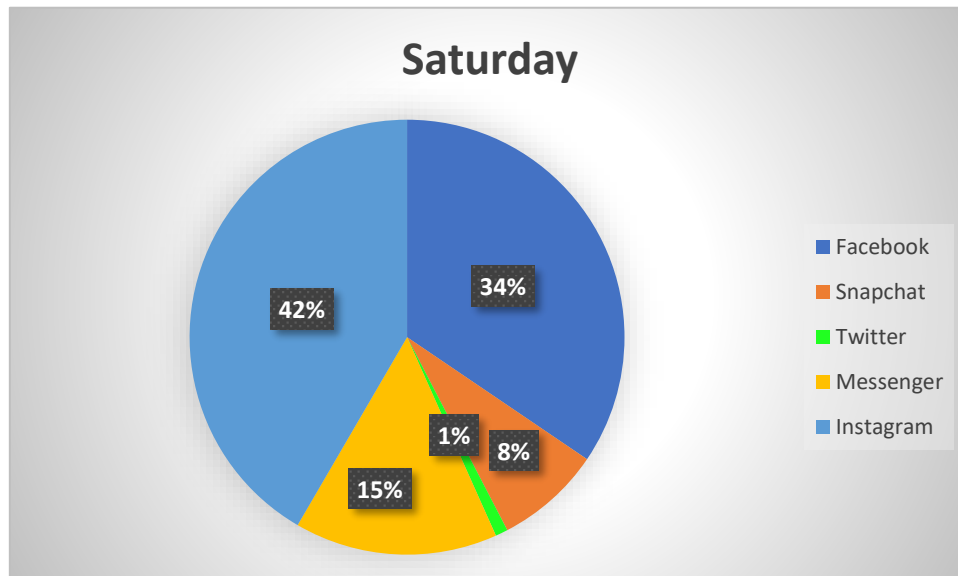


Figure 13 Saturday overall usage

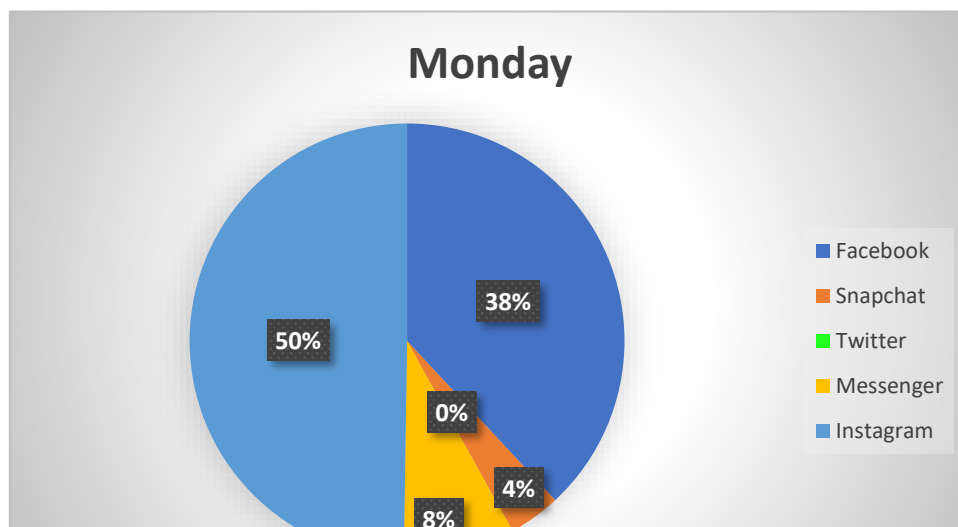


Figure 12 Monday overall average usage

To break this down into clearer view figures 12 and 13 show individual days, specifically Saturday and Monday. In figure 12 this shows that snapchat was used more as was twitter. These applications haven't been the greatest influence on participants, but this is the notable different between week day and weekend.

5.4 Application Usage

Within the study applications; Facebook, Snapchat, Twitter, Messenger and Instagram were all used to gain results of each participants foreground time, this being the time spent on screen on each application. These applications will be evaluated in this section to clarify each amount on each application.

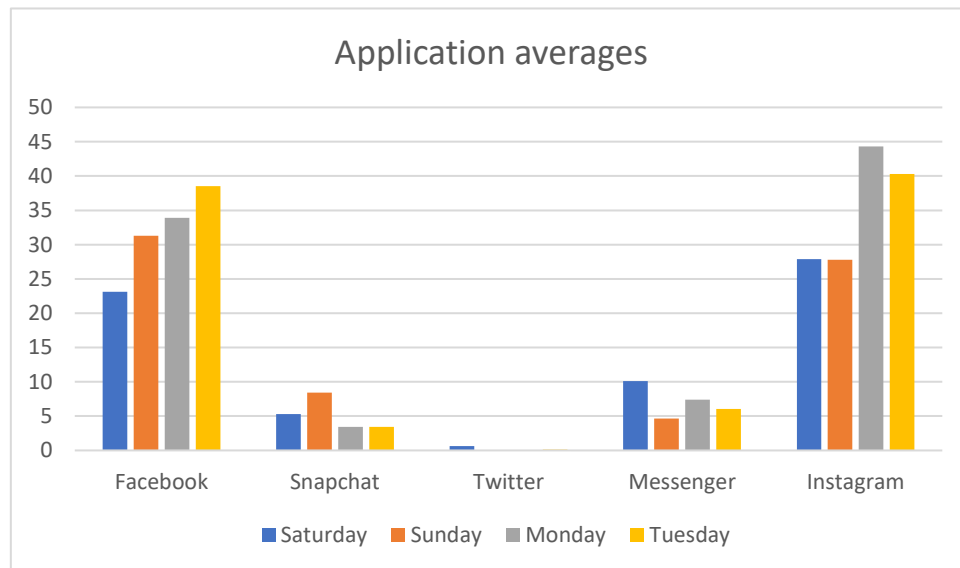


Figure 14 Overall average of each application

In figure 14, a definition of each application time is displayed on a column chart. This Column chart is used to provide clarity and readability to the data gathered. These applications will be broken down into sections to provide further understanding.

5.4.1 Facebook

Facebooks usage over each day is quite consistent, however it does show a slight progression in minutes as the weekend turns to week day. Facebooks highest average usage time is approximately 38 minutes and the lowest usage on the Saturday of 23 minutes.

5.4.2 Snapchat

Snapchats usage times are quite low in comparison to Facebook, with a highest time of 8 minutes and lowest of 3 minutes. This is an average of the overall this means that this was not used very often between all participants. What can be seen from this chart however is that there is more usage over a weekend compared to a week day.

5.4.3 Twitter

According to the data results Twitter was merely used. Before the study started it was assumed that this would not be the case as it has such a high amount of active users (how source here). Twitter was not used on either Sunday or Monday. The only usage that twitter

received was a max average of 2 minutes, and when compared to the other applications this seems redundant.

5.4.4 Messenger

Messenger data does not show long periods of time on the application however the results of each day are quite level. This shows that participants will speak to each other just as much on a week-end as a week day. Messengers longest usage amount was the Saturday, with 10 minutes of usage. The shortest amount of time it was used for was approximately 5 minutes.

5.4.5 Instagram

From the data gained, the chart displays Instagram to be constantly used. From Saturday to Tuesday this application kept a high usage amount. The highest amount the chart displays is 44 minutes, however the lowest amount of 27 minutes is still a large difference to the other applications. This chart details that Instagram is the most used application in this study with a total time of 140 minutes.

5.5 Participant responses

- Participant 1:

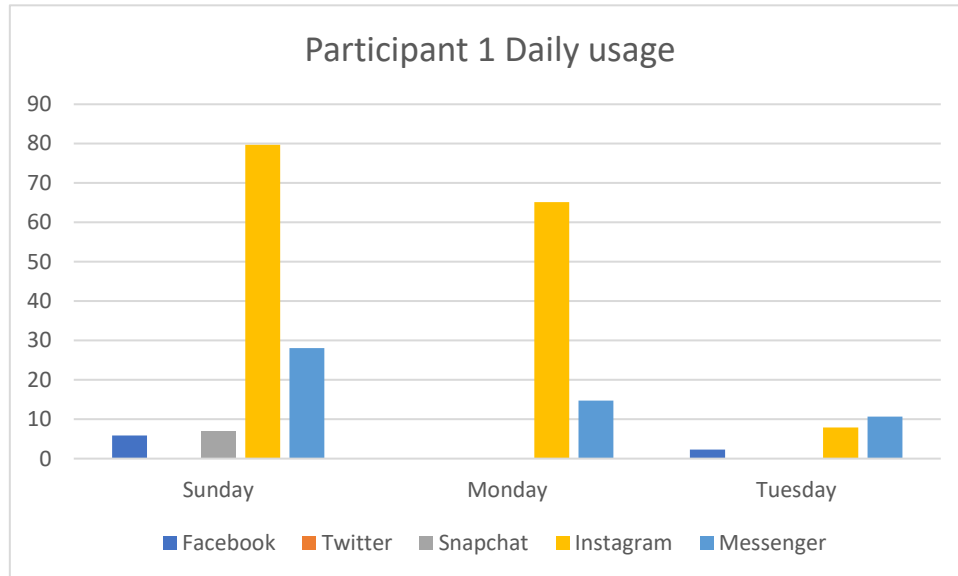


Figure 15 Participant 1 usage chart

What do you think is your average usage time?

“I’d say my average time overall would be about 2 hours”

Participant 1’s average time overall was approximately 4 hours over 3 days, there seemed to be a problem with retrieving the data on the Saturday however, the data retrieval was successful for the remaining three.

Yes or no, do you think your average active time is reasonable after finding out your results?

“Yes”

Why is this a reasonable time?

“Well, with messenger I can chat to friends to relax, with Instagram I find comfort in using this as there are many things to look at, it’s easy to get lost in”

There was no hesitation in the choice of yes or no as participant 1 did not seem too affected by the 2 hours difference.

What can be seen from participant 1’s result set is that Instagram was the main source of data usage in the study and by a large difference. The participant states that Instagram is used for comfort and messenger to talk to friends with, so the participant is aware of what they use and why, but they were not aware of how much time was affecting them. Time was not aware as the participant estimated that they spend 2 hours overall when it was in fact double that.

- Participant 2:

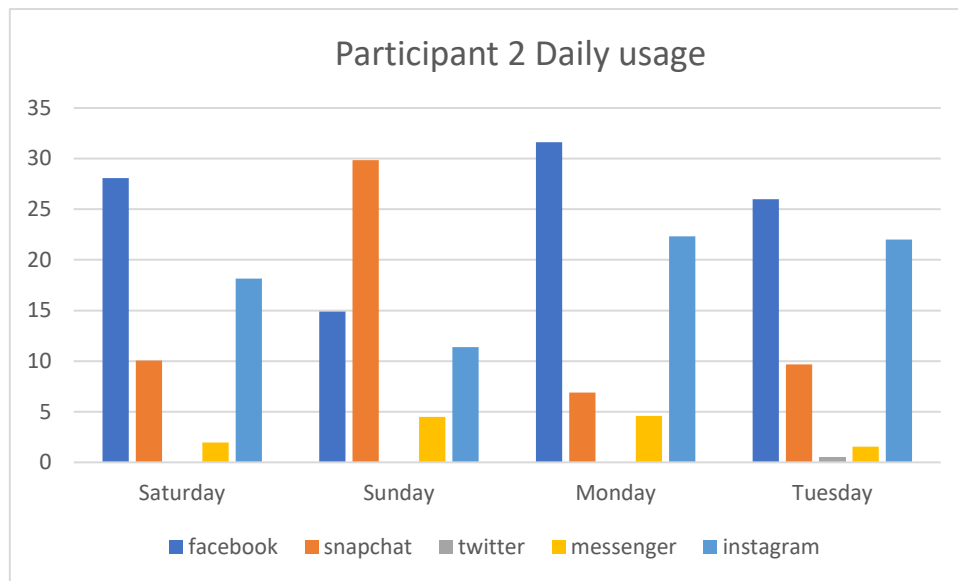


Figure 16 Participant 2 usage chart

Spent approximately 4 hours on social media applications over 4 days averaging at an hour a day

What do you think is your average usage time?

“Over the 4 days?”

Yes...

“I don’t think use it too much probably about 3 hours?”

Participants 2s average time overall was approximately 4 hours over 3 days and was successful over all four days.

Yes or no, do you think your average active time is reasonable after finding out your results?

“Hmm, well It’s pretty bad but, its nothing too bad I guess? So Yes”

Why is this a reasonable time?

“Well, in current society it’s regarded normal, I realise that it’s quite a bit of time and will consider how I use them in the future especially Facebook.”

Participant here was conscious of their time being a problem and felt guilty about it but still said yes.

What can be evaluated from this participant is that they were unaware of their usage times as their estimation was off by 25%. This participant was aware that excessive usage is bad

however they still believed that this average was reasonable, the reason for this was based on the belief that the majority of society will have similar averages, the participant believed that the results could have been worse in judgement of what others outside of the study would get. This participant did however acknowledge their average time for Facebook and wanted to make a possible change with it, showing that this study has brought awareness to this particular application.

- Participant 3:

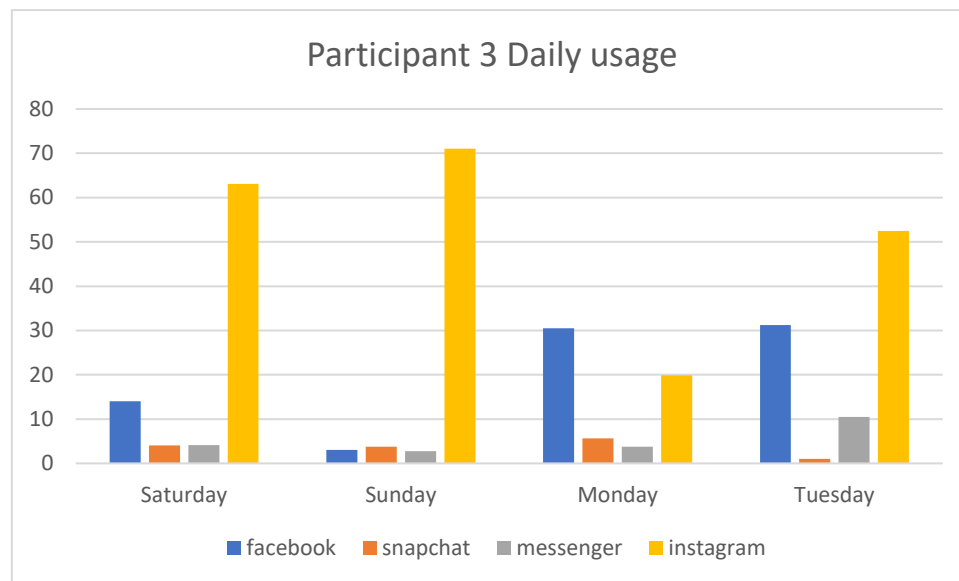


Figure 17 Participant 3 usage chart

What do you think is your average usage time?

“20 hours? Over four days so 5 hours a day”

Participant 3s average time overall was approximately 5 hours and 30 minutes over 4 days and was successful over all four days.

Yes or no, do you think your average active time is reasonable after finding out your results?

Yes

Why is this a reasonable time?

“because I wasn’t deprived of it, so my desire for the social media was met, it fulfils my boredom”

Participant 3 was keen on individual times and carried on to justify some of these applications; “I used Facebook more on a week day because it’s useful for uni work”

What can be evaluated here is that this participant was not aware of their time on these applications. This participant did not have twitter installed however the overall average still met a significant amount of time. This user explained that Facebook was used more on the weekday than the weekend because of coursework and University studies as a whole.

- Participant 4:

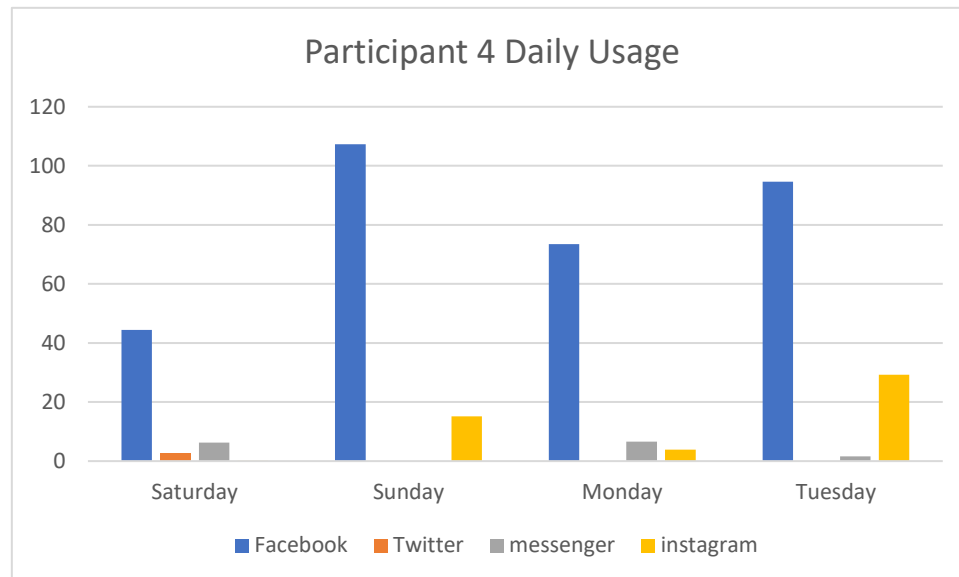


Figure 18 Participant 4 usage chart

What do you think is your average usage time?

“hmm I don’t know, I do not think I spend too long on it, probably about 40 minutes a day?”

Participants 4s average time overall was approximately 6 and a half hours over 4 days and was successful over all four days.

Yes or no, do you think your average active time is reasonable after finding out your results?

Yes

Why is this a reasonable time?

“because this is my chillout time, I spend time on Facebook scrolling through rather than other things such as playing games or watching television.”

“at the weekends I do other things with my time so my this is why my weekend time is less”

“I only really look at these apps if I’m bored”

Participant was undecided on the yes or no question, until eventually saying “I can live with it” the participant also carried on to say, “anything more would not have been reasonable to me”, this hesitancy shows that this participant was aware that their activity time stats that were recorded were high. However, this awareness was still accepted as reasonable showing that past the point of 2/3 hours the answer would have changed.

What can be noted from these answers are that this participant was aware that they were using these applications a bit too much, this participants reaction to the results was eye opening. They responded with “oh my god” “I didn’t know this”, these reactions of shock prove that the participant was unaware of how social media was influencing their lives.

5.6 Application structure theory

During the final interview, upon further review of the data an initial thought was why are these application times in each of the application similar each day but so different between each app. Trying to obtain an answer to this developed a theory that the structure and mechanics of these applications were the cause of such a high or low amount of usage time.

To gather an answer to this question participants were asked whether they knew why the difference exists. Depending on the participants answer to this question I would be able to assume that the participant was not aware of how these applications work and that they may use a system that tries to keep user attention or not.

Participant 1

“Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?”

“hmm well I use Instagram quite a bit as relaxation as I like to explore things like travelling pages because it lets me see some great things, but I only use snapchat when something happens to document it or when I get a message off someone, which is not too much on snapchat”

“Do you think that the way the app is designed could a factor in keeping you in the app”

“I suppose but I feel like you could use snapchat use just as much, it depends on the amount of things you follow I reckon”

Participant 2

“Could you explain why you think that your usage stats were far higher on Instagram than they were of Snapchat?”

“Well for me I like to look at particular feature in Instagram which is the explore tab, this provides a long stream of pictures and videos that are related to my recent likes, if it wasn’t for this I might not use it as much. With snapchat I have a group message where only a couple things are sent per day “

“Do you think that the way the app is designed could a factor in keeping you in the app”

“well I know that snapchat is probably small because it’s just one single image or video that disappears after you see it. I know that I use Instagram a lot because of the explore page which I could change to get it lower.”

Participant 3

“Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?”

“Well, it might be because I don’t use snapchat as I don’t follow much on this app, whereas Instagram I follow a lot of different types of account”

“Do you think that the way the app is designed could a factor in keeping you in the app”

“well I not thought of this but can understand why this may be possible as snapchat is only used for a very short amount of time”

Participant 4

“Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?”

“Well, I know that Instagram features a somewhat endless loop of content whereas snapchat only lasts for ten seconds”

“Do you think that the way the app is designed could a factor in keeping you in the app”

“Yes, because like I just said, Instagram can be very easy to provide content for me especially when I’m bored because I just keep scrolling”

These interviews describe that not all participants are aware of how the structure of Instagram may keep you in for as long as it can and snapchat as little as it needs to. Half of the participants were not knowledgeable of the possibility that an application can determine your usage time whereas the remaining two participants were aware that these apps have the potential to influence usage time, whether it be snapchats length or Instagram’s endless feed.

With this analysis, this may impact the study as it was not assumed that certain structures within the application could govern a participant’s usage. Therefore, a feature of this study highlights applications which know how to get the most out of a user, because in the same way that some are depend on these for such areas like boredom, the application needs the user all the same.

5.7 summary

None of the participants could estimate how long they had spent on each social media platform, or overall. Half the participants acknowledged that their activity times were large to them and that they would think about changing this. These participants were also hesitant in their answers, showing that they felt some guilt towards their results.

The other half of participants were more laid back about the results as they believed their reasoning was a good enough justification for their results. Comfort and boredom suppression are key points of why these participants felt their times were justifiable.

Overall each participant average times correlated to each other showing that within this community the usage of social media is similar.

5.7.1 Were the participants more aware of their usage afterwards and will it change them?

I believe that participants are now definitely aware of what their social media usage times are and how much of their day it will take from them. This could be seen through any response that was given, if participants accepted their results they were aware however they were not emotionally or physically affected by it, if the participants showed guilt in their response they were also aware of their usage stats. The difference between responses gave an insight to participants that might take action against their results.

I believe if participants were to change their usage statistics it will depend on the importance of their needs or the strength of their guilt from the results. From this study, participants now know where they can recover time lost as each application was evaluated, for example Instagram had the most usage on average making it the main culprit of the usage time. Participants may be better if it was not implemented on participants devices, doing this would greatly decrease total usage time.

5.7.2 Difference to existing studies

Within the literature review there were three studies which looked into the usage of social media and its growth between different types of individual. One study measured perceptions of school children and social media, where children were asked what they use social media for. What I took from this study was the use of questionnaires and both interpretations quantitative data and qualitative data, for example my study takes in quantitative data from the user's usage stats and qualitative data from their results interviews.

Each of the other existing studies took a far higher participant count than this study; being hundreds in the child study and in the telephone interviews it was thousands. Although my study did not contain this many participants it did achieve more detailed data which included natural behaviour. This data allowed my surprise method to work where a higher participant count would not have done so.

None of the studies however highlighted a contrast between perception and reality, with these findings my study is able to find a clear difference in what individuals thought they were spending their time on and what the realistic time was. The surprise method found that three in four individuals had a bad judgement of their awareness to social media usage, this discovering something that the existing studies didn't establish.

6. Conclusion

The overall aim of the project was to carry out a small-scale study amongst four participants over 4 four days. The purpose of the study was to understand and perceive if participants were aware to the amount of time they were spending on social media applications and if not, were they surprised at the truth. This study was conducted over two weekend days and two weekdays through the use of an application known as the software recorder. The software recorder was merely a tool used to gather data from each participant, so I could analyse the data and format it to evaluate readable findings.

This project was split into four and a half key components:

- The literature reviews & Investigating current apps
- Building my own app
- Running a small-scale study
- The analysis of it.

Each of these components are of equal importance to this study.

6.1 Overview of chapters

The literature component met the objects required for the development of the study, as from the literature review and investigation into existing applications I gained knowledge from these components that were interesting to learn about and interpret advantages they offered. This was an advantage to do because when designing the study itself I could see what had worked well for the existing studies and applications. By doing this I could incorporate questionnaires such as Likert questions and open ended questions, which gave a qualitative and quantitative finding both at the start of the study and end of the study, which the study [1] had used to gain these different types of data.

The literature review also gave me an understanding of what had not been covered in previous studies which I instinctively wanted to include. This was the surprise method. The surprise method is what this study should adhere to, essentially hiding results from the user until the second interview. By implementing this surprise method, the results from perception and reality would be unknown to the participant. When they were given their results the reaction to this would give a greater influence on the participants emotion if the results were greater than expected. For this method to work I needed to have data about individuals, and as the other studies did not contain the same form of formality the study results were not related and usable to my method. Therefore, one of the reasons this study is worth doing is because there hasn't been a study which examines to this level.

The app review component met the objects required for the development of the study, because it gave insight in how existing applications perform this type of internal data collection and display to the user interface. The existing apps each gave interesting methods and mechanisms to think about implementing as well as the well thought out usability the user interface inherits. This usability aspect was the most important area that these existing apps provided as a good layout and usability structure is necessary to make the software

recorder as easy to use as possible, this will help prevent problems from occurring when the study is running.

Building the application was a big challenge for me, having never used the android development side of Java before, this component took the longest as there were many challenges to achieve and overcome. By learning to overcome and find the solutions I needed to continue building the app I believe that this shows how my programming skills have dramatically improved since the start of this project. The applications could have been more polished in the user interface and in the code mechanisms however because the software recorder completes the job it was made for, I would deem this as a success.

The purpose of the study component was to have use interviews and make it a means of getting participants to think about what they perceived their results would be through questionnaires versus the reality of what software recorder evaluated, this was met by an open ended question. For this to adhere to the surprised method there would have to be two interviews before and after to see if users could determine what their activity times may be like

The purpose of the analysis was to deliver the surprise method to the participant and see a natural physical reaction to the results that have been hidden throughout the study. This analysis evaluated that three of four participants perception contrasted their reality. These findings have impacted the participants whether it be for bettering their time or knowing where their time was spent. With these findings also came a theory of how the structure and mechanisms the applications had may affect how long they use the app for as Instagram which kept users in was the highest on average and snapchat which had ten seconds per photo was the lowest. As I believe that an excessive amount of time on these social media apps, the impact on these participants can be accepted as positive findings as it may help their control of social media.

6.2What I would do differently

6.2.1 Use iPhones

Throughout the development of this study and system Android was a problem. This issue with Android came from both it's IDE and participant numbers. The Android IDE as mentioned in the implementation chapter was not smooth. When choosing participants, the participant had to have an android device, this proved to be a task in itself as students with android phones were a lot harder to find than android phones.

If I was to perform this study again I would have used IOS development to build an application for iPhone users. I would use iPhone development as the IDEs for this operating system has far better reviews than Android studio, which would have made the build process much easier. Another reason to use IOS development is due to the amount of students with iPhones as within Lancaster, many students that were willing to participate had iPhones.

6.2.2 Different environments

Another thing that I would have liked to implement would have been measuring the usage data in different environments. For example, performing the study over the Christmas holidays where participants would have a lot more free time, against very busy period at Lancaster University where users are more likely to have a lot less time due to coursework deadlines. Doing this would provide the study with more of a definite answer to whether social media usage is more prominent in free time as this study did not fully determine this due to close results.

6.3 What would you do if you had more time?

Future work (possible developments of existing system); Lessons learned. Some

6.3.1 Use more participants

By using more participants this may have provided information which would either backup my current results and solidify a pattern for the correlation, or this would provide completely different data which would provide a different correlation and a different evaluation.

As each study took an average elapsed time of one week, in the time given for the project this would not have been possible. This elapsed time took so long because of how interactive the study was. Organising the initial interviews, performing the study and analysing the data all added up to a point where any more participants would have taken too long to evaluate. This style of study should be deemed too time inefficient. However, with more time this would have been possible.

6.3.2 Measure usage on accounts rather than device

As social media is used over multiple platforms and the findings only monitored smart phones these findings may not have been as accurate as they could have been. If I had more time, monitoring the participants account which is attached to each device could be used to monitor the total usage time spent over all devices that the user is connected to. An account monitor would provide complete accuracy in determining how long each participant spends on a social network site or application.

6.3.3 Use a server for data transfer

Future goals would be to develop features in the software recorder that allows a greater amount of privacy, this would mean not having to include the process of sending an external file to me. If this data could be automatically exacted from the applications internal data and sent over a webserver or a host system for storage as this would greatly improve the surprise method. This would improve the surprise method as there would be even less for the user to be involved in the study and this would decrease the risk of a user formatting the output and discovering the data.

6.4 End note

As social media is becoming more embedded into everyday life this study provides participants with some evidence to help self-control their social media usage. Part of such self-control is through delivering surprise - showing to participants just how different are the facts of their media usage from reality. These applications and sites are very easy to get lost in and I believe that this study will help those that participated not to succumb to spending too much of their time in these applications. This study also provides advantages to myself

learning how the platforms are used, how to develop Android systems and perform interviews with real, physical participants.

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8. Appendix

Consent form

Project title: 'Surprising students through usage time of social medias'

- I have read and had the study details sheet explained to me by Lewis Allen the relating to this project. ☐
- I have had explained to me the procedure of the project and what will be required of me, and any questions have been answered to my satisfaction. I agree to comply with meeting with Lewis Allen when necessary and when appropriate for me. ☐
- I understand that my participation is entirely voluntary and that I have the right to withdraw from the project any time, but after 1 month of the studies completion the information I have provided will still be used for the project. ☐
- I understand that all data collected will be anonymised and that my identity will not be revealed at any point. ☐
- I have received a copy of this consent form and of the accompanying information sheet. ☐

- Name:

- Signed:

- Date:

Participant information sheet

Title: 'Surprising students through usage time of social medias'

Researcher: Lewis Allen

You have been chosen to partake in this research study. Please read the following information to understand what will be asked of you and whether you still wish to continue.

What is the purpose of this study?

The purpose of this study is to see how often participants use social media through their smart phones. This study is a part of my dissertation project for third year.

What you will be asked to partake in

You will be asked to install an application that has been built in order to monitor usage times from your device. You will be asked to run the application and send the output files to me after four days of monitoring.

What are the risks of taking part?

There are no risks in taking part of this study, the only disadvantage will be the time required for interviews which will last approximately 5-10 minutes per interview.

Can I decide not to continue the study at any point?

Yes, you can decide to exit the study at any time during the study.

And if so what will happen?

Any data gathered will be removed from the analysis of this study. If, however a month has passed since signing the consent form, the data will be kept within the study.

Will I be kept anonymous through out the duration of the study?

Yes, every participant will be kept completely anonymous throughout the study as types of individuals are not being measured.

If there is a problem and I don't know what to do?

Please do not hesitate to contact me with any questions or wishes about either the study or your participation at l.w.allen@lancaster.ac.uk

Questionnaire Questions:

Interview 1:

1. How often do you think you use social media?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

2. Which app do you think you use the most?

- ☐ Facebook
- ☐ Snapchat
- ☐ Twitter
- ☐ Messenger
- ☐ Instagram

Interview 2:

What do you think is your average usage time?

1. Do you think your average active time is reasonable after finding out your results?

- ☐ Yes
- ☐ No

2. Why is this a reasonable time?

Transcript of interviews:

Interview 1:

Before obtaining data.

Participant 1:

Interviewer: How often do you think you use social media?

Participant: sometimes

Interviewer: Which app do you think you use the most?

Participant: Messenger

Participant 2:

Interviewer: How often do you think you use social media?

Participant: Often

Interviewer: Which app do you think you use the most?

Participant: Snapchat

Participant 3:

Interviewer: How often do you think you use social media?

Participant: Often

Interviewer: Which app do you think you use the most?

Participant: Messenger

Participant 4:

Interviewer: How often do you think you use social media?

Participant: Sometimes

Interviewer: Which app do you think you use the most?

Participant: Facebook

Interview 2:

After obtaining data.

Participant 1:

Interviewer: What do you think is your average usage time?

Participant: I'd say my average time overall would be about 2 hours

Interviewer: Yes or no, do you think your average active time is reasonable after finding out your results?

Participant: "Yes"

Interviewer: Why is this a reasonable time?

Participant: "Well, with messenger I can chat to friends to relax, with Instagram I find comfort in using this as there are many things to look at, it's easy to get lost in"

Participant 2:

Interviewer: What do you think is your average usage time?

Participant: Over the 4 days?

Interviewer: Yes.

Participant: I don't think use it too much probably about 3 hours?

Interviewer: Yes or no, do you think your average active time is reasonable after finding out your results?

Participant: Hmm, well It's pretty bad but, it is nothing too bad I guess? So Yes

Interviewer: Why is this a reasonable time?

Well, in current society it's regarded normal, I realise that it's quite a bit of time and will consider how I use them in the future especially Facebook.

Participant 3:

Interviewer: What do you think is your average usage time?

Participant: 20 hours? Over four days so 5 hours a day

Interviewer: Yes or no, do you think your average active time is reasonable after finding out your results?

Participant: Yes

Interviewer: Why is this a reasonable time?

Participant: because I wasn't deprived of it, so my desire for the social media was met, it fulfils my boredom

Participant 4:

Interviewer: What do you think is your average usage time?

Participant: hmm I don't know, I do not think I spend too long on it, probably about 40 minutes a day?

Interviewer: Yes or no, do you think your average active time is reasonable after finding out your results?

Participant: Yes

Interviewer: Why is this a reasonable time?

Participant: because this is my chillout time, I spend time on Facebook scrolling through rather than other things such as playing games or watching television."

Participant: at the weekends I do other things with my time so my this is why my weekend time is less

Participant: I only really look at these apps if I'm bored

Interview 3:

After further data analysis

Participant 1:

Interviewer: Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?"

Participant: Hmm well I use Instagram quite a bit as relaxation as I like to explore things like travelling pages because it lets me see some great things, but I only use snapchat when something happens to document it or when I get a message off someone, which is not too much on snapchat

Interviewer: Do you think that the way the app is designed could a factor in keeping you in the app

Participant: I suppose but I feel like you could use snapchat use just as much, it depends on the amount of things you follow I reckon

Participant 2:

Interviewer: Could you explain why you think that your usage stats were far higher on Instagram than they were of Snapchat?

Participant: Well for me I like to look at particular feature in Instagram which is the explore tab, this provides a long stream of pictures and videos that are related to my recent likes, if it wasn't for this I might not use it as much. With snapchat I have a group message where only a couple things are sent per day.

Interviewer: Do you think that the way the app is designed could a factor in keeping you in the app

Participant: Well I know that snapchat is probably small because it's just one single image or video that disappears after you see it. I know that I use Instagram a lot because of the explore page which I could change to get it lower.

Participant 3:

Interviewer: Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?

Participant: Well, it might be because I don't use snapchat as I don't follow much on this app, whereas Instagram I follow a lot of different types of account.

Interviewer: Do you think that the way the app is designed could a factor in keeping you in the app

Participant: well I not thought of this but can understand why this may be possible as snapchat is only used for a very short amount of time.

Participant 4:

Interviewer: Could you explain why you think that your usage stats were far higher on Instagram than they were of snapchat?

Participant: Well, I know that Instagram features a somewhat endless loop of content whereas snapchat only lasts for ten seconds

Interviewer: Do you think that the way the app is designed could a factor in keeping you in the app

Participant: Yes, because like I just said, Instagram can be very easy to provide content for me especially when I'm bored because I just keep scrolling

Project proposal

Project proposal

The proposed project

The aims of the project are to investigate how much children are using social media, in terms of education and wellbeing, are they affected? In order to collect the data from the participants the project;

- I will build an application to record and store the data of when they use a social media application, this app will have to run in the background, so it does not interfere with the participants usage, if not then the outcome may be skewed as a conscious participant may give underwhelming results.
- Participant Interview, to find a range of results, by interviewing the participants this will allow a good sample of participants to be used.
- Applying the application to the participants, this will require android users as the application will be developed on android, their phone must be able to run the application. This will be on their phone for a week.
- analysing the data, once the participants have used the device for a week, the data will be collected, this data will be used to see if the amount of time spent on social media is excessive or not.
- Responding to the data- interviewing the participants, to discuss how much time they fully spent in a week on all social media applications and how it may impact their lives.

Abstract

This project is going to be an investigation into how children of many ages are affected by the use of social media. There are some important questions that need answering, are children spending their life on social media? How is it monitored? are schools dealing with the amount social media is used?

I would like to make a project to look into these areas, it would mean testing with participating children of all types, boys and girls young and older, top set and lower sets. By using an application to record the amount of time spent on a social media application, the recorded data could then be displayed on a graphs and diagrams and shown the participants through an interview, thus showing how much time is spent on these applications. As the time is monitored, the results will show certain peak times, this could lead to a better understanding and could make the children realise how much time they are taking up on their phones/tablets etc which may or may not be affecting them in some form.

Introduction

Social media is becoming more of a necessity to one every day, people are depended on social medias, whether it is talking to one another, sharing images and events or just seeing what users are generally doing in their lives. Social media can be used by many ages groups, different locations and all kinds of individual. In June 2017 Facebook recorded Over billions active users, whom are all sharing their lives upon social media, whether these individuals are famous, an icon or just an average individual. There are many social media platforms, Facebook being the most prolific, All of these taking up an individual's time to "check in" to their online lifestyle.

The more embedded users become into social media, the more time out of their lives is used. Currently the average person will spend more than five years of their lives on social media [5] only watching television came ahead of it, this meaning that users will spend more time in their lives than they do socializing and taking care of themselves which can be eating grooming and so on.

The proposed project will consider the impact social media has on children, specifically high school children in terms of How long they spend on average a week on social media within their everyday life, at school and at home. This will be carried out by using an application that will register when a participant uses a social media app and how long they are spending on it, this will store quantitative data (Time) from all social media apps the user has such as Facebook, snapchat, twitter... etc. The information and data that will have been gathered will be used to analyse if the use of social media is an increasing problem or not; does it hinder their studies; do they know how much time they spend on it and are the participants becoming depended on it at all.

This project proposal will split into the areas of; background; the project; the process ; Required Resources. The background will consist of reading and research that has been gathered that relate to the proposed project, taking information on how they produced their study and what the results were. The project segment will discuss the overall aim and strategies to finding out what the affects may be. The process will describe the plan of the project, its timeline and any due dates, this will be shown through a Gantt chart.

Background

Previous projects and articles relating to the proposed include a study on children using social media for learning [1]. The paper discusses and reports how often they use social media and what they use it for, this project used online surveys to gather the quantitative and qualitative information to find out children's perceptions of social media using. These surveys are given to each year group, boys and girls with their findings showing that in the lower years didn't gauge in social media too much.

However, this project focused on the whole collective of a school, whilst this is good for numbers and data gathering, the data that's collected is based on an estimate. This style of collecting data is not individual, in the proposed project it would be interesting to focus on individual studies as would be more affective as the data would be more accurate. This way the project becomes more personal and may influence the participant.

Furthermore, the social media & mobile internet use among teens and young adults [2] shows that in 2010 the number of mobiles and social media accounts in teens and young adults was

increasing, showing that the use is becoming ubiquitous between subjects and study. The information they gathered was obtained by surveying through a telephone, asking users of each gender, different education and different areas. What they found was social media increase and phone increase, as participants were starting to have multiple different kinds of survey.

However, this project is fairly dated, in 7 years smart phones have become more prominent, because of this the project would now have different outcomes as social media applications are available across all smart phones, this increasing how much they use the applications. The range that they choose is interesting as they chose to study were in higher education as it may give a different outcome. This is something the proposed project could take in the sampling of participating as some participants may use it less or more.

Another paper Social Media Usage: 2005-2015 [5] compares the social medias range from 2005 to 2015 in users, these users range from age 18 to 65, genders, race, areas and education. Within the decade the amount of social media users has increased in every age group, the most being young adults 18-29 by a massive margin. This project consisted of surveys and interviews among adult internet users.

Although they do not study school ages, this could give an indication to how much a child uses social media and how often, as this information more updated than the social media & mobile internet use among teens and young adults [2] paper, having these ranges could be used to compare from 2015 to 2017 to discover how if the rate is still climbing.

In the article Social media bingeing 'as bad as junk food' for children, parents warned [3] there are concerns that children 'binging' is becoming prominent in social media, especially over the summer while they are out of school, the proposed project will be researching into a child's use whilst in school, the project will discover whether any bingeing real.

Methodology

To gather the research, a sample of approximately 16 participants will be using the application recorder, these participants will range from Year 8 to Year 11, of which will be one girl and one boy from the higher sets and one girl and one boy for the lower sets. Using this range of participant will allow for a wide range of outcome, whether it is their age, gender or intelligence that is the cause, this sample range will be able to determine the differences.

Informed consent forms must be filled out so that the participant can understand the terms of the study and the type of data that will be stored by the application. Each participant will be given a agreement form to fill out.

The aims to collect this data and receive certain results will mean monitoring the participants use of social media. The developed application will tell me how long they have spent on social media that day and will allow me to send the participant the information. Here I will be able to see a possible reaction, as I believe a participant may change the amount they use social media if they have been informed of the data, already making them conscious about the amount of time they spend on social media.

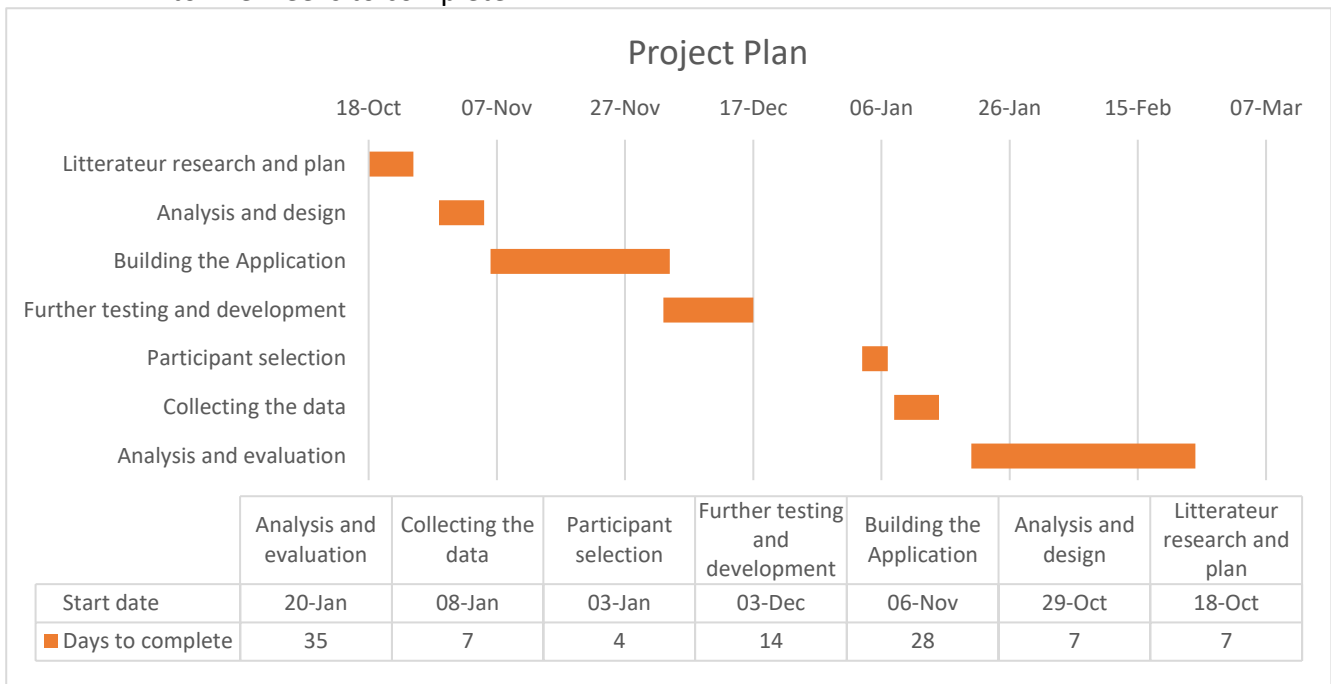
To ensure the application has no bugs and will be reliable I shall use an android emulator in order to run the application on. This will ensure a final working application will be ready to use.

Programme of work

As for a time line I, the project will involve the following process:

- Litterateur research and plan to adapt my proposed project and learn how other projects have been conducted. This will ensure the outcome will be due to the participant and not anything that has been poorly planned in the project. This should take a week.
- Analysis and design, this will involve designing the application to follow the aims of the proposed project, schools will be emailed to ensure I am able to cast the study on children. This should also take a week.
- Building the Application. Once the application has been designed, the build may begin, this will be done by using an android emulator to mimic an android device which will be used in the study. Once built the application will be tested to ensure any bugs or errors do not occur. This stage should take three weeks.
- Participant selection should be performed in order to select the right individuals, this will be done in the week that children are back in school after the Christmas holidays, to recruit the individuals it should take half a week.
- Collecting the data, after the participants are selected they will immediately be given the application to install on their devices and will begin collecting data from there on for a week and a half to two weeks.
- Analysing the data and producing an evaluation, once the data has been collected the data will be received and analysed into a readable format and for the study to commence. This data will be able to tell me whether or not social media has an

impact on the lives of children and whether they reacted to it. This should take four to five weeks to complete.



Resource Required

Access to a model of an android phone will be required for the project so that the application can be tested on during the development stage, this will prevent any obvious errors from occurring as testing will fix it. Having this device will be important to finalizing the application, bug free and ready to be used on participants devices. This device will be provided by Lancaster university.

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Proposal changes

As I initially wanted to do this study using school children. After taking advice from my supervisor, the process of obtaining all the permissions to do this would be far too unnecessary if the same study could be performed on fellow students.

I also wanted to use 16 participants as this would provide a wide range however this was changed as it was found to be very time inefficient to do this number of participants. As students were treated all the same, the high amount was not as necessary.

Gantt Chart was not realistic, the whole-time scale proposed was not similar in the slightest as each component of this study took much longer than expected to complete.