



RESEARCH ON VARIOUS ADDICTIVE TECHNOLOGY, USER EXPERIENCE DESIGN AND ITS IMPLEMENTATION IN MODERN GAME DEVELOPMENT



Submitted By:
Deependra Pokhrel
College ID: 170366
Batch: 22 C

Submitted To:
Manoj Shrestha
Lecturer, Project Supervisor

Softwarica College of IT & E-Commerce
Dillibazar, Kathmandu
30 SEP, 2020

Table of Contents

Table of Contents	2
Introduction	6
Understanding relation between user experience design an Impulsive human behavior.....	8
Aim	9
Objectives	9
Personal Objectives.....	9
Academic Objectives.....	9
Technical Objectives	9
Research Question	10
Justification	11
Problem Statement	12
Solution to the problem.....	13
Ethical consideration.....	14
Limitation.....	15
Literature review	16
Case studies.....	18
Netflix and Prime Videos:	18
Amazon	19
Snap chart:	21
Slot Machines.....	23
Case studies on digital Addiction	24
Types of Digital Addictions.....	25
Human being and Social media.....	26
Social media and Students	28
Cyber bullying	29
Self-Esteem and Social Networking	30
Social media and business.	30
Social media and Casino.....	31
Digital addiction on online gaming and pornography.	32
Why social Networking is so Irresistible?.....	37
Types of Social Media Addicts.....	38
User centric design.....	39

Risk factor of digital addiction	40
Primary and Secondary research.....	41
Quantitative research	41
Methodology	45
Waterfall Adoption	45
Reason for choosing Waterfall methodology	46
Tools and Technology.....	48
Technology.....	48
Tools.....	50
Development of Game:	52
Features of Game:.....	52
Pestle Analysis:	56
Findings.....	57
Future Work	58
Challenges	59
Learning Outcomes	60
Conclusion	61
References.....	62

Table of figure	
Figure 1Digital World.....	6
Figure 2Portable gaming devices.....	7
Figure 3Scanned brain (China daily, 2017).....	8
Figure 4Objectives.....	9
Figure 5Research question.....	10
Figure 6Gaming revenue.....	11
Figure 7Popular game genres.....	11
Figure 8Problem Storyboard.....	12
Figure 9Solution to problem.....	13
Figure 10Ethical consideration.....	14
Figure 11Mobile VS Others console.....	15
Figure 12Literature review.....	16
Figure 13Social networking users.....	17
Figure 14Impact of social media (Siddiqui, 2019).....	17
Figure 15Netflix and other video streaming.....	18
Figure 16Amazon Users.....	19
Figure 17Amazon prime subscriber.....	19
Figure 18Amazon icon.....	20
Figure 19Amazon buyers.....	20
Figure 20Snapchat icon.....	21
Figure 21Snapchat user frequency.....	21
Figure 22Snapchat user saying.....	22
Figure 23Slot machine.....	23
Figure 24Gambling psychology.....	23
Figure 25Hooked.....	24
Figure 26Digital clicks.....	25
Figure 27Average screen time.....	26
Figure 28Problem of today's people.....	27
Figure 29Daily life.....	28
Figure 30Cyber bullying.....	29
Figure 31Social media and business.....	31
Figure 32Casino.....	32
Figure 33Brain reward center (Recovery research institute , 2018).....	33
Figure 34Normal day of student.....	36
Figure 35Why social media is so irresistible? (Ahmad, 2018).....	37
Figure 36Type of user (GOINS, 2013).....	38
Figure 37User-centric design concept.....	39
Figure 38Addicted youth.....	40
Figure 39Response to first question.....	41
Figure 40Respond to second question.....	42
Figure 41Respond to third question.....	42
Figure 42Respond to fourth question.....	43

Figure 43Respond to fifth question.....	43
Figure 44Respond to sixth question.....	44
Figure 45Waterfall methodology	45
Figure 46Reason for Waterfall use	47
Figure 47Java for android icon	48
Figure 48Nodejs and express Icon.....	48
Figure 49Mongo DB icon	49
Figure 50Android studio IDE icon	50
Figure 51GitHub icon	50
Figure 52Microsoft office icon	50
Figure 53Google chrome icon	51
Figure 54Canva icon	51
Figure 55Registration page	52
Figure 56Login page	53
Figure 57User dashboard	54
Figure 58Game play.....	55
Figure 59PESTLE analysis	56

Introduction

The new advanced age has realized phenomenal improvements in innovation, and this has changed the way numerous individuals' daily use and respond according data provided by the system. The advanced internet and digital platform are developing in a speedy rate, things thought to be challenging for normal people in daily life are currently turning simple easy task. The scope of digital platform is extremely astonishing, examples: long lines in the banks or financial organization has been disappeared because of computerized machines (ATM), time spent to meet has been decreased because of calls, and improved entertainments makes life simple all around. (Hayman, 2012) Though this steady computerized and web improvements which help to interface the world can be viewed as either valuable or impeding to human connections and well-being, Some most noticeable advanced innovative improvements which have extraordinarily influenced numerous parts of our lives are cell phones, PCs, iPod and some more. Internet is developed to be universal, progressively accessible and faster to technical as well as non-technical communities, social media plays an incredible role in intercommunication and collaboration, empowering individuals to communicate and share interests from numerous points of view. (Lisa Eadicicco, 2016) Undoubtedly digital technologies improvements helped to interface the connection in world and is to be viewed as either valuable or hindering to overall well-being of human being, some of the prominent technologies have incredibly influenced numerous parts of our lives. (Adhikar, 2017) These prominent gadgets largely on internet. Various application and sites like Facebook, YouTube, twitch, Instagram, twitter and many other have made possible for user of every age group to share their interest among others worldwide.

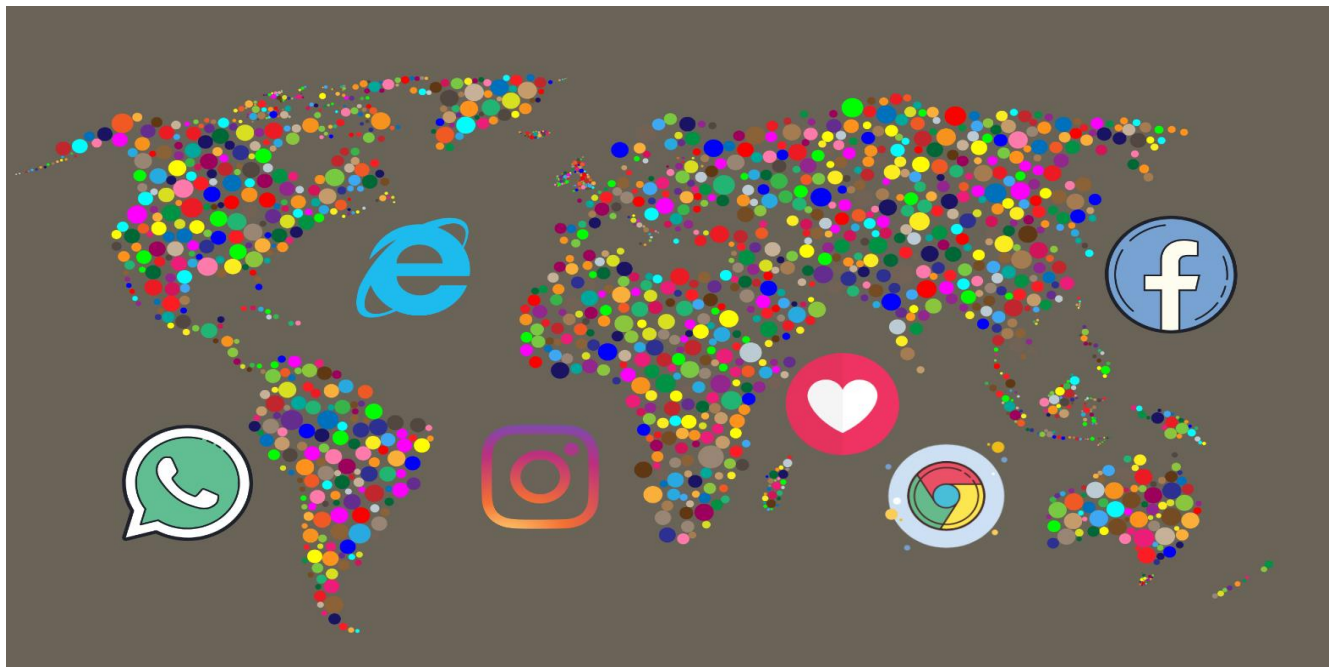


Figure 1 Digital World

The Internet is modifying human social connections and the architecture of brain while processing information. Despite being a typical phrase and sight in the present extraordinary social life, Mobile game is not plainly obvious what precisely comprises and characterizes a "versatile game." Definition on portable games is regularly in fact centered, and for the most part moves straightforwardly explained to the execution of games for cell phones and other devices without explaining the key idea itself. (Nature) Nonetheless, various types of cell phones, and even PCs is defined as "portable", in view of the prevalence of little and lightweight PCs. In portable gaming, cell phones are widely recognized devices for identifying game development of events and distributing. With regards to gaming universe, it has a reasonable piece of fluctuation by which gamer can decide to make the most out of preferred games. (LEDGER, 2020)A few gamers might be committed PC gamers, with proper development of gaming environment like setup room, lights, chairs, well powered PCs, gaming mouse and other defined gaming gadgets as their weapon while playing game. Others player, free time users may prefer the most "ease" way that accompanies with consoles like cell phones, PDAs, prescreen etc. Everyday new development of another gadgets for players is rapidly developing itself as a versatile competitor in gaming industry.



Figure 2 Portable gaming devices

Understanding relation between user experience design and Impulsive human behavior.

The activity of client experience developer is extremely huge and assembled simultaneously. Developers work with information, channel it, develop and assemble wireframes, models and mockups for developing introductory product before release. (Psychology today, 2018) This exertion is similarly spread between development of any software, application or game development. This cycle is implemented in every project for developing projects which can be easy to understand, to expand the environment of user, to save time to customers. As of definition of Cash, Addiction begins to develop when people hold on doing one task very often without caring its positive or negative impact. In the case of behavioral addictions, that withdrawal includes fundamentally mental side effects (touchiness, eagerness, poor fixation, expanded tension, and despondency, and so on.) The brain cerebrum starts compelled to pull back neuron-receptors with end goal while reestablishing harmony particularly when they do not get the high feelings again from a similar degree of act or from use of medication. (Cash, 2012) When an addiction grabs hold, the addict is either pursuing another high or attempting to stay away from withdrawal. This, thus, prompts fixation and taking part in the behaviors despite negative outcomes. Addicted people might not sleep, pass up social relationships, associations, prosperity and well-being of daily life. Impulsive behaviors are also outlined to enthusiastically repeat behavioral action for everything throughout everyday action. All impulsive action causes a similar harm to the mind receptors just like a drug. (CBS News, 2012)



A boy who was addicted to the internet, has his brain scanned at Daxing Internet Addiction Treatment Center in Beijing

Figure 3 Scanned brain (China daily, 2017)

Game: "I have to fly" is a game developed to entertain user with all the technologies to keep them entertained, but with also time limits allowing users remind about their time and work. Also allowing user to perceived available support by providing option to connect with friends. It helps user to cope up with lower self-esteem, self-efficiency and people with low satisfaction of life. User can improve their real-life abilities by enhancing the mental stage of their mind.

Aim

The aim is to research on User interface and experience design, addictive technology used in game development and other social networking site like Facebook, Instagram, Flappy bird and develop an appropriate modern mobile game based on research.

Objectives

Personal Objectives

- Explore the development of addictive technologies.
- Collect information regarding excessive social media usages.
- Learn how to maximize productivity.
- Learn about impulsive and compulsive human behaviors.
- Understand importance of User interface design.
- Understand diverse human behaviors.

Academic Objectives

- Study how Digital platforms can be used for good purpose.
- Study importance of graphics and user interface while developing mobile game.
- Create a comprehensive document of research for high marks score.

Technical Objectives

- Enhance knowledge of different design and development tools to showcase problem identified.
- Implement comprehension through prototype development.
- Learn use of new tools and technologies.
- Develop a game which runs without any bugs and crash.
- Develop security features for user's data.

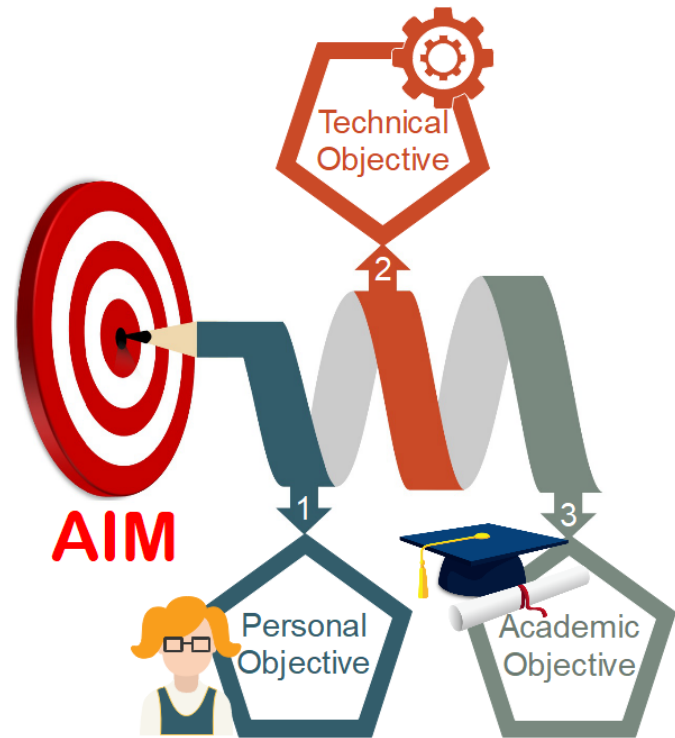


Figure 4Objectives

Research Question



*Figure 5*Research question.

- Will the project help to enhance user experience?
- How mobile game has impacted students, children and other players?
- Why player start playing game more often?
- Is User interface the important factor in game development?
- Do players consider themselves addicted to games?

Justification

At the end of the 2000's PCs UI configuration began to undergo essentially because of the ascent in prominence of the cell phone. Obviously, versatile gadgets were already available before the Apple iPhone, including PCs (clearly) and portable gadgets. (Molla, 2017) UI have made considerable progress since printed order inputs, and for sure from the customary PC work area working frameworks. Consoles and mouse development contact and inputs as text and voice are regular in PCs and cell phones. To begin with, game development begins chipping away at the thought. It is a significant advance to encourage further achievement. Since there is an immense number of thoughts previously actualized in the portable business, it should offer something fresh out of the box new or something effectively natural in another covering. (Muldrew, 2019) The significant thing is thought must be routed to a mass crowd to get a conceivably more noteworthy benefit. In this way, development of game development who has played the new developed in industry. Most importantly, choosing what sort of a game to be developed for more entertaining purpose. Ignorant of more modern problem such as social media addiction can cause a problem in patient's health and can take a time to consider and recover the problem. (Babulous, 2018)

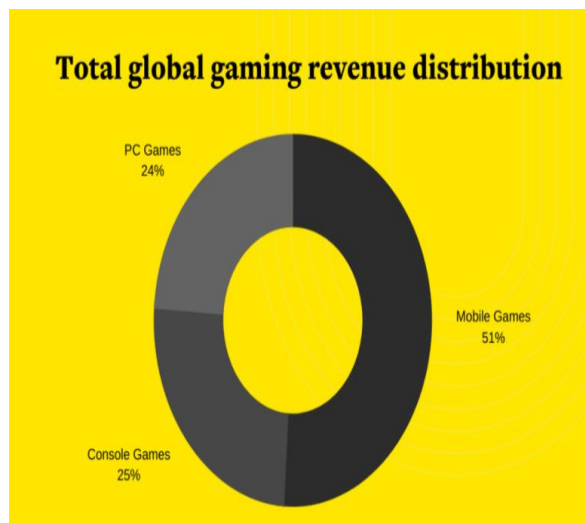


Figure 6Gaming revenue

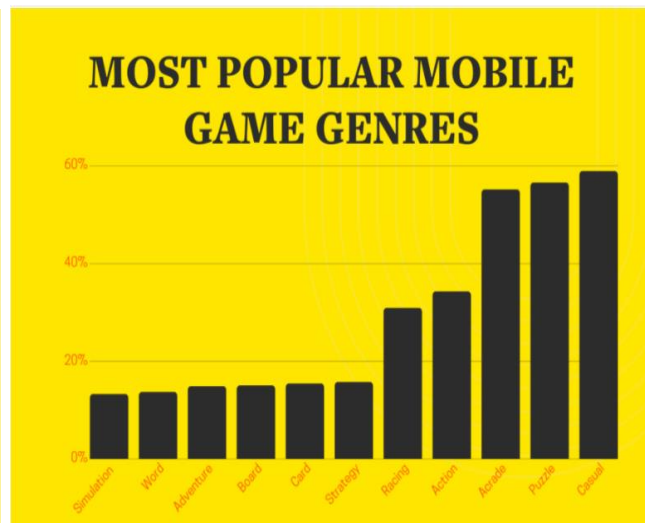


Figure 7Popular game genres

A few people who are discouraged may go to video games as an approach to self-sedate. This is the reason some examination can be slanted; it can seem as though gamer have a high probability of gloom, which can prompt the presumption that gaming has caused it. In any case, it is likewise conceivable that many individuals with discouragement go to gaming and really experience a decline in indications. Going to gaming for restorative purposes turns into an issue when the gamer endeavors to get away from their life as opposed to treating their issues.

Problem Statement

Computer games has developed itself as one of the important parts of user life. Most of the user give more time to online game which make them addicted to the game. It changes the way user perform their daily activities other than playing games. Not only game addiction changes the way user perform their habits physically but also mentally. For example: If a user plays a violent game for long hour, his/her behavior starts to develop as a violent person. They start to bargain about everything violently, discuss on every topic violently which will prevent them from developing social coping mechanism.



Figure 8 Problem Storyboard

Research and serious survey on the issues and impact of computer games are imperative to guarantee user will have some sort of constraint and limit while playing game. Parents have started complains about these problems about gaming industry. As games are developed for 16+ or 18+ age of user, children below 16 enjoys playing game. They get introduced to gaming in early age without listening to warning in description. Numerous guardians fear and scorn Scomputer games. Many guardians at discusses about an approached take control of gaming consoles like Xbox. It is a thoroughly outsider condition for many people, and for them who feels forceful hostility for. As per random internet research, it is found 99% of kids in the UK matured eight to 15 play computer games normally. Youngsters are totally drenched in this gaming world being addicted to it. Furthermore, they watch computer game influencers on Mixer, YouTube, Facebook, twitch and another streaming platform.

Solution to the problem

It is possible to aware people and change the habit of addicted people with the help of application, which will provide them with time to time warning and virtual consultation. In additional computer game and education can be taken side-by-side. There are main people who can control these problems faced by gamers and they can be parents, government and game developers. As most of the gamers fully focus on playing game, they ignore their words. It cannot even be controlled from government side. For example: Government of India banned mobile game Player-unknown's Battleground (PUBG) in sept 8 2020, still most of the player from India are playing using modern technologies like VPN. So, it is not possible to control from government side.



Figure 9Solution to problem

It must be developed from developer side, so being a beginner software developer, I have tried to develop a game which will aware player about their mental health while playing game. This application will help to find the user if they are addicted to games or only playing during free time. As an anonymous, people will always provide honest data it will be easier to study the data of mentally ill people and get a new way to treat a patient. Instead of getting worried about self-behavior and wondering, people can talk about their problem and help each other fight it. As this application will start to collect data from different background, result of patient which will provide huge amount of information to mental health which can be used for various use. So, this system can reduce the addiction cases and can also enhance mental health awareness among general people.

Ethical consideration

This research has taken into consideration with certain ethical issues. Issues regarding data privacy, copyright were duly considered. Proper citation and references have been taken into consideration from research papers, online portals, Internet. The objective of this research was to understand the addictive technologies, impulsive human behavior to technologies and problem arising in mental health and find solution developing a system prototype.



Figure 10 Ethical consideration

So, nothing unethical work was considered on this research paper.

Limitation

The scope of these research is limited due to focus on mobile game development. There are many other players addicted to PCs game. Mobile games have developed itself as a new field in game development, many new players are introduced in mobile gaming every day. This research paper is confined to mobile game development only, also only in android sector of mobile.

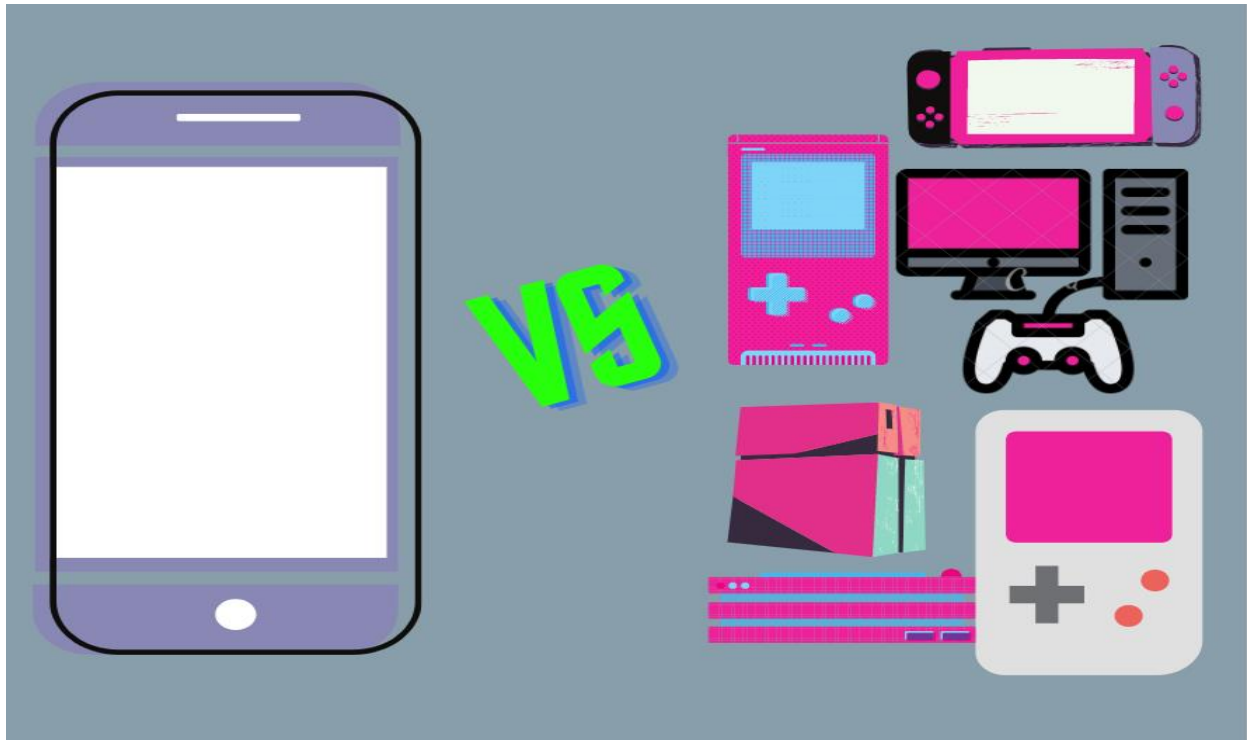


Figure 11 Mobile VS Others console

There is different development environment for different platform of game development. Since prototype of this project is developed in android phone, Android-studio an IDE for android phone was used to develop the game. Many players do not use android phone, so such player reach has been destroyed while developing the project. Many players believe mobile game allows low graphics or in-depth gameplay which might be one of the major limitations in this project. Even if mobile games deliver less graphic and in-depth gameplay than that of PCs gaming, attention span in mobile is also less than that of PCs which will not sink hour of player's time.

Literature review

According to Adam alter, half of the world is addicted to something and for the most people that something is a behavior. Most of the people are hooked in emails, phones, video games, television, shopping, and other long list of other experience backed up by powerful supplicated product design. Number of addictive technologies are rising at rocket speed. So, people must know why and how first behavior addiction was introduced and escaped by people. On a long term, people's health, happiness, and well-being depends on it. (Alter, 2017)

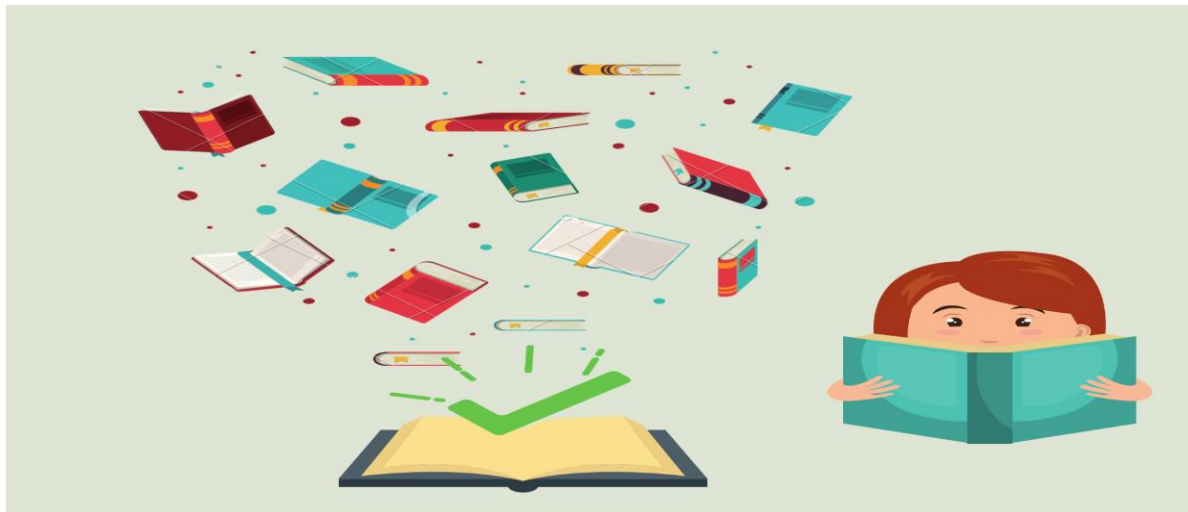


Figure 12 Literature review

Many people look back in the past and realize many things had changed and tends to believe they will stop changing, they believe that the life we lead right now will be this forever. Which is known to be end of history illusion, the illusion is comforting because it makes us sense that we have finished becoming and prevents us for changes yet to come. With all these all social networking Human being is still on the phase of early way point on a long climb and they tends to suffer in this phase of mobile phones and social networking, how are human going to withstand the addictive technologies yet to be seen such as emerging virtual reality experiences. Nobody knows how the world will look like 10 years from now and looking back at history, there is no reason to believe history has ended today. (Alter, 2017)

According to Seth Stephens- Davidite author of “Everybody lies”, Facebook is developed as a digital brag-to-my-friends-about-how-good-my-life-is serum. For example, an married couple who seems to be happily living, enjoying parties in Vegas but in daily life people have a problem or frustration due to line they have to wait in shopping malls, ignoring phone calls from their spouses. In social-media people looks happy which is far. There are many others related information regarding to people which shows people are totally different than what they show in their daily life.

The relation of networking (Social) and depression is complicated and duplex, and this bonding might be affected due to social, mental, behavioral, and biological components. In addition, dependency upon certain conditions for people, Facebook will either cradle or impede psychological well-being. While critical relationship between explicit social networking practices and burdensome manifestations can be recognized, perceive that causality cannot be suggested. (Stephens-Davidowitz, 2018)



Figure 13 Social networking users

The tendency to socially compare one-another online usually reflects self-real human behavior which leads to mental problem like depression related with delusion and hallucination. The connection between increasing social comparison and burdensome indications has been assessed in a few researches. Communication technologies and social networking site like Facebook, Instagram makes easier to develop and enhance connections and refers health information.

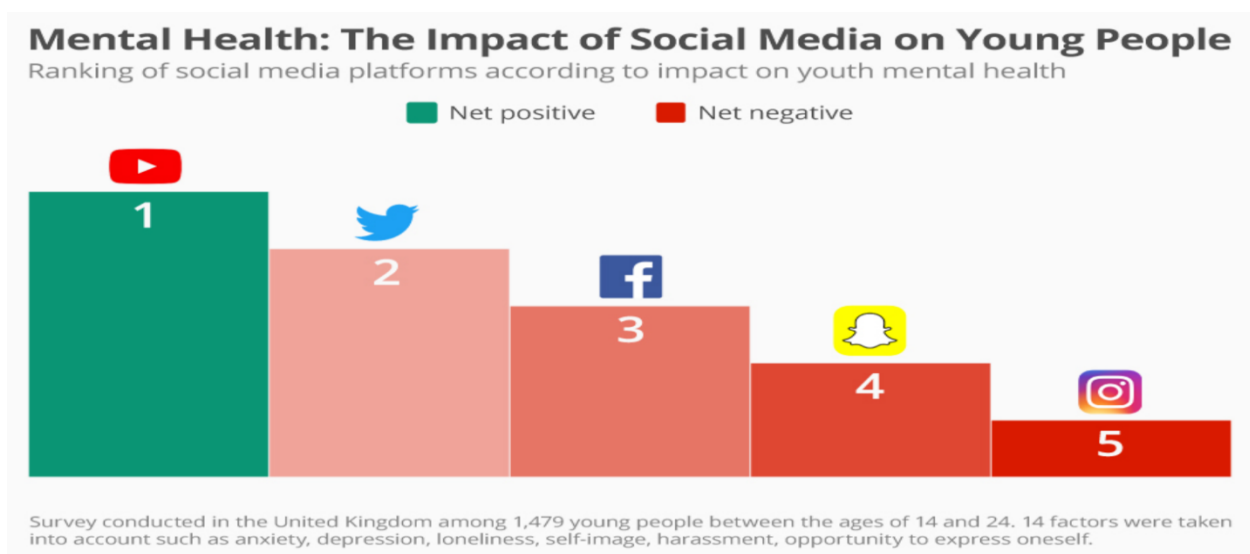


Figure 14 Impact of social media (Siddiqui, 2019)

Case studies

The suitable approach for this project would be to study different contextual condition of other system. Different systems have been studied for the development of this project. Some of the case studies of giant software company are further described below:

Netflix and Prime Videos:

Netflix, prime videos, and other technologies uses the auto play feature in some form or another. They also show related videos, movies, and tv shows to their users. Users do not even need to search anymore. Online video streaming platform always arrives with next piece of content right there waiting users! A sophisticated algorithm, it is precisely the type of content you are most likely to consume. How convenient. The Important element is the trigger. To become truly addicting, a behavior needs to get cued repeatedly. Various triggers need to become associated with the behavior. That is why hanging around alcoholic person is so problematic for someone trying to quit alcohol – they get triggered for a pack. Why? Because its sweetly visible right in front of their eyes and, by seeing the sweets, user who are trying to quit gets triggered. (Rao, 2018)



Figure 15 Netflix and other video streaming.

Push notifications and emails are nothing but triggers. Netflix sends email to users asking, “What’s playing next?” or “Netflix plan tonight?” Linked-In continually messages users that “people are looking at your Linked-In profile.” Facebook shoots alerts to users saying someone tagged them or posted an update, an event is happening, it is someone’s birthday, and so on. Tech companies sends triggers to users After all trigger in the hope of bringing users back to their application. And once a behavior is repeated, it can get linked to an internal trigger. When users feel bored, they check phones. When they feel lonely, they check phones. When they feel insecure, you check phones. These organization, in their quest for expanding time spent on their platform, utilize groups of hundreds if not a huge number of specialists with the sole occupation of advancing the three parts of addictive conduct – trigger, daily practice, reward. They are in the matter of getting us hooked, and they are working admirably at it. (Franssen, 2017)

Amazon

Amazon is a magnificent company. Amazon is online retail organization, yet an information organization. In some way, Amazon realizes users' experience more importantly user themselves have realized. Which makes its all experience considerably the inebriating – each flow, User signs into their account, Amazon is furnishing them with their algorithms, and typically decided proposals for what users purchase straightaway. It resembles Amazon knows you, and who does not care for it when somebody comprehends their necessities? Furthermore, on the off chance that user can consider it, user will presumably have the option to discover it on Amazon. (Krishnamurthy, 2005)



Figure 16 Amazon Users

Notwithstanding a single tick shopping, gadgets additionally make shopping compulsion simpler than any time in recent memory to cultivate. Any opportunity an idea rings a bell, a client with the application can without much of a stretch remove their telephone from their pocket to get a dopamine fix with some perusing and buying. This can be a go-to wellspring of joy to help fill in the exhausting holes in the day, for example, hanging tight for a transport or sitting at your work area at work. Some segments of this model are, develop web shopping experience as basic as conceivable by evacuating whatever number hindrances to buy as could be expected under the circumstances. (Mohsin, 2020) The less steps, the more the client can get moment satisfaction. A definitive portrayal of this mainstay of the buyer experience is the One-Click Purchase highlight.

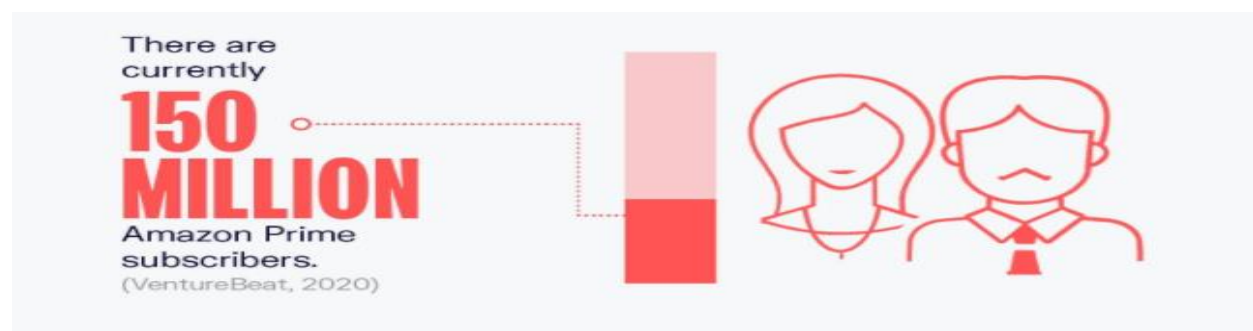


Figure 17 Amazon prime subscriber

Any individual who ordered from this application has revealed delight in feeling as they get packages. Subsequent after this, or in the wake of getting bundles of package on back to back days, returning home from work, and not having a bundle looking out for your doorstep can make people feel ransacked of people's package dopamine fix. Before people know it, they end up looking for motivations to mastermind request internet during their personal time at work in order to bundle a package looking at their doorstep. Traditional addiction such as drug abuse or other behavior shows the strategy for organization to assumes a main function in the shopper's probability of shaping an enslavement, quickly the medication hits the cerebrum, more addictive. Single Click Shopping is what might be compared to an infusion. Notwithstanding getting bundles close to home, it can likewise be a wellspring while following the conveyance cycle from order to delivery on cellphone. Every update, customer gets gaming attributes to buying experience. (McFadden, 2019)



Figure 18 Amazon icon

Amazon is without a doubt one of the most indicatively advanced achievements of innovation in current history. They will probably make the shopping experience as simple and fulfilling as could reasonably be expected. Ordering dependence and ordering certifiable is simpler at any other opportunity to create through computerized gadgets. The outcome of stage furnishes clients, on items requests, with hold up, button clicks. However, it is only bit in the conundrum. Its objectives digital organizations – like Facebook, Snap-chat, Twitter and different basically computerized organizations – to give a consistent trail which records the client connected with, continually search of motivations to return. Thus, Addiction is a piece of their plan of action, A portion of these organizations even employs specialists and psychologists to help keep up an ethical behavior in design. (Stone, 2013)



Figure 19 Amazon buyers

Snap chart:

Snap-chat is just about on each young person's cell phone. It is one of the most used applications on the planet, rivaling other significant organizations like Instagram and Facebook. A drawback has started to get clear, however, as this application keeps on expanding in ubiquity: Snap-chat compulsion.

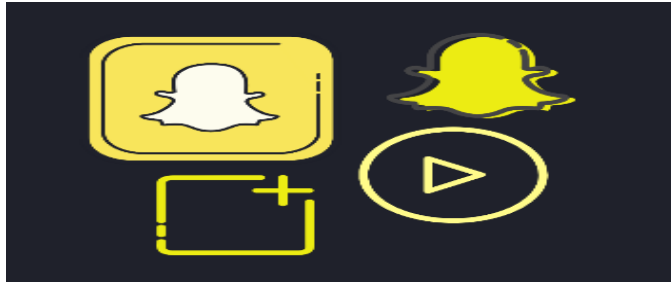


Figure 20 Snapchat icon

Snap story is best approach while quantifying “achievement” in Snap-chat. Other social networking is about preferences, but Snap-chat is about the achievement. Snap story is the point at which user have been sending snaps straightforwardly to an individual for a drawn-out measure of loop. User need to create achievement every day to maintain profile, however in the event user does not perform, they overlook streak. All these functionalities look seriously inconsequential for outsiders, yet daily users it is beginning and end. For snap-chat users, it is a proportion of the amount they care about somebody or the amount they care about themselves. It can get so fanatical that the streaks proceed for longer than a year—and on the off chance that user lose one, it tends to be pulverizing, it can even destroy a kinship. So, it is anything but difficult to perceive how this fixation to develop into something risky. (Elgersma, 2018) It can start as something innocuous, yet on the off chance that conduct progressively becomes flighty and over the top, there might be a main problem. If user start placing self-esteem based on loves/likes, or message they receive, which is to be called for disaster. (Tillman, 2020)

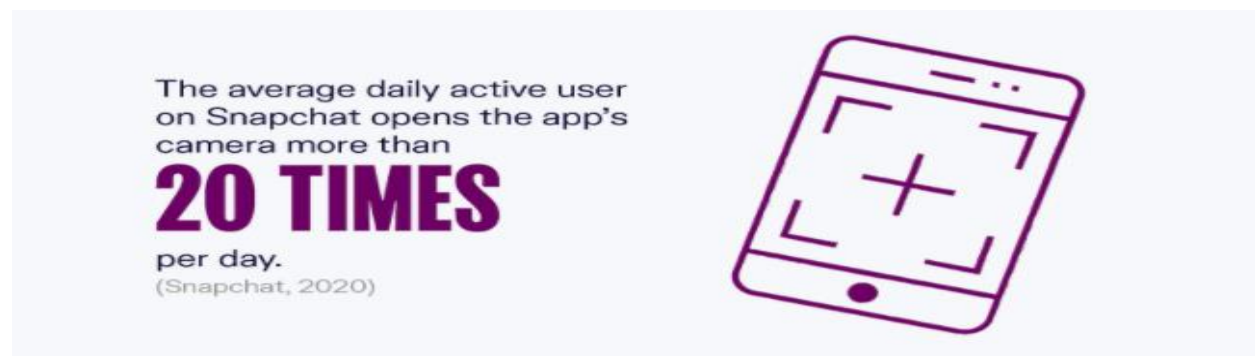


Figure 21 Snapchat user frequency

When Snap-chat is downloaded from the App Store or from Google Play, the users registers and sets a mystery word. Users can get to contacts others account and can incorporate various friends' past users contact list. At the point when user load the application and sign in, they can

snap an image, adjust it, incorporate "doodles." User can choose allies while sending pictures and define time up-to ten seconds. While picture is developed, authority can now open door defined by clock to get application to see photo "self-destructs." Companions would then be able to take their very own photograph to answer or simply communicate something specific back. The quickness of Snap-chat posts is a key factor for two main reasons. Users using Snap-chat felt considerably more reliable with how they imparted substance to other people. (Clement, 2020) Since the substance disappears rapidly, user can share their lives and do not feel the strain to introduce themselves in any unprecedented structure—they can simply be their ordinary, genuine self. User believed that was a decent method to keep up attaches with individuals they were at that point exceptionally close with, relational". Research says Snap-chat is not the favored online networking stage for beginning another relationship. However, it is an ideal stage for those with whom the client as of now has a relationship, and hence do not need to impress in their post. It is said to keep up connections and build up trust between clients. Simultaneously, Snap-chat appears to change quicker than other internet-based life stages, including things like channels that Facebook and Instagram later included too. (Smart insights , 2020)

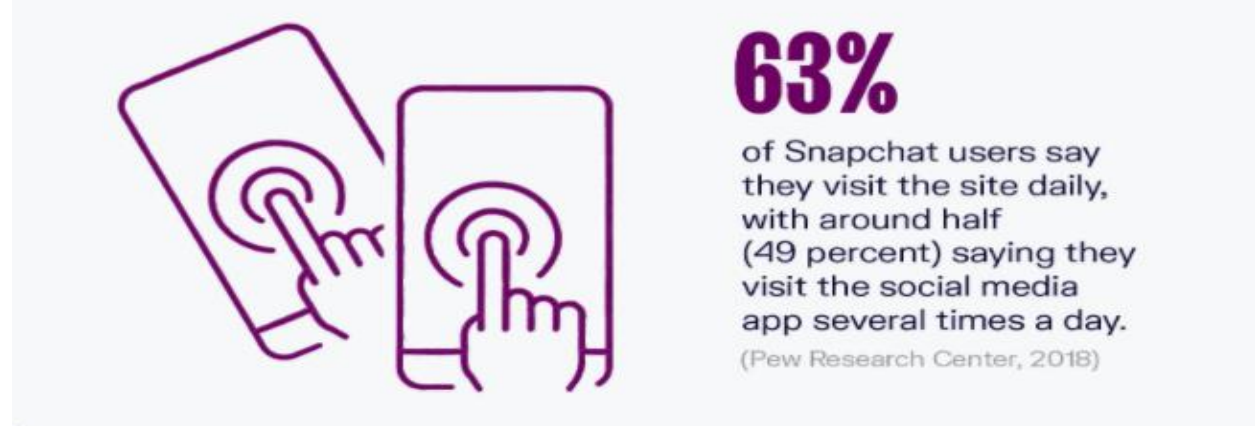


Figure 22Snapchat user saying

Developing videos and photos from Snap-chat disappears in an allocated second. Different adolescents and youths developed a misguided sensation about everything is good which can be posted anything will disappear within a second. Here, adolescents using the application gets motivation to develop suggestive videos and photos of self. Others makes screen effort, yet if so, the person who posted the photograph is advised who did it. This gives a little obstacle to screen shots; however, kids are shrewd. They bypass the notice by snapping a picture of the image with another PDA. At that point they can have the photograph forever without the banner knowing and do anything with it. Snap map feature was released in 2017. It allows Snap chat users to share their real-time location with friends and anyone else on their Snap-chat friend list. Every one of the individuals who have empowered their Snap Map can see each other's position. (Bradford, 2017)

Slot Machines

Slot machines are the sweetheart of the betting business. They get more cash-flow in the US than movies, parks, and baseball combined. Casinos make between 65 and 80 percent of their money with them. The psychological ingredient that makes slot machines so viable: variable rewards schedules, the users pulls the switch without recognizing what they will get or if they will get anything by any stretch of the imagination.



Figure 23 Slot machine

Most of the features used in digital technologies can be compared with Slot machines.

- Users check email, to see what new email they got
- Users hop on Instagram, to see what stories there are
- Users pick up our phones, to see what notifications we got
- Users visit a news website, to see what happened over the last 24 hours
- Users swipe on Tinder, to see if they got a match



Figure 24 Gambling psychology

Digital medias create an endless surge, what a few people call the "magic of maybe." Maybe I will get 100 new likes. Maybe I will get nothing. Maybe I will get another email from my darling. Maybe I will get a pleasant video. Maybe I will get another companion demand. Possibly I get new messages.

Case studies on digital Addiction

To clarify about online device addiction, it is essential to characterize impulsive human behavior. Modern addictions used to depict a person whose correspondence with innovation is expanding expressively with no reasons or undertakings, finding a way to retain their thought regardless of anything else and thus having adversely sway the thriving of the user. When company use as a conversational articulation, victim depicts an irrefutably fundamental reliance on devices.

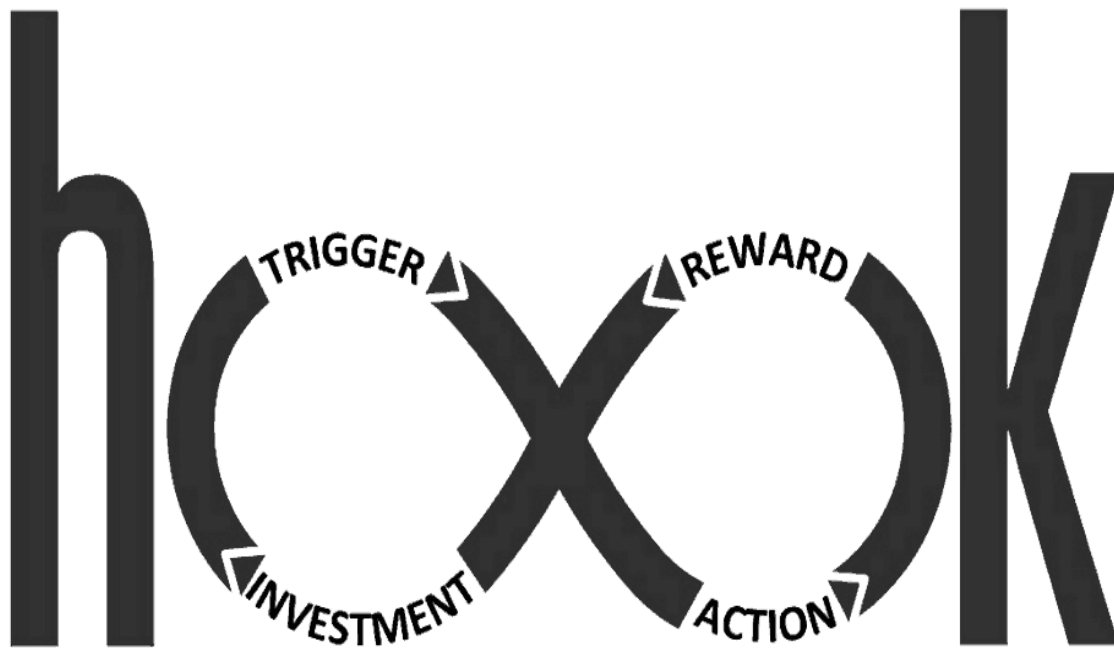


Figure 25 Hooked

The word "modern fixation" is utilized to show the possible signals in over introducing to innovative gadgets, change in rate at their utilization of computerized device in step by step practices is always growing and the conceivable outcomes of being reliant upon alarming them. Negative side effects of manhandling advanced device lately pulled in growing consideration as an authentic mental issue. Random use of such devices may influence upon formative, social, psychological, and physical growth and result in symptoms much equivalent to other lead propensity. A few studies recommend, look to build up an association between the usage of the internet and examples of conduct in client. Modern Addiction to devices is a conduct arranged habit and conceivably depicted as the physical and mental dependence on the use of devices. While still talked about, potential of internet and additionally devices to have addictive innovations is a rising subject.

Types of Digital Addictions

Device addictions apparently can be viewed in several different aspects that covers different area of technical utilization among which few as listed by Gandolfi (2010) are:

- Online-relationship Addiction: Unnecessary utilization of social media develop connection with unknowns in preferences to utilizing that time with closed circles may lead to destruction of real-life relationships.
- Cybersex: Too much surfing of porn sites often affects real-life relationships.
- Overload of Information: Internet digging prompts downfall of profitability at work, less collaborations with relatives.
- Irresistible addictive behavior: Unnecessary time spent on the telephone or in online exercises, for example, gaming, exchanging of stocks, betting and even sales regularly prompts overspending and issues at work.
- Media impulsion: Television, movies, video, games, music.
- Internet Addiction.
- Virtual Addiction.
- Other type of digital addiction is Facebook, YouTube, Google addiction disorder.

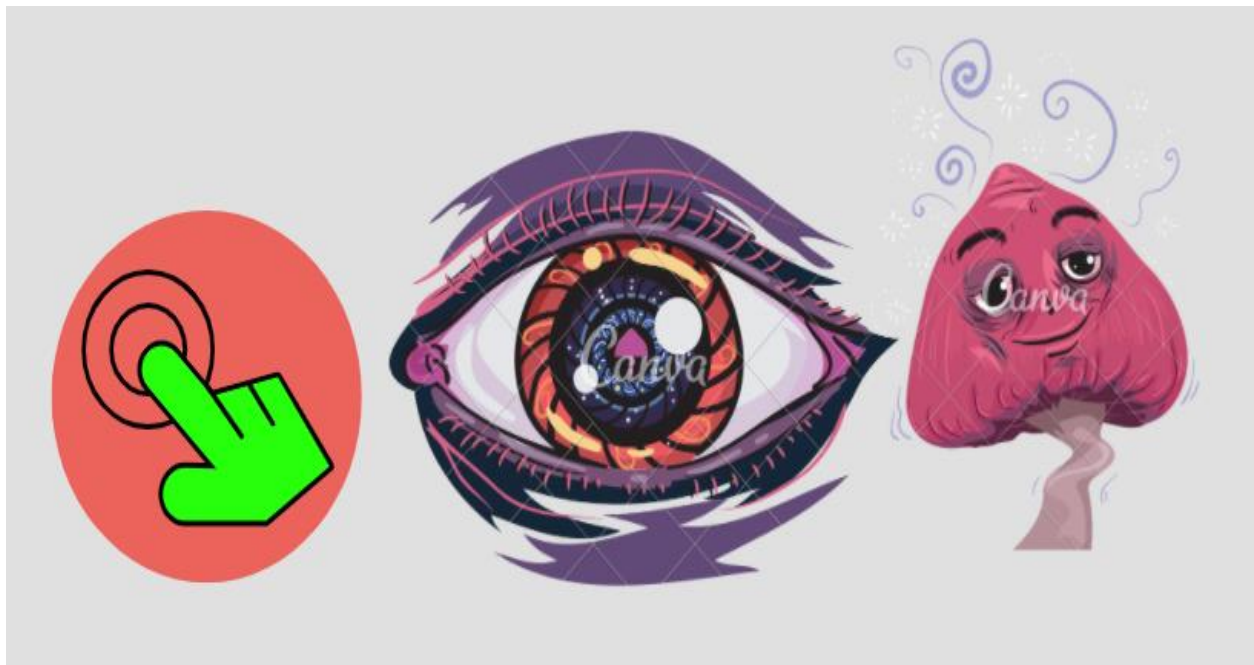


Figure 26 Digital clicks.

Human being and Social media

Human beings are born social and are tribal in nature. As human started evolving, interpersonal communication was the key to relate. With the development of Information technology in recent years, social media such as Facebook, Instagram, What's-app has evolved dramatically changing the way of interpersonal communication between human beings. Social media has shaped human interaction in various ways. Social media measurements from 2019 shows that there are 3.5 billion online media clients, and the number is developing which equivalents to the 45% of current population. An average of 3 hours is spent per day per person on social networking, which means we are all slowly becoming social media addicts. Social media is inescapable, whether it is scrolling newsfeed, posting pictures or just to be in touch with loved ones, it is becoming more integrated into our daily lives and defined the way of being. It has unarguably unveiled opportunities for business and connectivity but also has increased higher depressive and anxiety scores, poor sleep, body image concern and low self-esteem in youth. (Edwards, 2017)

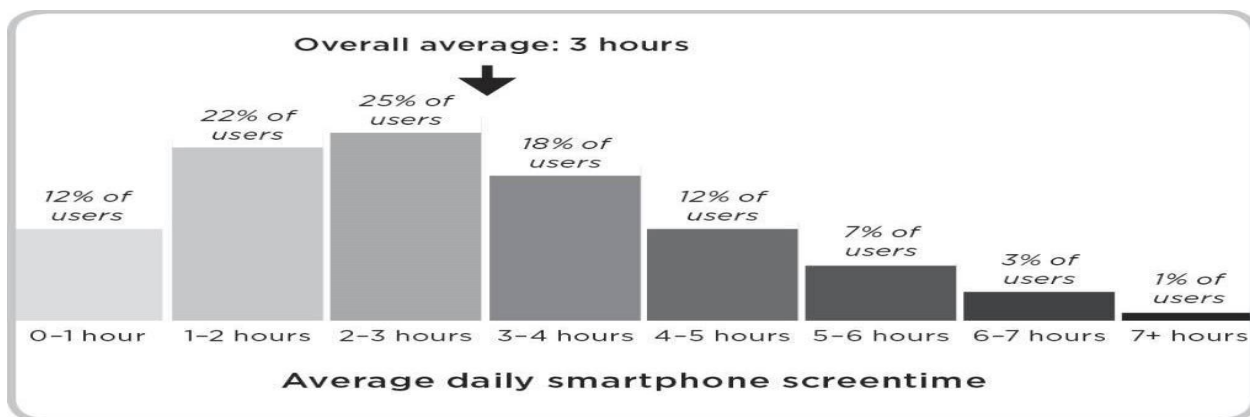


Figure 27 Average screen time

There could be numerous reasons why online media have connection with expanded discouragement, rest issue, nervousness negative intruder picture, cyberbully however Social correlation is one of the most remarkable triggers. Earlier Facebook president, Sean Parker, defined Facebook “Social validation feedback loop” and accepted the fact that “Like” button used in Facebook gives a dopamine hit to user’s brain which encourages for continue uses. There are many other similar platforms with the same feel good triggers which is continuously affecting the user’s brain. People who creates social media run hundreds of tests with thousands of users to learn which tweaks works and which do not to keep the user engaged. Hundreds of millions of people share their life in real time through Social media and those life are instantly evaluated in the form of Likes, reacts and comments. (Kremer, 2012)

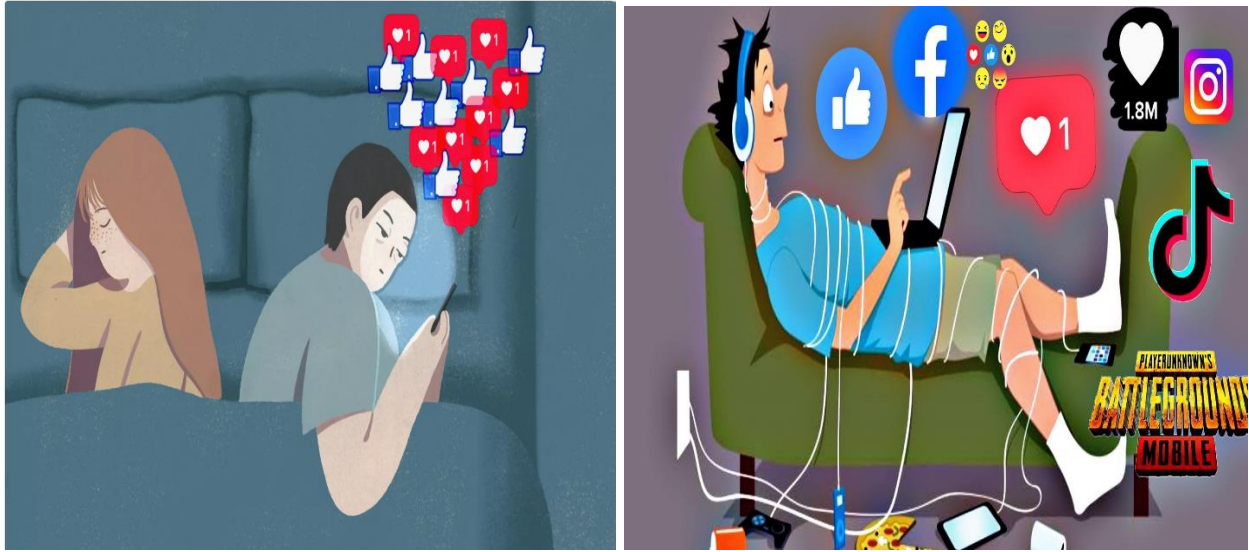


Figure 28 Problem of today's people.

Analyzing social media addiction and its effect on mental health, was clear that there is a relationship between time spent on social media and time management skills among students. Most students use at least one form of social media platform in their daily lives; therefore, Testing the effects of these platforms on students would be more valuable. The aim of this research is to study the time management skills of student and how these skills are being affected due to social media. Most of the student make habit of using social media without planning due to lack of consciousness and strategy about managing time. Time management can help student to increase personal development, productivity on daily life and lead a successful career forward. Time management skills is one of the important skills to decide a student's career but most of the student seems to lack this skill and one of the main reasons behind it is social media addiction. (Purdue University Global, 2018)

Social media and Students

Karpinski stated that social media have uncooperative relationship with educational achievement, which is important compared to benefits derived from social networking. Can be viewed as a lot more noteworthy compared to favorable circumstances inferred utilizing media. Individuals on planet earth depends on networking regularly than before. (Amankwaa, 2016) Advisor prompted and suggested to individuals, depending on love to utilize net hampers self and expert duties in this helpless scholastic presentation. Advisor also described about social media users usually devote lesser time to their studies must compared to nonusers and can be subsequently found they has low grade total. It is also described by other researcher that any distraction present generation is facing among them social networking comes as a major distraction. Kuben also suggested that there might be some connection between scholastic presentation and the reliance via web-based media. Researchers studies also indicates that students' understudies' scholarly presentation is influenced the more they utilize web-based media. (Osharive, 2015)

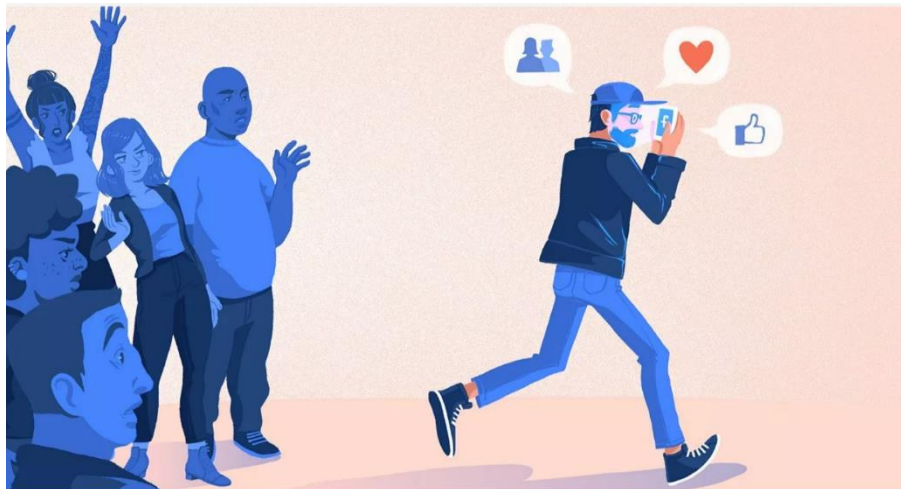


Figure 29Daily life

Online media are ordinarily utilized for mingling exercises instead of scholarly reason huge share of understudies feel that social stages have good effect on scholastic development. In an alternate examination led by Shana it was learn that understudies use stages predominantly for visiting and making companions. "The results of web and social stages on understudies' scholarly development" an examination than by Young it was seen that web has spread its wings to arrive at youngster's school life. (David, 2019) It was additionally seen by Young that understudies are more reliant on web to get to information that relate their scholastic life just as amusement. Furthermore, Young said that web, however, take a great deal of time, and have less effect on examines. It was seen by Wang that effect of social stages lay on the level of use. Jong saw that web fixation is altogether and contrarily identified with understudies' scholastic development, just as enthusiastic ascribes. (Larry Magid, 2014) Website design enhancement affirms Jong articulation when he believed that the negative impact of web is just on inordinate clients and not on all clients, Or maybe asserts that: the social stages which are being utilized today with

incredible want and eagerness have adjusted the method of utilizing webs in this cutting edge age by characterizing on the web instruments and utilities which permit clients for correspondence, investment and cooperation of data on the web. The present youthful age, particularly youngsters and youth are utilizing innovation through inventive ways because of which they are alluded to as millennial and have changed the manner in which they think, work and impart despite the fact that they are in early stages of their life. The present youth on account of social stages have become innovation addicts and are very pulled back. (Wade, n.d.)

Cyber bullying

Innovation's movement is frequently compared with the headway of human social orders. Essential advancements, for example, Social media has everlastingly revolutionized how individuals communicate. Despite the fact, the innovation has permit humans to make extraordinary steps in numerous fields, they have likewise permitted types of offense to turn out to be wilder and broader. (Larissa Hirsch, 2014) It made clear while thinking about how conventional tormenting has advanced into cyberbully. During harassment, frequent comparatives regarding structure and procedure, likewise have numerous distinctions. It permits guilty party to veil their character behind a PC. An anonymously like this makes it simpler for negative people during blowing against victim without having to view the victim's response. Separating impact innovative gadgets from the present youth frequently drives to state and perform evil things contrasted with regular in a customary eye to eye harassing circumstance. (Gordon, 2020) Many individuals seem to identify harassment primary because the of the reports. Online harassment was recognized severe in people were phrase abuse, biological abuse. Most people recorded; harassment nature has been modified from biological to unobtrusive method. As increase in innovation, tormenting also have increased, respectively. With approach of the networking, texting. Live social meetups provide federal replicating space to people to assault one another. (UNICEF, n.d.)



Figure 30Cyber bullying

Self-Esteem and Social Networking

Another potential clarification involved to fatalistic connection among social media and self-esteem is, every networking sites were self-reflection of vital saying, Activities performed by user causes or encourage self-obsession. A research explains where 200 Facebook clients at school gave confidence characters in self-reports. This outcome demonstrated clarifies people with less confidence have more addiction digitally so as per steadily limited time content on Social networking profiles. Few application functionalities are contrarily correlated from confidence described by self-assessment scale. On the other hand, some authors have presented results indicating that Facebook use may enhance self-esteem. A report investigated by Gonzales and Hancock included students presented to three unique situations: visit to own social networking profile, review in mirror and a control setting. (Jacobson, n.d.)

Confidence degree seen in members was probability measured by utilizing Rosenberg's self-assessment measurement. Outcomes indicated beneficial effect, social-media help to promote self-assessment back-boned by the spooky individual Model where self-assessment influence attraction of oneself. "Hyper individual model" of human characteristics in the time of digital meetings, referenced by reports of Gonzales, additionally each potential adjustment of confidence of Social networking client. (Fuller, 2011) It also summarizes human upsides from digital meetings over eye to eye meetings as far as clients having the option which helps to advance assessment to another more adequately. Recommendation is made when utilizing digital area, the concern have huge opportunity to choose, underline, and show the parts of their behavior, they have been viewed as well recipients, for current situation. Differences from traditional eye to eye interaction there would be more time and chance to add time and opportunity to present the positive features of themselves. Considering, it is expected that presentation of self-worth on texts, expanded connection enhancement will influence vehemently on self-evaluation and confidence. (Perez, 2015)

Social media and business.

Development of digitally networking has changed who we behave, act, talk, shop, eat and many other human behaviors. Its development has made a dramatic power shift between supplier and customers. As it is developed for the better form of communication, which is inexpensive to everyone, businesses developed digital media as their primary outlet there. Organizations transformed web-based media into an amazing promoting and advertising instrument to be played properly. This shows how powerful is social media in today's business. Also indicates marketing effects to costumer, company influence to costumer through online networking. It has replaced the focus, where influence of networking shows the attention, everyone can spread information. (Wordstream , 2018) The capacity for a standard individual to state something that will turn into a web sensation makes both positive and negative impacts for organizations, contingent upon what is said. One client that leaves a positive or negative survey of a business can change its image picture or notoriety rapidly and with a great deal of results.

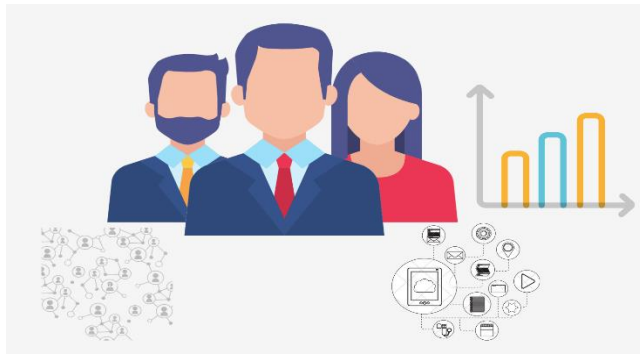


Figure 31 Social media and business

Organizations do not be able to control what is said about their administrations via online media, making it be a more dependable wellspring of data to customers and a wellspring of intensity for shoppers. This wellspring of realness additionally makes people be more real and open when sharing their encounters and emotions and making a more grounded feeling of network and connection among different clients, making their words even more remarkable. The more grounded feeling of network likewise makes new networks on the grounds that through online media, individuals can discover things that they can share for all intents and purpose. This advantages organizations by helping them make a more grounded feeling of network around their image and their shoppers can share their items to make new clients. Alongside making a feeling of network around their image, they likewise make a feeling of network that urges customers to continue utilizing web-based media. (WorldBankGroup , 2020) The sentiment of network and association is a prize reason for online media use and along these lines it can likewise be a factor prompting enslavement. The negative to the more grounded feeling of network is the more prominent chance to empowering "crowd attitude" through innovation. One slip-up made by an organization or organization delegate can create a public scene with impeding impacts. As expressed before, it is difficult to control the negative impact online media. (Metev, 2020)

Social media and Casino.

The club business relies upon an unbalanced portion of income originating from a small group of addicted gamblers. Numerous enterprises gained extravagant extent amount income from most frequently visiting client. The food business amusingly calls the 20% of client who speak to 60 percent of their pay, "generous clients," as demonstrated by the street Journal. Although most American club are legally necessary provide "self-rejection" session provided to gamer, who aim to stop their enslavement, gambling clubs welcomes addicted gambler back wholeheartedly. (Law insider , 2016)



Figure 32Casino

A similar situation uncovered itself of internet gaming. In fact, some tech organizations are as of now restricting abuse, but in simple ways. Obviously, tech organizations will not have the option to "fix" addictions, nor should they endeavor to do as such. Not every organizations are as reliant on dependent clients as the gambling club and web-based gaming enterprises. (Gaming association , 2017) Providing help to would little damage online media stage. Not shall every company act paternalistic, killing access after discretionary verifying that a client has had enough. Or maybe, tech organizations owe it to their clients basically to connect and inquire as to whether they can be useful, similarly as a concerned companion may do. On the off chance that the client shows they need help decreasing, the organization should offer some assistance. With the data these companies collect, identifying and reaching out to potential addicts is a relatively easy step. This ethical standard ought to apply to all social media sites that gather personal information of people and help addicted users. (Lee, 2012)

Digital addiction on online gaming and pornography.

Exorbitant gaming, seeing on the web sexual entertainment, messaging and text informing have been recognized as reasons for a habitual rash issue by Dr Jerald Block, a main specialist and creator of a publication for a regarded American Journal of Psychiatry. Square (2008) contends that the problem is presently so normal that it merits consideration in the Diagnostic and Statistical Manual of Mental Disorders and expressed that advanced dependence has four fundamental parts. These are, Excessive use; regularly connected with lost feeling of time or a disregard of fundamental drives, Withdrawal; including sentiments of outrage, strain as well as discouragement when the advanced device is blocked off, The requirement for better contraptions; more programming, or more long periods of utilization with negative repercussions, including contentions, lying, helpless accomplishment, social segregation and weakness. Square (2008) presumed that computerized dependence is currently a genuine general medical problem that ought to be authoritatively perceived as a clinical issue, People with this sickness give indications of "lost feeling of time or a disregard of essential drives, withdrawal, sentiments of outrage, strain, and additionally despondency" when denied of admittance to PCs and other advanced innovations. (Villines, 2020)

Cassidy suggests right off the bat, a meaning of web dependence that is both approved and relevant to youngsters, youths and grown-ups the same ought to be created. Furthermore, a superior logical comprehension of which kinds of utilization represent the most danger of habit. For instance, Virtual reality games specifically, where members accept different characters or work together with colleagues everywhere on the globe, may represent the most serious danger of enslavement, since incessant and persistent online presence is both imperative and expected; additionally, going disconnected can have punishments related with it. The overall revenue of these new, membership put together games is based completely with respect to keeping individuals playing and in this manner paying. Purveyors of these items in this manner have an unreasonable motivation to create addictive games. (Voss, 2015)

Brain's Reward Center

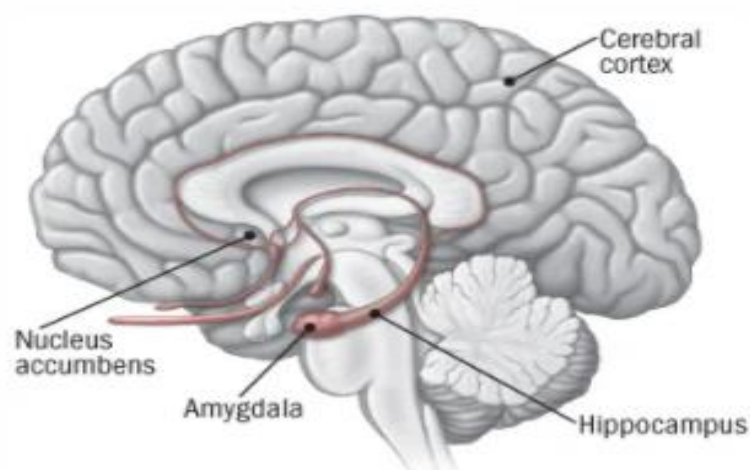


Figure 33 Brain reward center (Recovery research institute, 2018)

Thirdly, successful essential avoidance techniques should be created, tried, and actualized. Cutoff points on screen season of different kinds are significant for all kids, however in the appearance of pervasive access these are progressively hard to authorize. Suppliers, guardians, and educators require approaches that are demonstrated powerful and that take into consideration essential and even sound web utilization. Fourthly, a focused-on counteraction approach, distinguishing kids at most danger for compulsion, is additionally significant. Kids with previous psycho-social morbidity might be at most danger, and their web use ought to be even more expressly checked and directed by gatekeepers, and protectors. Cassidy suggests initially, a meaning of web fixation that is both approved and material to youngsters, youths and grown-ups the same ought to be created. (TIMESOFINDIA.COM, 2020) Furthermore, a superior logical comprehension of which kinds of utilization represent the most danger of compulsion. For instance, Virtual reality games specifically, where members accept different personalities or work together with colleagues everywhere on the globe, may represent the most serious danger

of enslavement, since successive and consistent online presence is both imperative and expected; besides, going disconnected can have punishments related with it. The overall revenue of these new, membership put together games is based totally with respect to keeping individuals playing and thus paying. Purveyors of these items hence have an unreasonable motivating force to create addictive games. (Love, 2015) Thirdly, successful essential anticipation procedures should be created, tried, and actualized. Cutoff points on screen season of numerous types are significant for all youngsters, however in the approach of omnipresent access these are progressively hard to uphold. Suppliers, guardians, and instructors require approaches that are demonstrated viable and that take into consideration vital and even sound web use. Fourthly, a focused-on anticipation approach, recognizing youngsters at most danger for dependence, is additionally significant. Kids with prior psycho-social morbidity might be at most danger, and their web use ought to be even more expressly checked and controlled by gatekeepers, and defenders. (Awad, 2011)

The "fixation" to computerized innovation does not just can possibly influence the psychological prosperity however can likewise make bigotry among client's others around, particularly when openly. Youngsters are without a doubt turning out to be inconsiderate on account of abuse or abuse of computerized innovation. (MEHAR, 2020) This inconsiderateness and absence of habits can be watched almost all over — from telephones ringing during classes, to forceful driving while on the telephone, to hostile language during „phone brings in broad daylight. In 2001, Public Agenda, a charitable exploration association, studied roughly 2000 Americans through phone to analyze their perspectives with respect to good and moral conduct related with telephone use. Practically 50% of the members state they frequently observe individuals utilizing PDAs in an uproarious or irritating way openly, yet just 17% of phone clients conceded partaking in this irritating conduct. (Sniewski, 2018)

These are not by any means the only unfavorable impacts of manhandling innovation. At the point when individuals become more secluded and interface more with innovation, quality record begins to glitch, safe frameworks are upset, and there are more heart chances. They likewise have a higher danger of getting a persistent illness. Innovation habit influences the way cerebrums review data. It additionally lessens engine and mental turn of events. Notwithstanding the social and physical impacts, there are likewise mental impacts. Individuals who are dependent on innovation normally experience crabbiness, and do not think obviously. Part of the motivation behind why certain advances like internet games and applications on a PDA are so addictive is on the grounds that they give the individuals who use them "mental highs". Innovation is unmistakably addictive and has many negative results. (Nair, 2016)

This "techno-impoliteness" can be straightforwardly connected to the way that innovative garnets are consistently accessible. The measure of time spends submerged in the media condition influences the way one acts and collaborates outside of that space. The understudy who goes through almost 30 hours per week on a Blackberry will be inclined to accepting a call during a class, when in strict spots, or at other improper occasions. As indicated by Professor Michael Bugbear of Iowa State University, the accessibility of media welcomes misuse, and when these

maltreatments become routine, these activities stop to be untouchable. Bugbear call this wonder "advanced dislodging" and characterizes this "as what happens when the requests of this present reality struggle with those of the virtual, bringing about an excessive number of individuals giving a lot of consideration to contraptions and disregarding reality" (Shoukat, 2019)

To understand the time, spend by student daily on social media, Quantities analysis was done among 10 students and the result is shown below:

A day in the life of normal 19-year-old High school kid (Social media usages):

6am – 12pm

- Check social media notifications before even getting out of bed.
- Quickly respond to any stories, messages, or tweets
- Sneakily check for other posts, mentions and brands posted as on the way to college
- Send messages to friends frequently to get a dopamine hit while travelling in a public vehicle
- Eat lunch with college friend but continuously check personal Instagram, Facebook posts.

1pm – 5pm

- Continues observe online community through their vlogs and posts
- Respond to any brand mentions or comments
- Follow all the influences, living the dream and start to dream accordingly
- Play online games
- Get caught up more than two trending topics online, such as political and celebrity controversies
- Review stories views, likes and comments
- How is it 5pm already?

(Cha, 2018)

6pm – Midnight

- Review stories views, likes and comments
- Start to message friends, start sharing memes and comment on others posts
- Continuously watch vlogs from the influences
- Cannot function...need sleep

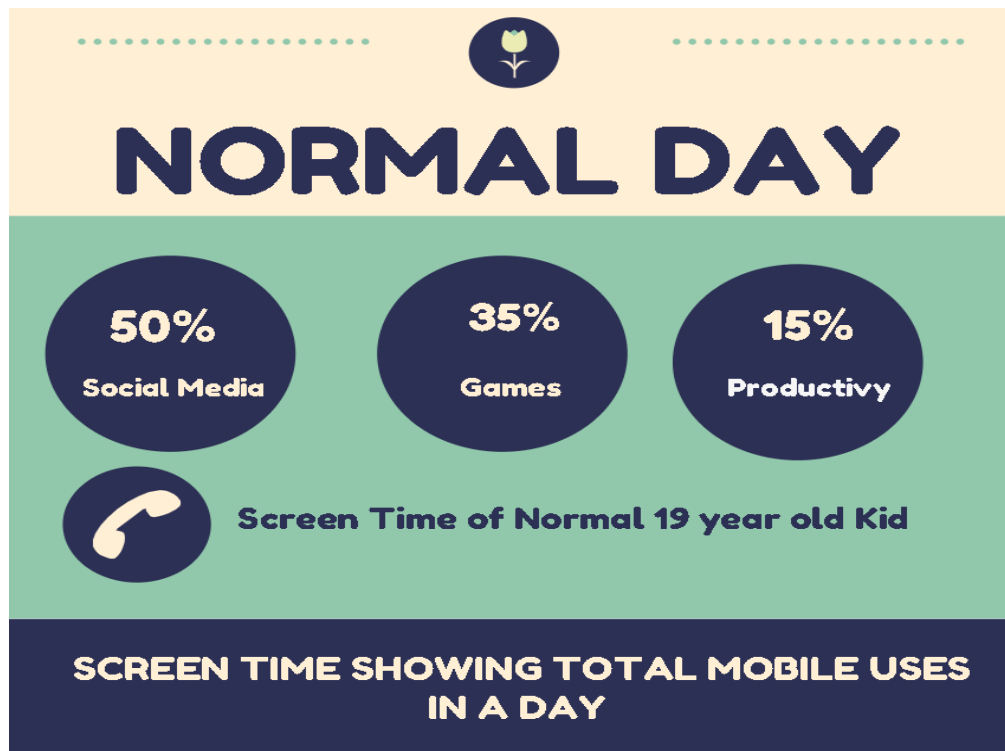


Figure 34 Normal day of student

From this statistic alone, social media has become integral part of young adults. So called Online compulsion is alluded by wide assortment of examination, research, and test. It is portrayed conceivably highly addictive than liquor and cigarettes.

(Dredge, 2018)

Why social Networking is so Irresistible?

- Social Comparison and Validation.
- Design of Application/ Targeted advertisement
- Fear of Missing out
- Rewards in a form of dopamine pill



Figure 35 Why social media is so irresistible? (Ahmad, 2018)

Types of Social Media Addicts

Active users: Person who posts continuously to reassure themselves. Posting pictures, counting likes and social comparison are symptoms of active users.

Passive users: Person who follows other to make up a group.

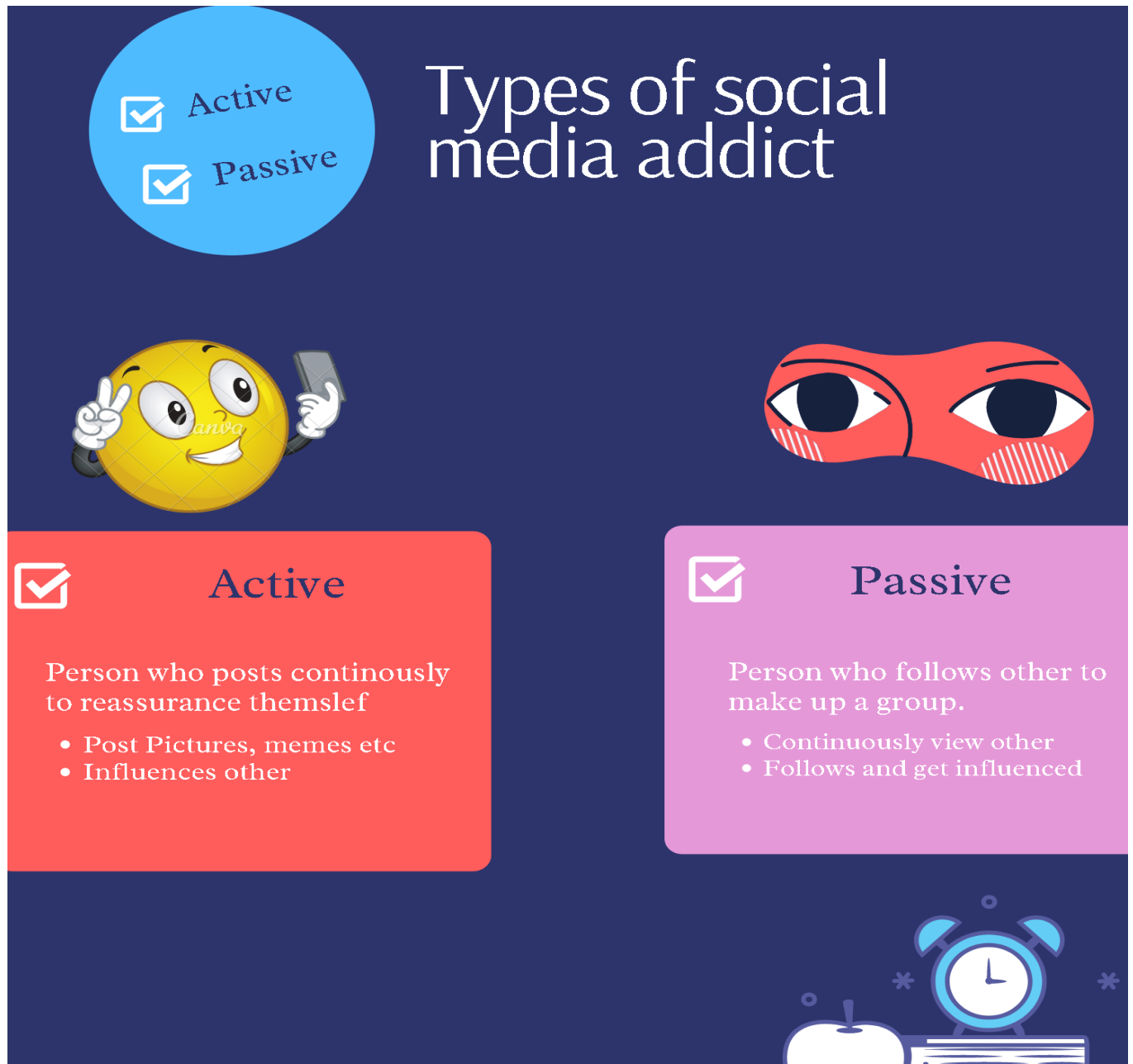


Figure 36 Type of user (GOINS, 2013)

User centric design.

User Experience acts as an umbrella framework which covers various boundaries of software development. User-centered design is the principle rule for designer/developer. In 2007 the first iPhone was released, the phone with user-centric design. After year 2005 designers all around the world develops their software with the end-user in mind. A decade later after Apple introduction to the first iPhone, people are facing a global phone addiction problem. And the same feeling— contributing to a societal problem, even with the best intentions. (Ostrower, n.d.) While designer focused on developing inventive, helpful and esteem-adding interface to clients, they like wisely built up a world of miracle which can only accessed clearly through screens. As they developed with such a great amount of exertion on providing client what they needed, but also in a way they couldn't avoid, people started to completely suck into these same screens. (Babich, 2019)

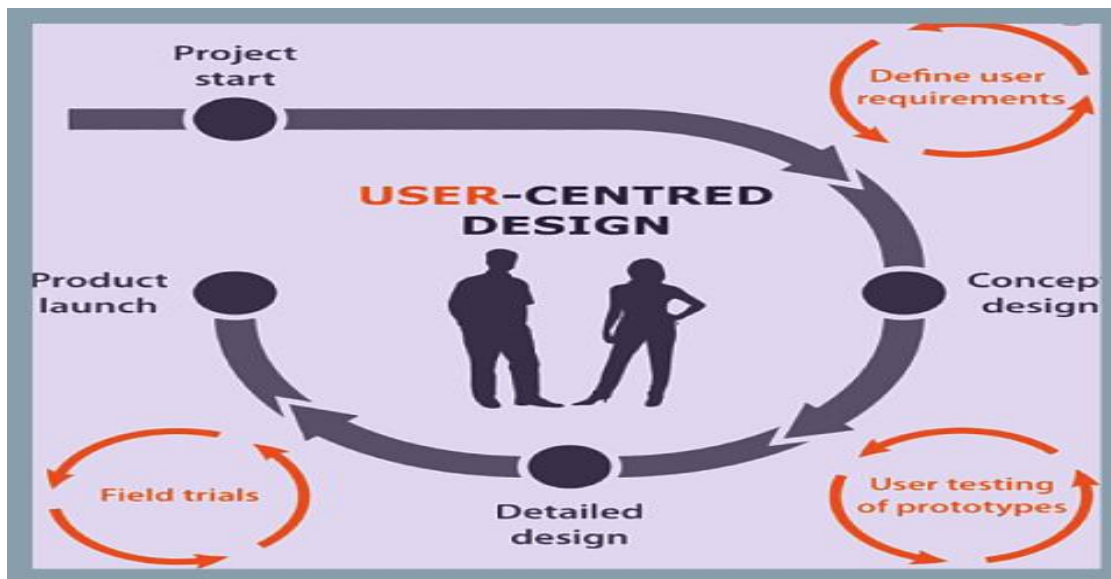


Figure 37 User-centric design concept

Risk factor of digital addiction

Experiencing uneasiness/anxiety: The utilization of computerized gadgets to divert self from stresses and fears. A nervousness problem like over the top compulsive issue may likewise add to unreasonable email checking and habitual Internet use.

Depression: The Internet can be an escape from feelings of depression, but too much Time online can make things worse. Internet addiction further contributes to stress, isolation, and loneliness.

Other addiction: Many Internet addicts suffer from other addictions, such as drugs, alcohol, gambling, and sex.

Different Internet addicts experience the ill effects of different addictions, for example, drugs abuse, liquor, sex and betting. (Lam, 2014)



Figure 38 Addicted youth

Struggling in social support: Digital addicts regularly utilize long range informal communication locales, texting, or internet gaming as a sheltered method of building up new connections and more unquestionably identifying with other.

Despondency: The Internet addicts could feel better with online friends more than genuine companions.

Less versatile or socially dynamic than you used to be: For example, adapting to another incapacity that restricts your capacity to drive. Or on the other hand child rearing small kids, which can make it difficult to go out or associate with old companions.

Stress: While a few people utilize the Internet to calm pressure, it can have a counterproductive impact. The more extended time spent on the web, the higher the feelings of anxiety will be. (Joseph, 2016)

Primary and Secondary research

Quantitative research

Quantitative research is the way toward gathering and breaking down the problematic information. It is solid information assortment source that helps in finding profundity understanding in the issue and examining it. It is an examination that is done to watch the wonders or events, which may be influencing people. (SIS International , n.d.)

Quantitative research was performed through google forms online among student of Softwarica college to understand their gaming experience and addiction to social media. Several questions were asked to them, which gave detail aspect of their view. Firstly, they were asked if they use social media or play game on mobile phone. The answer was as expected which was about 92.9% respond with answer “yes”

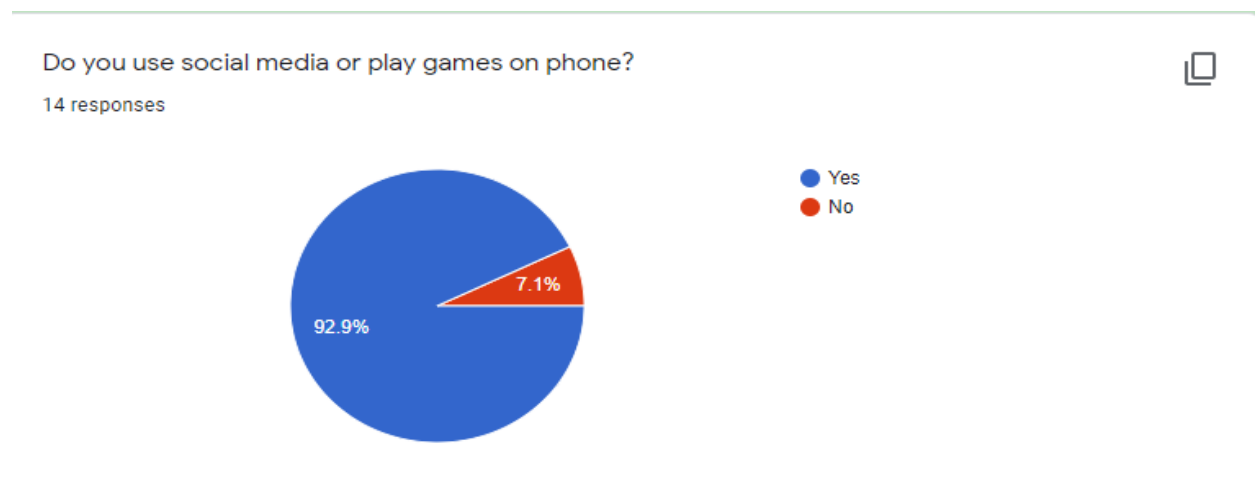


Figure 39 Response to first question

Secondly, they were asked how long they use social media. The answer to this question was, more than 28% student spend about 4-6 hour a day using phone, more than 21% student spend 6-8 hour a day using phone, more than 21% spend 0-1 hour and other 21% spend 2-4 hour using mobile phone, other 7% never check how long they use mobile phones in a day. Which meant most the students are either addicted to game to social media.

How long do you use social media or play game on phone?

14 responses

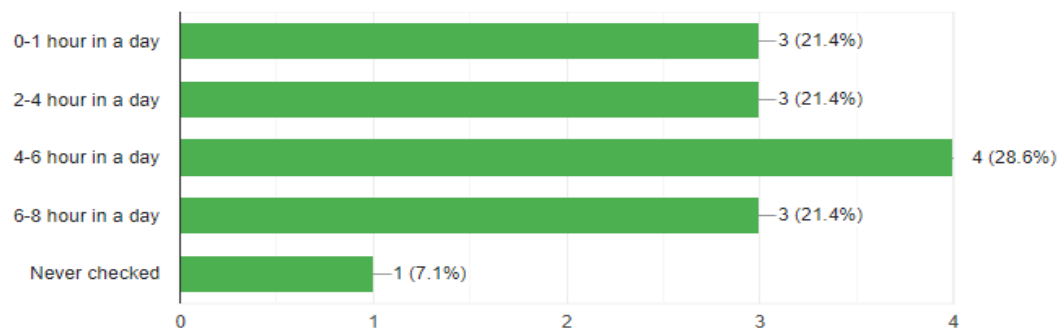


Figure 40 Respond to second question

For the question why they use their phone so often. More than 57% respond because they love UI of their phone, more than 21% respond to phone is their only friend, more than 14% use phone because it is expensive and other responded to something else. Which shows more people are interested due to its UI?

Why you love to use phone?

14 responses

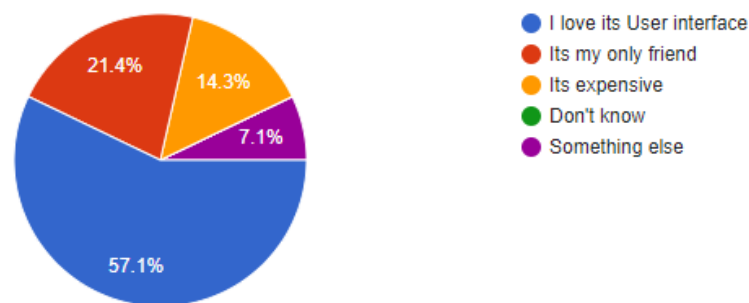


Figure 41 Respond to third question

Another question, do you think you are addicted to phone? Which shows respond of yes more than 42%, more than 14% responded with answer no, 28.6% responded with answer I don't know and more than 14% responded with answer maybe.

Do you think you are addicted to phone?

14 responses

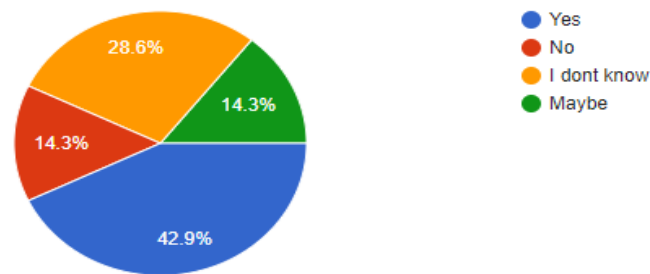


Figure 42 Respond to fourth question

In fifth question, they were asked if they would be happy having a timer in the game they play. The response was more than 53% responded with yes, other 23% with no and remaining 23% with maybe.

Would you be happy if there was a timer in the game you play?

13 responses

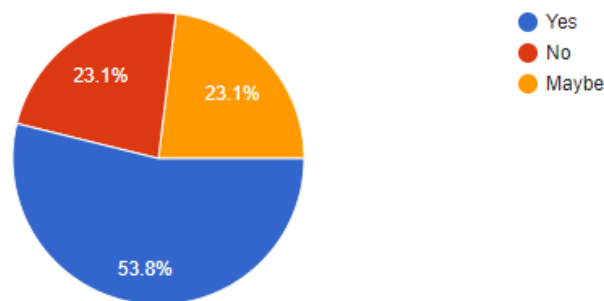


Figure 43 Respond to fifth question

For the question, which application UI do users find beautiful. Equal answers were recorded, more than 28% responded to Facebook, more than 28% responded to Instagram, more than 28% responded to the game Flappy Bird and other 14% responded to other applications. Which shows every user has their own type of preferences?

Which application UI you find beautiful ?

14 responses

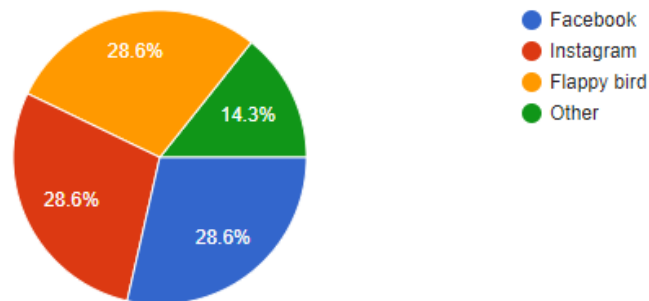


Figure 44 Respond to sixth question

A research revealed an essential contextual analysis in South Korea, where found the best utilization of Internet on the planet. Ten individuals passed on from blood clusters staying situated for extensive stretches in web bistros and other were killed as a result of a web-based game. South Korea presently considers digital fixation as its genuine problem to well-being issue. The administration appraises that around two hundred ten thousand Korean youngsters are influenced and needing treatment, of whom 80% may require medication vaccine focusing on the cerebrum and almost quarter needs to visit emergency clinic. Normal secondary student there goes through around 23 hours of the week gaming, additionally noticed that another 1.2 million are accepted to be in danger of habit and require fundamental advising. It has made caution over a rising number of modern victims, school dropouts or stopping their business to invest more resources on gaming.

(Milosevic, 2007)

Methodology

Game is developed for this project in waterfall methodology. So, it can be easier for development of project with short time period. Most popular methodology of SDLC, waterfall follows a straight-forward process of software development. Since, other new methodology of developing software have made placed in the software market, waterfall methodology can never go wrong with small project with short time period. So, game “I can fly” is to be developed in waterfall methodology.

Waterfall Adoption

Since, waterfall methodology follows a sequential step while developing software. The steps defined by waterfall methodology of software developed has been thoroughly followed. The steps defined by waterfall methodology, requirement gathering, system design, implementation, testing, delivery/deployment and maintenance has been thoroughly described below:

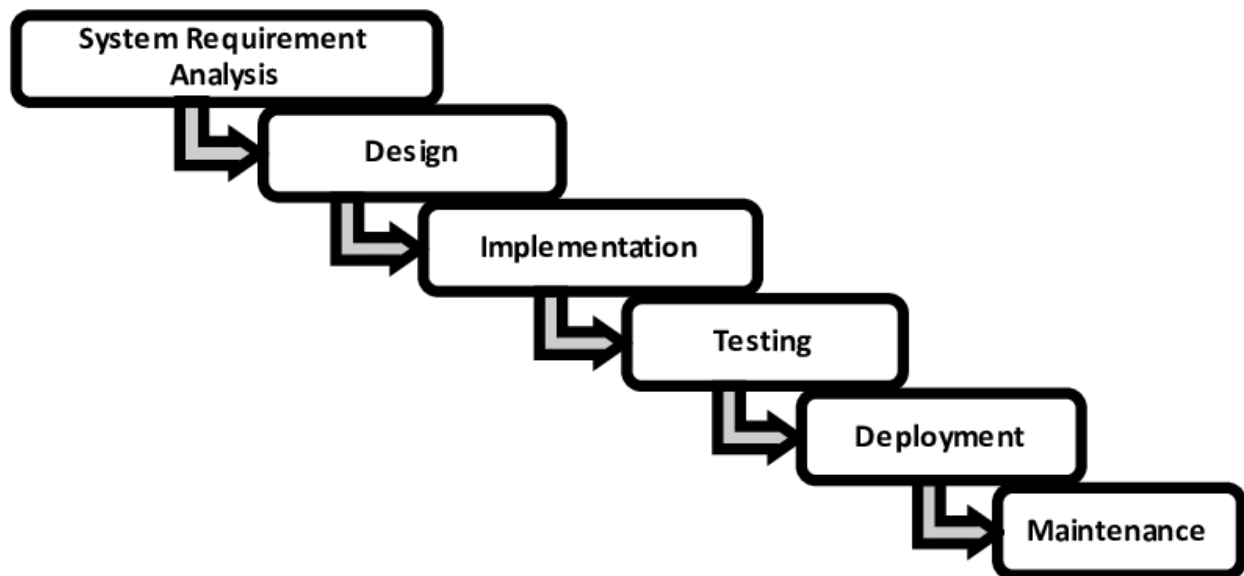


Figure 45 Waterfall methodology

Requirement gathering: Requirement for the project was gathered by observation, research and discussion among friends. Research on various players, users are done to collect the appropriate information which can help in system development. After collection of all the requirements, feasible studies of the system are also detected before heading toward system design.

System design: After the first step of requirement gatherings, in second step system was designed with the help of information gathered from step 1. System was designed balancing hardware and software to develop an appropriate blueprint of a system.

Implementation: After professionally designing architecture of a system, development of actual system has been started by writing the code according to design of a software. Coding was

started in java language, by following all the standards set by java like coding standards for components, name and variables.

Testing: After developing proper code for the project, a developed system has been undertaken through arrangements of testing for providing guarantees that a system will work fine without any mistakes. System testing was also done to ensure treatment of bugs and error in a system.

Delivery/deployment: After completing all the necessary step for development and with proper testing, project was developed and made ready for deployment.

Maintenance: After properly deploying system, if any bugs and loop-wholes are found in a system, it is to be fixed by maintaining the system. If a system crashed intentionally or intentionally it is also to be fixed in maintenance stage.

Reason for choosing Waterfall methodology

Waterfall depends on member following an arrangement of steps and not moving to another step before previous stage has been completed. A Waterfall approach can really give unsurprising final product to spending plan, timetable and extension plan of project. This structure is fit to for small projects with deployment planned from beginning of the project. Waterfall model is an essentially to execute procedure that does not need an intricate understanding of cycles and tasks. As waterfall methodology is a traditional approach of system development, it becomes easier for a beginner software developer like me to follow this straightforward approach rather than taking time to understand newly developed approach available in the software market. While there is wide difference between waterfall method and other methodology developed from critics of waterfall methodology. Game “I have to fly” is an small android game developed by a single developer, it has a specified and clear requirement which are not to be changed in the future which makes developing easier providing straight-forward steps which are ready to be followed one after another easily.

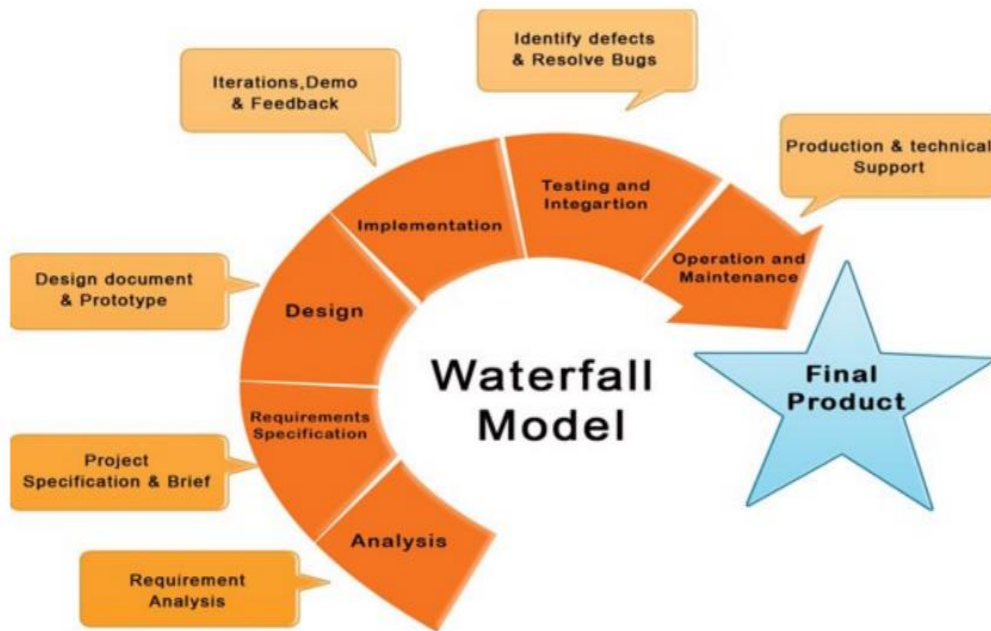


Figure 46 Reason for Waterfall use

Moreover, for the small project like this waterfall helps to carry out gathering of requirements, planning the system design in an easy way which would not require for a change in future. This project is designed and developed alone by me in which waterfall methodology have played a vital role in helping to make a fast and reliable decision. Though the project may crash if any change in requirements occurs in future. So, it must be analyzed and planed probably in requirement gathering steps, designed probably in software design step, proper code must be written in implementation step, through testing should be done in testing stage and bugs and errors must be fixed properly in maintenance stage so there is no looking back to the step that are completed, which saves time and helps to develop system in a strict manner. And if the system is developed in a strict manner, there is no space for unnecessary arrangement in any stage and it is handled properly before moving forward to another step. If this project were to be developed in agile or any other methodology other than waterfall methodology, it would have taken a lot more time for developing the system. Checking back and forth all the steps after completing the project would have led to crisis in time and the project would ultimately crashed.

Tools and Technology

Technology

Java



Figure 47 Java for android icon

Game “I have to fly” make use of java programming language to develop the basic front-end of the game in android phone. As java is fast, reliable and secure programming language used to develop different software and website. Java acts as a building component of basic usability in this game development.

Why Java?

- Easy to write and run which saves time.
- Understanding Java CLASS-PATH mechanism is easier.
- Better GUI system and Class libraries available.
- Android has kept Java as forefront of Mobile development which provides mutual help from other mobile developers.
- To run project in mobile application which uses different OS.

NodeJS:



Figure 48 Nodejs and express Icon

NodeJS platform of JavaScript run-time is used to develop the back end of this project. As NodeJS is lightweight and efficient which helps to write server-side application in JavaScript. Set of API is developed in NodeJS for back-end development of this project.

Why NodeJS?

- Better use cases availability which improves project standards.

- Fast and scale-able environment available in NodeJS.
- NodeJS has unique API that supports HTTP requests for the project.

5. Express:

Express, flexible NodeJS web application framework which provides faster set of features to develop web and mobile application. Express helps to develop the system in a robust way by providing middle wares to respond HTTP request.

Why Express?

- To add routing and connect middle-wares in the project.
- To create session for the project.
- To POST query/body for the project.
- To allow error-handling for the project.

MongoDB:



Figure 49Mongo DB icon

MongoDB is used as a non-SQL database to store the data of user; MongoDB has helped in development of project quickly and elegantly by carrying the load of database on itself. Other database would have taken a large portion of time while developing a system.

Why MongoDB?

- MongoDB provides a powerful way to store and retrieve data.
- Provides great UX for developers, which saves time.
- MongoDB provides large and mature ecosystem, making problems easier to solve.
- It can be used everywhere by everyone.

Tools

Android studio:



Figure 50 Android studio IDE icon

Android studio is an official IDE for developing software for android platform. Most developer use android studio to develop an android application. It is also said as a IDE for native android application development.

Why Android Studio?

- Intelligent code editor.
- Faster Emulator availability.
- Samples and Template availability.
- Cloud and version-control integration availability.
- Easier apk analyses and editorial for layout.

GitHub:

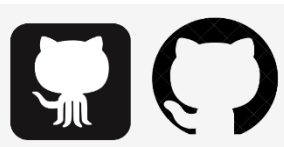


Figure 51 GitHub icon

A great repository hosting services, usually called version-control. GitHub helps to share repositories between different users. GitHub uses different functionalities like forking, pull request, merge to allow developers for better controlling the version of the project.

Why GitHub?

- Availability of powerful Community always available for help.
- Secure cloud storage.

Microsoft office:



Figure 52 Microsoft office icon

Collection of office-based application, with each application powered by different functionalities. Microsoft word and excel is the most used application of Microsoft office for this project.

Why Microsoft Office?

- Availability of all application required for official purpose.
- Most used among users which makes it easier.
- Trusted company provides security features to data.

Google chrome:



Figure 53 Google chrome icon

Web-browser of a giant google family, google chrome helps to search for everything available on web.

Why Google Chrome?

- Faster than any other web-browser.
- Simplicity in user interface.
- Availability of user personal account which also allows customization.
- Availability of security and privacy policies.

Canva:



Figure 54 Canva icon

Graphical designing platform allows user to create modern graphical design suitable for all platform like social media, book outlets.

Why Canva?

- To design a beautiful image and front page.
- Availability of online service, which takes downloading and installing difficulties away.
- Availability of beautiful and fun tools to play around and be creative with.
- Availability of templates and sample, which is to be used for brainstorming ideas.

Development of Game:

Game was developed for android phone, so it was developed using Android-studio IDE and Java as main language for programming. Other tools and technique were also used while developing the game. Game is developed with the help of research findings and includes technology used in other software development as well.

Features of Game:

User is the important actor of this game. So, UI is kept as main priority while developing the game to enhance user experience. Game was developed which contents aspect from other game.

User account register and login.

To provide personal account to user, user registration features was developed with user details. After registering user details, they can login to their person account which will help them to store their personal achievement in game. It will also help the user to login from different gadgets with the same achievement.

Registration Page: User can register their account by providing their personal email and creating new password for their account.

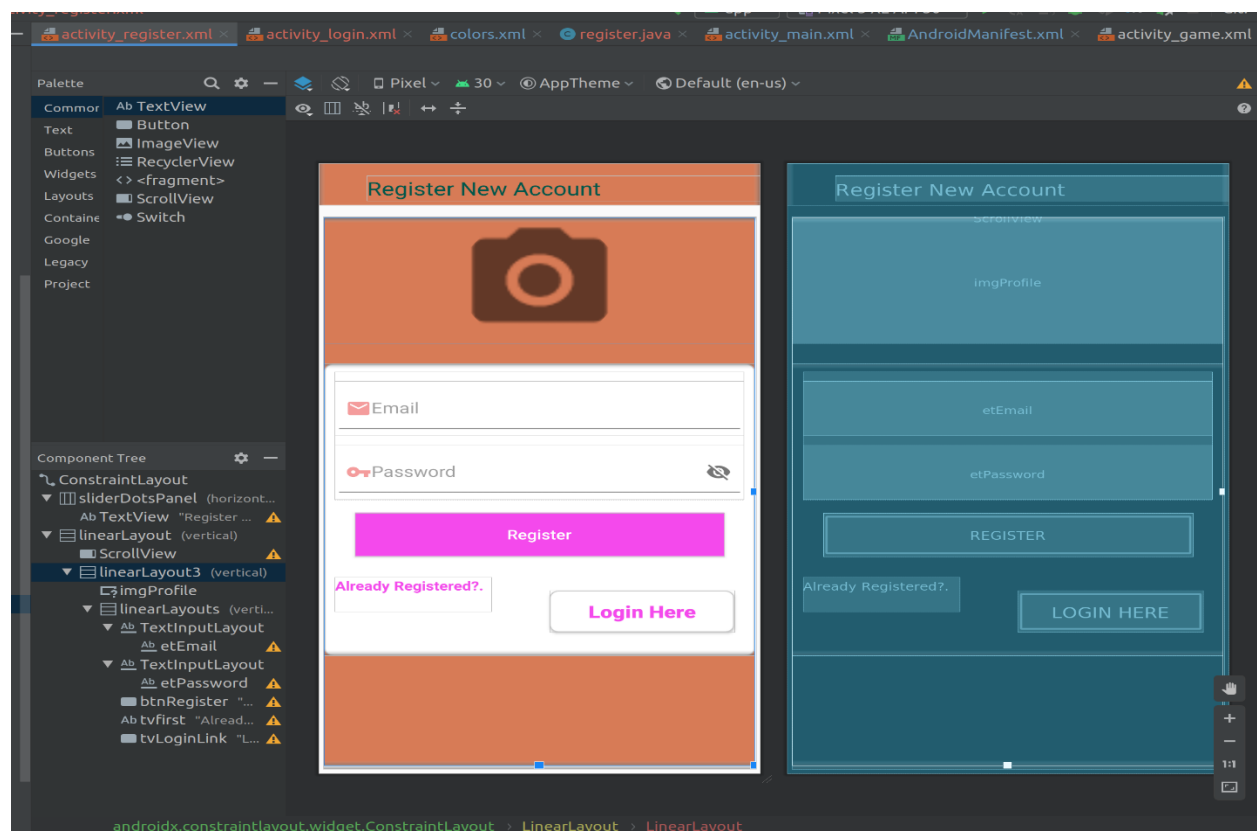


Figure 55Registration page

Login Page: After successfully registering, user can login with their login details. If they provide correct username and password, user will be taken to their dashboard where they can start playing the game.

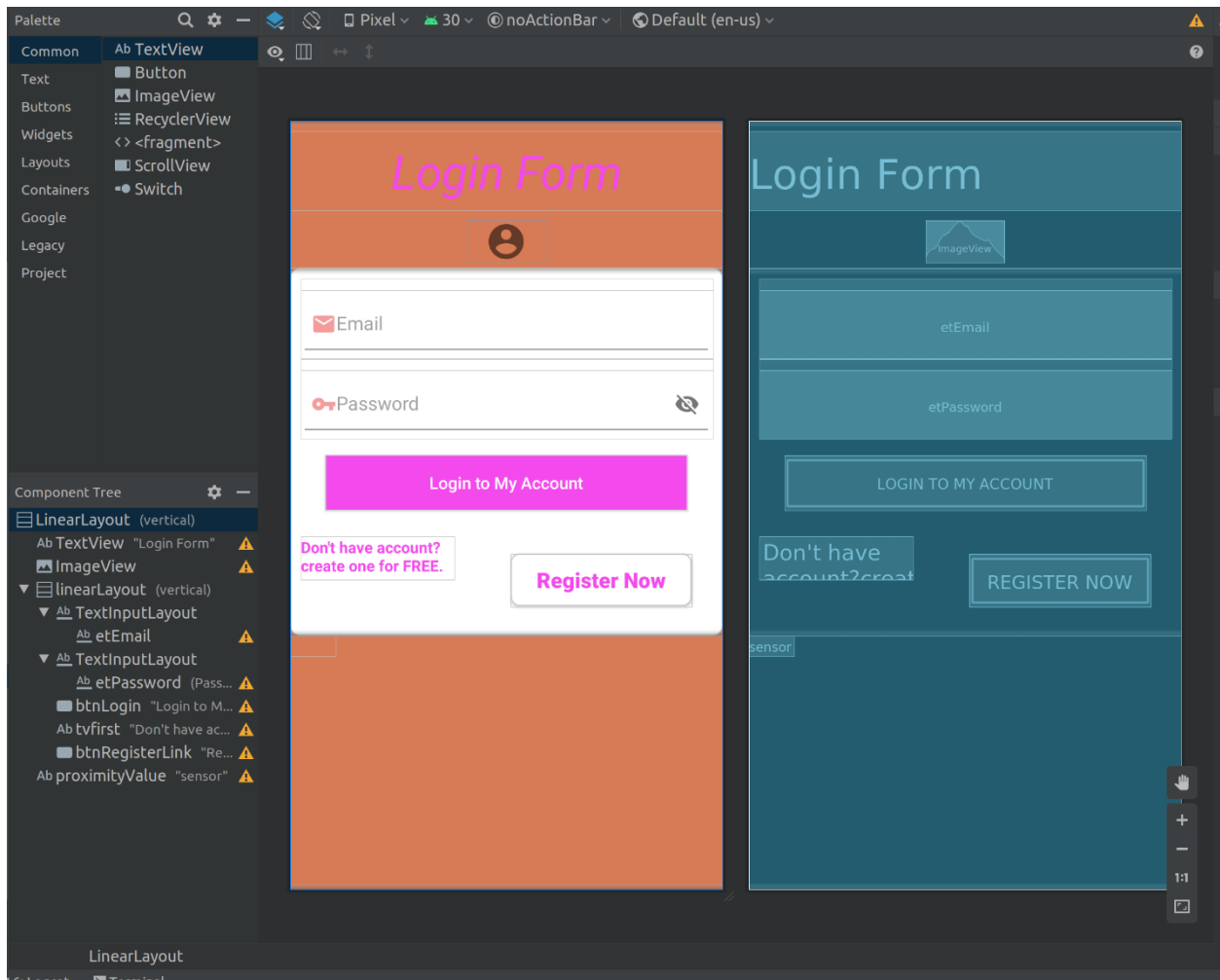


Figure 56 Login page

User Dashboard

After successful login, user will be taken to their dashboard. In user dashboard they can view their high score, start playing the game or exit the game. User will also get an option to turn volume on and off in the game.

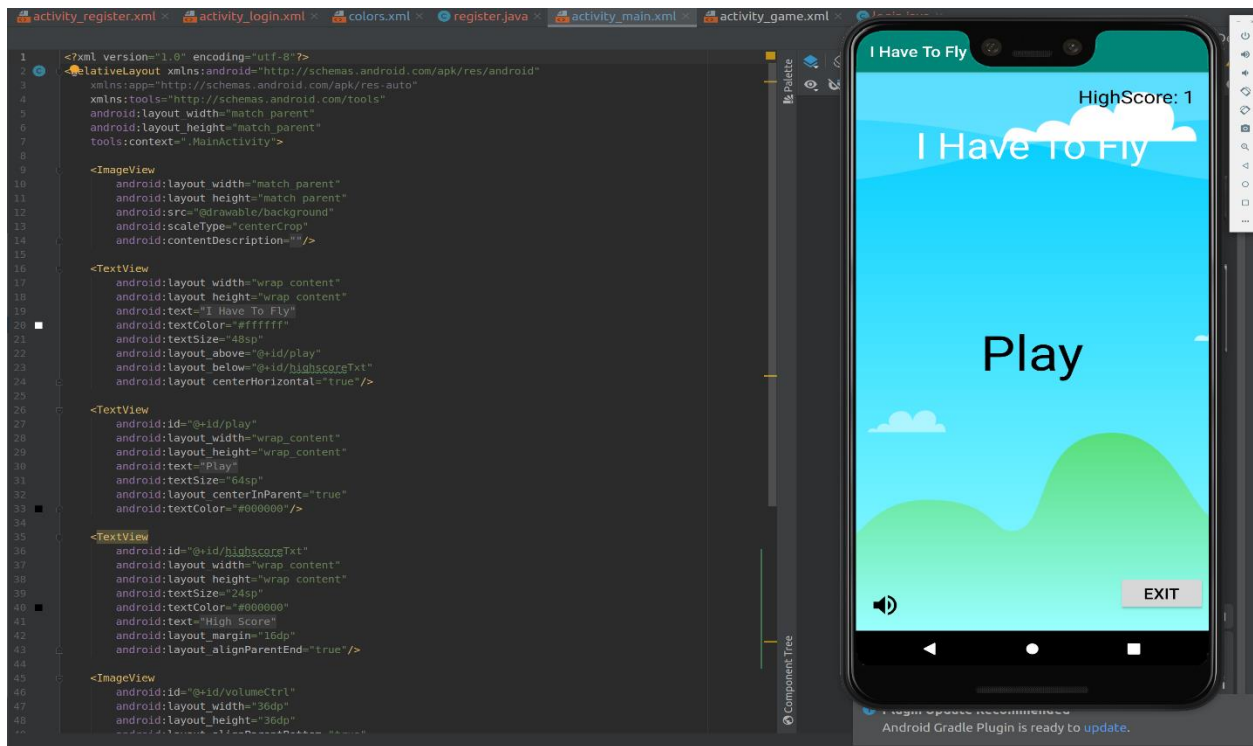


Figure 57 User dashboard

Game play

After starting the game by clicking play option in user dashboard. User will be taken to dashboard where they must fly their plane, shooting the obstacle coming to them. If they to shoot the obstacle, game will end. Score will be continuously recorded after user start the game till; they end the game. It will be recorded, and highest score will be placed in user dashboard.

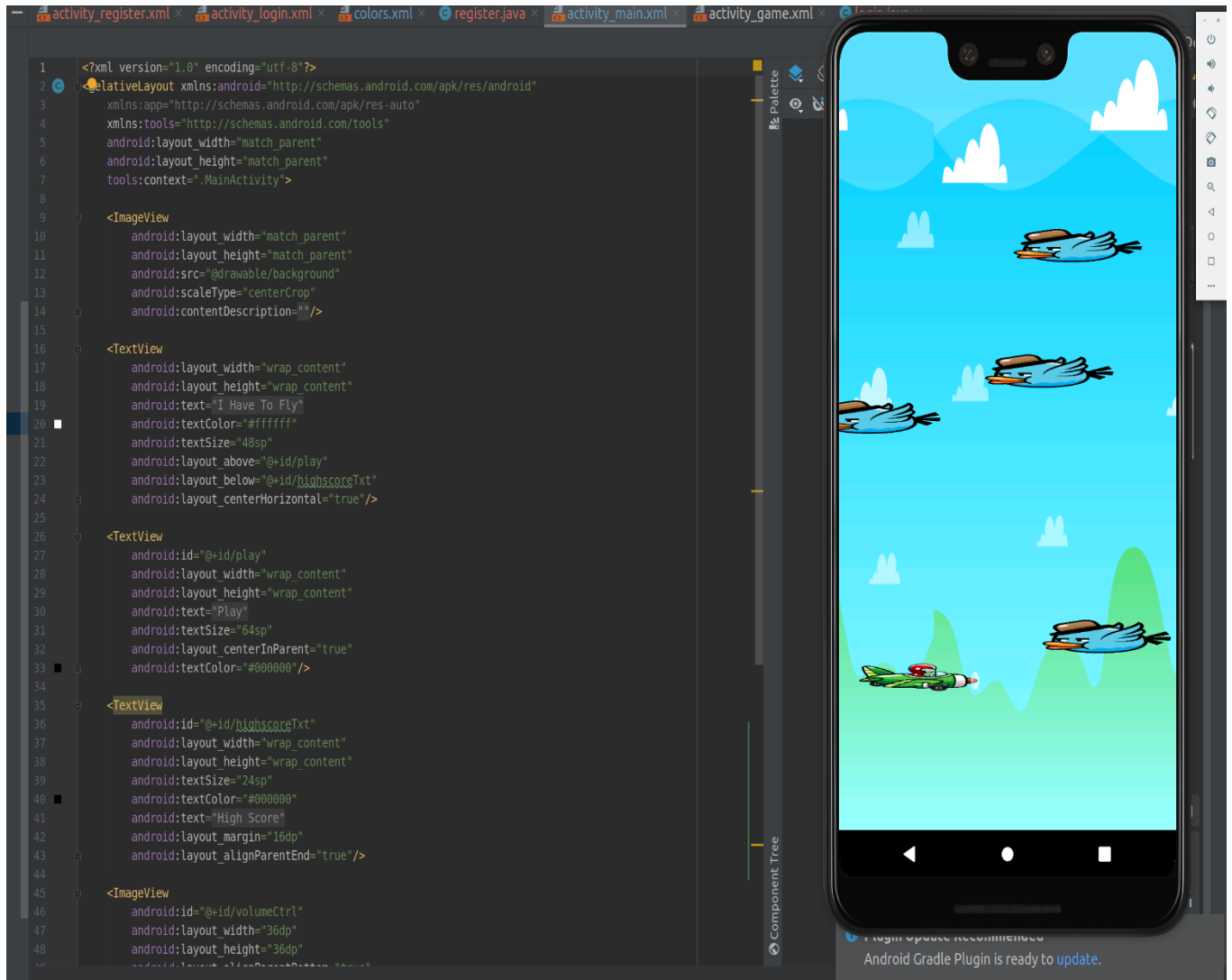


Figure 58Game play

Pestle Analysis:

A concept in marketing principles, used in this project to track the risk of Political, Economic, Social, Technological, Legal and Environmental area. Pestle analysis is done in this project to look overall factor which will or can create an impact on the project. While performing this analysis certain question was brainstormed and reviewed thoroughly which helped in overall development of the project. Some of the question reviewed before performing Pestle analysis are:

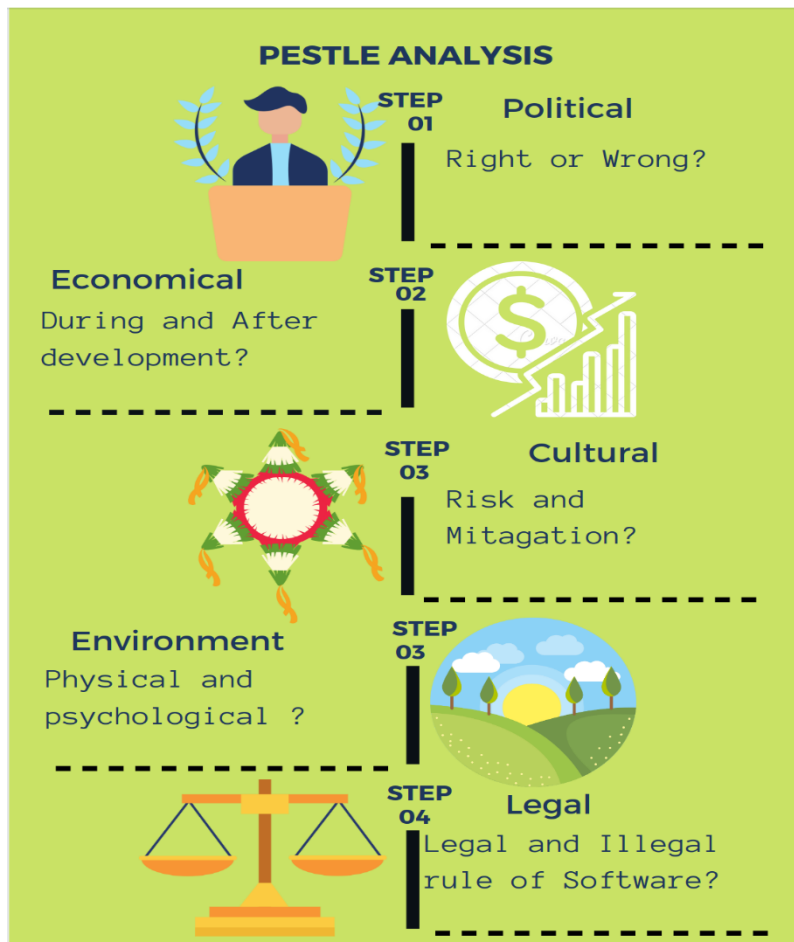


Figure 59PESTLE analysis

- Political condition of the country, whether my project is political right or wrong.
- Environmental Concern, physical and psychological.
- Cultural Impact, risk and mitigation.
- Economic factor, during and after development.
- Legal and illegal law of the country, regarding software development.

Findings

With the profound examination on addictive technologies alongside its impact on human behavior. It has been discovered that study of human behavior and addictive technologies is surprisingly filled with complexities. In context of internet in Nepal, most of the people were unaware of Internet and social media till Facebook came in practice in around 2007 AD. Most people of Nepal still have a misconception of Internet as a social media. They still have no idea what internet are made for and only believe on information provided on Facebook and YouTube. So, they get introduce to all the rumors, fake news and propaganda which will get them to believe without knowing its relevant source which will cause negative effect on their mental health. According to Research article published in 14th April 2016 on BMC Psychiatry, a nationwide cross-sectional study was conducted among the representative sample of Nepalese adult aged 18-65 years old(Numbers = 2100) and found that 16.1 , 4.2 and 5.9 percent was victim of anxiety, depression and combined anxiety and depression respectively and resulted to alcohol consumption, marijuana use and quality of life.

Like social media, mobile gaming has also been increased rapidly in context of Nepal. Most of the play the game 24/7 without realizing its negative effect to their brain. Game development is unpredictable, for effective development of entertaining game, developer must research all be ready to research all related fields. Certain component in game development helps to make game more addictive and easier. Components like easy, robust, simple with unique style along with expanding challenging levels makes user to get hooked to games.

Future Work

With consideration of all the research and analyses, mobile game was developed but still many features to be added in game are still missing due to lack of time and limited resources. List of addition work listed below could help development with better effectiveness in the future.

Better UI/UX: Game is developed in a basic way with no profound examination to the UI/X. User experience could be improved by understanding the requirement of player once it is released. Text styles, color could be improved in the most ideal way.

Graphic quality improves: Graphical qualities is extremely low due to lack of time and small project, so in near future graphics of player's skin textures and facial details could be improved graphically. Other graphical action could also be improved like switching between action from mobile, improvements in visual effect.

Friend connection and communication: Bi-directional features in a game must be added in future, since every game is introducing bi-directional, bi-communication features on mobile games. This game should also be developed in a way that two or more friend should be able to play in a challenging environment.

Challenging play modes: Game can be more addictive and fun with challenging features in a game, several play modes is to be added for better development of the game in near future. Several features in challenging mode like player must earn certain star to level up would be more fun and challenging in a game.

In-Game purchase: Income from in-game buys gives motivation to developer to refresh a game often, extending play choices just as the items accessible. An expanding number of web-based games have been including game purchase since virtual products from such games are cool. In-game purchase is the future expectation in this game.

Challenges

Pandemic: Pandemic of Covid-19 was one of the major challenges of the project. Pandemic caused difficulties to meet the module leader, seek help from seniors and other many challenges arise while developing the project from home. It was a challenge to stay mentally healthy due to strict lock-down in a country. Slow internet was another challenge during pandemic. Pandemic hit hard to my commitment as class, meetings were only held virtually. Many technical issues occurred to my PC during home stay, which I had to solve myself taking help virtually. It prevents me from doing my project on time.

Targeting right audience: Game development is one part and targeting the audience is another. Player of mobile games varies of different ages. Most people love to play mobile game for entertaining purpose. Location and culture of the area also determines the audience behavior. So, it can be challenging to target the right audience of right place.

Dealing with securities concern: Dealing with securities concern is one of the importance characters of software. This game also deals with user information. Thus, ensuring user securities comes under ethics and responsibilities of developer. It would be challenging to ensure security and stop unauthorized access and provides confidence to data and informatics of user in case of damage.

Maintenance: Game after development needs occasional maintenance. In addition, an application requires time and cash to dispatch new upgrades and fix bugs or to redesign application. Subsequently an ideal answer for it is take the assistance of an experienced developer. It might be challenging to flow the cash and find developer ready to help.

Learning Outcomes

Looking back at project starting phase, lot of things has been improved both physically and psychologically. The research findings and time-management were among the most importance things discovered while writing this thesis. Research on various addictive technology and human behavior taught various aspect of application development. This thesis helped me to analyze the change in human behavior and thinking pattern inspired from use of technology. Developing a fun game was another challenging part of this project. This subject helped to understand the importance of research and explore the various field of software development other than writing a code. This project also helped to enhance technical aspect of the software development. This project is developed for android phone, Java as main programming language and JavaScript as secondary language for this project. Mobile development was the one of the challenging parts while developing this project, because learning two new language was most challenging phase prior to time provided. It was challenging yet beneficial step to learn mobile application development, looking at the current software market scenario. Game was developed using Android-studio IDE, which was easy and robust platform to learn new skills. Many other tools and technology were also explored while doing this project.

Before heading towards project research, I had a basic understanding of how social media has implemented addictive technology to keep their user hooked to the system. So, I started my research from social-media and begin to enhance the understanding of the technology, how they can manipulate attention and emotions through algorithm. Various studies done by giant software company on self-esteem, personality disorder, narcissistic human behavior has helped to explore the social understanding, political view, religious beliefs of mass majority. It also helped to explore basic human behavior such as attention-seeking, need of belonging, communication, self-expression etc. which will be beneficial in making decision in every aspect of life. Since everything on world has both beneficial and devastating effect, social media is no untouched on this. But still many things are to be discovered since its newly born baby in tech world, will social media enhance beneficial content to users and society, will they remove offender enhancing itself to next further or will they be only there for producing entertainment contents, it will be on their hand but society cannot provide next decade to them for this findings which shows that world is an iterative and is ready to change to cope to change in any moment. Which is also one of the greatest findings of this project.

One of the most challenging and surprising findings was information overload, information related to everything could be found. It only matters are whether to find positive or negative information available for the project, it would sometime lead to misinformation and make a scene frustrating. But help from module leader helped to keep the information of the project on track. Various other technique described by different professor to find the information with correct source helped in managing the track while developing the project. Research on behavior changes and addictive technology was extremely difficult.

Conclusion

As video game being one of the most developing industry with social internet in concern. It is loved by people of every age group; various tournament is also being held in gaming environment with big prize announcement. People started connecting with one another through digital games. Not only player of game is increasing but also audience of gaming sector is increasing, which show people have started viewing as one of the entertaining source. Digital players from different country are emerging in gaming, generating large sum of revenue for themselves and country's economy.

Last decade was a sea storm in a tech industry, cause lot of new tech company were increasing their hand to change normal social things forever. Development of Facebook, YouTube, Twitter have also changed the way gaming has developed. Social media has helped to increase the fun part of game by interacting social integration. People have started to view game playing as a skill to be developed. Game streaming software like twitch and mixer, YouTube and Facebook have helped gamer to create content for their audience. Gaming industries have started to host big tournament which can be a life changing award for gamer. Many youths have started to develop their career as a gamer. Gamer have got an opportunity to continuously get connected to their fan through social networking.

Project research was to understand about the arising addictive technology and the way it has changed human behavior and implement those findings while developing mobile games. Game developed for this project is made for easier gameplay. It is developed with user authentication, providing challenging levels to beat their own high school. Although research was started with an intention to develop online medical system for victims, architecture of the projects was changed after receiving the comments from module leader. So, addictive game was tried to develop for mobile phone. This research helped me to integrate the findings through development of mobile game.

Lastly, it was clear that addictive technology has changed human behavior and will keep the power to change the way people think and act upon on things. It is necessary to understand this action, which are to be implemented for development of the project. Many techniques from other part like gambling, Vegas technique was also studied to understand how human being feels and why we feel that way. It was a roller coaster journey while developing this project plus the pandemic period during project development made me realize about priorities to be chosen for given time. It was an opportunity to develop this project which helped to uplift my understanding of technology and human behavior. It was necessary to understand the impact of social media on increasing gaming sectors.

References

- Purdue University Global. (2018). Time Management.
- Adhikar, B. (2017, 5 5). Advantages And Disadvantages Of Electronic Gadgets For Students.
- Ahmad, I. (2018, 27 July). Why Are We Addicted to Social Media? Retrieved from Social Media Week : <https://socialmediaweek.org/blog/2018/07/why-are-we-addicted-to-social-media-infographic/#:~:text=Social%20media%20affects%20the%20human,of%20dopamine%20in%20the%20process.&text=Being%20on%20social%20networks%20increases,aforementioned%20hormone%2C%20gene>
- Alter, A. (2017). Irresistible : the rise of addictive technology and the business of keeping us hooked. New york : Penguin Press.
- Amankwaa, R. O. (2016). The Impact of Social Media on Student Academic Life in Higher. New york : Global Journals Inc.
- Awad, F. (2011). Pornography Addiction.
- Babich, N. (2019, Oct 18). HUMAN COMPUTER INTERACTION . Retrieved from xdAdobe : <https://xd.adobe.com/ideas/principles/human-computer-interaction/user-centered-design/>
- Babulous. (2018). The problem with phone addiction is we think it's not a problem. Hackernoon .
- Bradford, A. (2017, Oct 2). things every new Snapchat user should know. Retrieved from CNet : <https://www.cnet.com/how-to/things-every-new-snapchat-user-should-know/>
- Cash, H. (2012). Internet Addiction: A Brief Summary of Research and Practice.
- CBS News . (2012). Social solution to connect .
- Cha, S.-S. (2018). Smartphone use and smartphone addiction in middle school students in Korea: Prevalence, social networking service, and game use. Health Psychol Open.
- China daily. (2017). Move to protect children from misusing internet.
- Clement, J. (2020, July 23). Internet>Social Media & User-Generated Content. Retrieved from Statista : <https://www.statista.com/statistics/545967/snapchat-app-dau/>
- David. (2019, September 24). Retrieved from Social media Explorer : <https://socialmediaexplorer.com/social-media-marketing/how-does-social-media-affect-students-behavior/>
- Dredge, S. (2018 , Jan 27). Mobile phone addiction? It's time to take back control. Retrieved from TheGuardian : <https://www.theguardian.com/technology/2018/jan/27/mobile-phone-addiction-apps-break-the-habit-take-back-control>

- Edwards, B. I. (2017). Human Behavior and Social Networks. New york : Springe.
- Elgersma, C. (2018, June 18). Everything you need to know about Snapchat. Retrieved from PHYS.org : <https://phys.org/news/2018-06-snapchat.html>
- Franssen, C. L. (2017). The Netflix Addiction: Why Our Brains Keep Telling Us to Press Play. Huffpost.
- Fuller, J. R. (2011). Social Media Use and Self-Esteem. Retrieved from Newyork behaviour health : <https://newyorkbehavioralhealth.com/social-media-use-and-self-esteem/>
- Gaming association . (2017 , April 20). Gaming Means(Small) Business . Retrieved from America Gaming : <https://www.americangaming.org/resources/new-study-casino-industry-essential-to-small-business-growth/>
- GOINS, J. (2013). Sprinklers and Vacuums: Two Types of Social Media Users. Retrieved from Goinswriter : Sprinklers and Vacuums: Two Types of Social Media Users
- Gordon, S. (2020, July 10). Real-Life Effects of Cyberbullying on Children. Retrieved from Verywellfamily : <https://www.verywellfamily.com/what-are-the-effects-of-cyberbullying-460558>
- Hayman, K. K. (2012). Life and Living in Advanced Age. A Cohort Study in New Zealand -Te Puāwaitanga o Nga Tapuwae Kia Ora Tonu,.
- Jacobson, R. (n.d.). Social Media and Self-Doubt. Retrieved from Childmind : <https://childmind.org/article/social-media-and-self-doubt/>
- Joseph, R. (2016). A Review of Digital Addiction: A Call for Safety Education. Bayelsa State, Nigeria.: Asian Online Journal Publishing Group.
- Kremer, W. (2012). Human echolocation: Using tongue-clicks to navigate the world.
- Krishnamurthy, S. (2005). Amazon.com - A Comprehensive Case History.
- Lam, L. T. (2014). Risk Factors of Internet Addiction and the Health Effect of Internet Addiction on Adolescents: A Systematic Review of Longitudinal and Prospective Studies. Sydney : Current Psychiatry Reports .
- Larissa Hirsch, M. (2014, June). Cyberbullying. Retrieved from Kidshealth : <https://kidshealth.org/en/parents/cyberbullying.html>
- Larry Magid, E. a. (2014, Janaury). The Educator's Guide . Retrieved from Connect safely : <https://www.connectsafely.org/eduguide/>
- Law insider . (2016). Definition of Casino Business. Retrieved from Law Insider : <https://www.lawinsider.com/dictionary/casino-business>

- LEDGER, F. E. (2020). Digital Sobriety. Earth.org.
- Lee, T. J. (2012, March). Marketing Strategies for Casinos: A Case for Australia. Retrieved from Research gate :
https://www.researchgate.net/publication/272145366_Marketing_Strategies_for_Casinos_A_Case_for_Australia
- Lisa Eadicicco, M. P. (2016). Most Influential Gadgets of All Time. New york: Time .
- Love, T. (2015). Neuroscience of Internet Pornography Addiction:.
- McFadden, C. (2019). A Very Brief History of Amazon: the Everything Store.
- MEHAR, P. (2020, Jan 23). Google presents an Envelope to combat cell phone addiction. Retrieved from Inceptivemind: <https://www.inceptivemind.com/google-presents-envelope-combat-cell-phone-addiction/11485/>
- Metev, D. (2020, September 18). Small Business Statistics . Retrieved from review42:
<https://review42.com/small-business-statistics/>
- Milosevic, Z. (2007). Computer and Video Games in South Korea. Research Gate .
- Mohsin, M. (2020). 10 AMAZON STATISTICS YOU NEED TO KNOW IN 2020.
- Molla, R. (2017). Everything has changed. Vox .
- Muldrew, E. (2019). The secret design tools which Social Media apps are using to create addiction. Medium .
- Nair, R. d. (2016, March 03). Pornography Addiction in Adults: A Systematic Review of Definitions and Reported Impact. Retrieved from The Journal of Sexual Medicine :
[https://www.jsm.jsexmed.org/article/S1743-6095\(16\)00350-7/pdf](https://www.jsm.jsexmed.org/article/S1743-6095(16)00350-7/pdf)
- Nature. (n.d.). The Earth as Modified by Human Action .
- Osharive, P. (2015). social media and academic performance of students.
- Ostrower, D. (n.d.). Apple is Winning the War with Android: Why User Centered Design is Key. Retrieved from altitudeinc: <https://www.altitudeinc.com/apple-is-winning-the-war-with-android-why-user-centric-design-is-key/>
- Perez, J. (2015, March 17). To like, or not to like. Retrieved from Daily Sundail :
<https://sundail.csun.edu/89462/lifestyle/to-like-or-not-to-like-how-social-media-effects-self-esteem/>
- Psychology today . (2018). Addiction.
- Rao, S. (2018). How Netflix became one of the most addictive products in the world. Medium .

- Recovery research institute . (2018). The Brain in Recovery . THE NEUROSCIENCE OF ADDICTION RECOVERY.
- Shoukat, S. (2019). Cell phone addiction and psychological and physiological health in adolescents. EXCLI journal .
- Siddiqui, A. (2019). Effects of Social Media on the Mental Health of Young People! Digital Information World .
- SIS International . (n.d.). Quantitative Research. Retrieved from Sis International Research : <https://www.sisinternational.com/what-is-quantitative-research/>
- Smart insights . (2020, March 18). Snapchat statistics 2020. Retrieved from Smart insights : <https://www.smartinsights.com/social-media-marketing/social-media-strategy/snapchat-statistics/>
- Sniewski, L. (2018). Addictive Behaviors.
- Stephens-Davidowitz, S. (2018). Everybody Lies: Big Data, New Data, and What the Internet Can Tell Us About Who We Really Are.
- Stone, B. (2013). The Everything Store: Jeff Bezos and the Age of Amazon.
- Tillman, M. (2020, April 6). What is Snapchat, how does it work and what's the point? Retrieved from Pocket-lint : <https://www.pocket-lint.com/apps/news/snapchat/131313-what-is-snapchat-how-does-it-work-and-what-is-it-used-for>
- TIMESOFINDIA.COM. (2020, Feb 22). Smartphone addiction is just as dangerous as drug addiction, says new study. Retrieved from Times Entertainment times : <https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/smartphone-addiction-is-just-as-dangerous-as-drug-addiction-says-new-study/photostory/74242699.cms>
- UNICEF. (n.d.). Cyberbullying: What is it and how to stop it. Retrieved from unicef.org: <https://www.unicef.org/end-violence/how-to-stop-cyberbullying>
- Villines, Z. (2020, Janaury 29). know about porn addiction. Retrieved from MedicalNewsToday : <https://www.medicalnewstoday.com/articles/porn-addiction>
- Voss, A. (2015). Internet Gaming Disorder Associated With Pornography Use. Yale J Biol Med.
- Wade, L. (n.d.). Reshaping Today's Education System. Retrieved from Center for social impact : <https://csic.georgetown.edu/magazine/social-media-reshaping-todays-education-system/>
- Wordstream . (2018). Social Media Marketing for Businesses. Retrieved from Wordstream Online advertising made easy : <https://www.wordstream.com/social-media-marketing>
- WorldBankGroup . (2020). Doing Business 2020.

Google Forms: Free Online Surveys for Personal Use (2020). Available at:
<https://www.google.com/forms/about/>

Quantitative Research - an overview | ScienceDirect Topics (2020). Available at:
<https://www.sciencedirect.com/topics/social-sciences/quantitative-research>

Waterfall Methodology - ProjectManager.com (2020). Available at: <https://www.projectmanager.com/waterfall-methodology>

(2020) Java.com. Available at: <https://www.java.com/en/>

The most popular database for modern apps (2020). Available at: <https://www.mongodb.com/>

Node.js (2020). Available at: <https://nodejs.org/en/>

Express - Node.js web application framework (2020). Available at: <https://expressjs.com/>

Anon

(2020) Usabilitygeek.com. Available at: <https://usabilitygeek.com/user-centered-design-introduction/>

Wearables: The Lack of User-Centred Design in Apple Watch's Apps

Wearables: The Lack of User-Centred Design in Apple Watch's Apps (2016). Available at:
<https://www.nomensa.com/blog/2016/wearables-lack-user-centred-design-apple-watch%E2%80%99s-apps>

Busting the myth that Apple doesn't do User Research | Experience Dynamics

Busting the myth that Apple doesn't do User Research | Experience Dynamics (2020). Available at:
<https://www.experiencedynamics.com/blog/2014/09/busting-myth-apple-doesnt-do-user-research>

How Apple Is Giving Design A Bad Name

How Apple Is Giving Design A Bad Name (2015). Available at:

<https://www.fastcompany.com/3053406/how-apple-is-giving-design-a-bad-name>

User-Centred Design and Why it is Important | Usability and Accessibility | Government of Saskatchewan

User-Centred Design and Why it is Important | Usability and Accessibility | Government of Saskatchewan (2020). Available at: <https://www.saskatchewan.ca/government/visual-identity-and-protocol/digital-standards-and-framework/usability-and-accessibility/user-centered-design>

User-Centred Design and Why it is Important | Usability and Accessibility | Government of Saskatchewan

User-Centred Design and Why it is Important | Usability and Accessibility | Government of Saskatchewan (2020). Available at: <https://www.saskatchewan.ca/government/visual-identity-and-protocol/digital-standards-and-framework/usability-and-accessibility/user-centered-design>

Develop a mobile game the easy way: Use a framework

Develop a mobile game the easy way: Use a framework (2020). Available at:

<https://techbeacon.com/app-dev-testing/develop-mobile-game-easy-way-use-framework>

Mobile Game Development Companies | Zco Game App Developers

Mobile Game Development Companies | Zco Game App Developers (2020). Available at: <https://www.zco.com/mobile-game-development/>

Top 10 Mobile Game Development Tools | Mobile Game Engines

Top 10 Mobile Game Development Tools | Mobile Game Engines (2020). Available at: <https://unaryteam.com/top-10-mobile-game-development-tools/>