***Report***

“Technology is not just a tool. It can give learners a voice that they may not have had before.” (George Couros). Having had first-hand experience with technology in the classroom, I for the first time began to enjoy studying and learning. As a student with Dyslexia, it was hard to focus and progress when what teachers presented was heavily text-based. Having technology incorporated when studying meant that students going through similar experiences were able to break down information using tools to create learning methods, listening to podcasts instead of reading and much more. The combination of technology within the education system has sparked my desire to contribute to the ever-growing field of education and to be apart of a movement which aimed to use technology as a source of enhancing and stretching today's generation in learning. There have been a lot of contributing factors that drove me to my Final Media project idea, Firstly, knowing that I wanted to create a project that incorporated both Education and Technology. I also wanted it to be relevant, meaningful and at the same time contemporary.

***what are you making?***

Project 360 is a mobile phone application that Features short films (mini-documentaries) shot with a 360-degree camera addressing the theme of education, entertainment, lifestyle and Culture of participating students from Hamma Lakdar University in El-Oued Algeria. These will be available to view on a virtual reality headset for a fully immersive experience. This project will then be open to the public to collaborate and contribute to by following steps laid out on the project blog created to expand on the content thus Allowing the audience to be creators as well as to further explore Students from other country's lifestyles and Culture. Therefore, By including 360 and VR viewing technology, I aim to make the content I’m producing as immersive as possible to give each viewer the closest and personalised unique experience. The purpose of this project is to create a uniquely immersive and educational experience for people to learn and enjoy.

***who else made similar stuff?***

There were many projects by immerging artists and experimental filmmakers that helped shape and influenced the flow of ideas for my final project. As I will be creating a short film/ Mini-doc and following the theme of student culture, there is a relation and common feature with the following films; 'Third Culture Kids' by Zazie Bibi is a 7-minute film that featured a combination of landscape shots and interviews. This was filmed in 2D and was published on YouTube an open source platform. Similarly ‘A Sense of Belonging' by Sophie Darmawan an 8-minute documentary also published on YouTube had a combination of landscape and interview shots. Both of these mini-documentaries are targeted at the same audience as my project. I took a close look at social documentaries like the above and analysed the subject areas that interests and appealed to this demographic. I found that it was generally in line or similar to the area I had chosen to focus on, with lifestyle being a reoccurring theme in these documentaries. Both documentaries give its audience the reaction that I want my audience to feel. This comment "I love this film. As a TCK who grew up in Singapore, it was really nostalgic seeing the greenery and the architecture of the houses. But nostalgia aside, the film itself was really thought provoking. I loved hearing the answers from the people you interviewed. This was superb ﻿" (YouTube, 2018) outlines the feeling of nostalgia and describing how the visual aspects of the video made this viewer feel imply the importance of it. By developing this and creating 360 VR videos will amplify those feeling as the viewer will be connecting and be fully immersed when viewing the videos making the experience personal and unique.

Valens Reef 360 and Fight for Fallujah have been dubbed as some of the best 360 content of 2017 These are also examples of short films/ mini-docs that were created in the same form and similar purpose that I will be producing. Therefore, my films will also be contributing to this genre as they too were created to educate, raise awareness of issues or as a form of journalism. However, what differentiates our projects is that I am creating multiple mini-documentaries rather than long length ones as established, this works better with my target audience as they prefer having the freedom of choice in what they watch and having shorter length videos works well with capturing their attention.

Institutions like St. Wilfred's Academy use classroom VR and teacher Anthony Johnson record lectures using 360 and posts them on to YouTube for students to see and others to use for educational purposes. This shows that VR/ 360 technology does not only have to be used for entertainment purposes to be enjoyed. It is versatile and is used in many institutions such as in schools and even hospitals. VR played a vital role in the successful separation of conjoined twins at Masonic Children’s Hospital in Minneapolis. “You look through the 3D glasses, and you can walk through the structure, peeling apart parts so you can look at exactly what you want to,” said Dr Anthony Azakie, one of the surgeons who separated the twins. He said the high-resolution visualisation “helped minimise the number of surprises that we were potentially dealing with.” (NBC News, 2018). By seeing how big the impact of Virtual Reality and 360 technologies have made on these intuitions, it has inspired me to pursue this idea further. As from all the research gathered it is evident that these technologies have so much potential in not only the entertainment industry but also health and education sectors which seems to be making a positive change and gaining vital life-changing experiences, from aiding life-threatening surgeries to motivating and inspiring youth in education and by campaigning for an important cause.

The way I aim to use it is by spreading a message of diversity and bringing communities together not physically but virtually. Unfortunately, we are living in a society where there still lies prejudice within our communities. In fact, hate crimes in the UK have increased since Brexit. "The increase over the last year is thought to reflect both a genuine rise in hate crime around the time of the EU referendum and following the Westminster Bridge terrorist attack, as well as ongoing improvements in crime reporting by police." (BBC News, 2018).

In 2016-17:

* 62,685 (78%) were race hate crimes
* 9,157 (11%) were sexual orientation hate crimes
* 5,949 (7%) were religious hate crimes
* 5,558 (7%) were disability hate crimes
* 1,248 (2%) were transgender hate crimes

(BBC News, 2018).

Looking at these figures, it is evident that hate crimes are increasing and that race is the most targeted group. I believe project 360 can help reduce any racial prejudice that someone might have and also any preconceived or stereotypical views they have of a particular race or culture whether it be from misrepresentations from films or the news. It can be achieved as when the audience is viewing the project 360 mini-documentaries on education, culture and lifestyle they can get to know and empathise with other communities and maybe find areas in their lives that they have in common in which they can relate. This can change and open peoples minds in how they view others as they will learn and delve into a community outside of their own within of a couple of minutes and experience something fun, new and exciting.

***why are you making it?***

I chose to use 360 Virtual Reality technology as it fits well with project 360 and that desired feeling is achieved when viewing the foreign locations and hearing of the difference in culture. it gives a sense of familiarity and realism to the viewer even when watching or experiencing a place/ setting alien to them. Over the past 50 years, all the applications of the technology of television dominated entertainment. Because of this, the vast majority of televised scenes have been familiar landscapes; private rooms, churches, Courtrooms, even open prairie! In each case, the viewer can bring a vast amount of his or her experience to bear in interpreting the missing third dimension. However, as the applications of television broaden to include for instance displays for molecular modelling programs, for surgery, for remote inspection of cables and pipelines and military applications. The interpretation of the depth Cues become more difficult as the televised scenes become unfamiliar. Unfortunately, in each case the need to interpret the missing dimension correctly as often commensurately more and not less, necessary. Virtual Reality technology allows the audience to experience this without having to interpret the third dimension as it is all in 360 and three dimensional (Brice, 1997).

This may be one of the leading reasons why Virtual reality has been booming in the gaming, entertainment, and media industries in the past year and even journalists around the world are embracing this technology as a new way of storytelling (Lin, 2017). The most intriguing potential of VR in journalism is the immersive experience that VR provides, which can take the audience into the location itself, witness an event and see augmented information at the same time. The traditional journalism makes people easy to hear a terrible piece of news and write it off, and thus some news loses their power when the viewer is just watching them on a comfortable couch. However, both the physical and physiological experience would change when watching topics like war, natural disaster, political change in full 360 immersions. (Lin, 2017). Documentaries are generally created to educate and make a social impact; I am personally drawn to this genre as it raises awareness and encourages viewers to think critically and to form their own opinions. I believe if done correctly and aimed to create a positive impact, these are essential life skills needed. When combining it with immersive live-action technologies, it can lead to many great outcomes such as being a tool for aiding studies in a classroom or personal environment or even on a broader scale helping eliminate social issues society faces like cultural prejudice as viewers will gain empathy and emotionally connect with the films.

A study was carried out by Associated Press (AP) trying to investigate how virtual reality devices and content affect the viewer's physical and physiological stimuli, by conducting a study with neuroscientists at Multimer that measured participants’ engagement and brain activity when consuming immersive media content (Lin, 2017). The results showed that regular VR headsets drove higher levels of stimulation and intensity, and the stories involved in war and conflict could evoke higher engagement compare to stories with discovery and scientific topics. Also, experiencing a room- scale VR story could drive higher levels of open-mindedness and fascination compared to other VR headsets which people could not move around quite much (

Lin, 2017). When creating the 360 mini films education, culture and lifestyle I would like the audience to feel as if they are in that specific location exploring. From gathered primary research 88% of TCK’s think about how different their life would have been if they have stayed living in their country of origin. 82% said they would like to go someday and experience their culture and to educate and reconnect with their roots.75% said that they would love to have experienced a cultural exchange and learn new things about another culture and how people of similar ages lead their lives. However, due to travel costs and time inconveniences, they are unable to do so. This project will bring this experience to them and gives the opportunity to do so in the comfort of their homes in their own time and for free.

360 Virtual Reality is now in a long-term growth phase. Many firms are diversifying beyond the dominating content categories of gaming and video to find new opportunities, especially in enterprise VR apps or venue-based VR experiences (PwC, 2018). Due to this, there Is a welcoming platform for project 360 being a VR application, as it is the prime time for projects like this to be on the market.

***who are you making it for?***

The target audience for Project 360 is 16-25-year-olds, as they are the age group that is most interested in the theme proposed. 82% that they are interested in watching contemporary documentary’s and mentioned channels like Vice and iD on YouTube that make mini films/ documentaries about urban culture and society. Also, 100% of the participants answering the questionnaire said they own a smartphone and are likely to try new apps. This demographic is what American writer and speaker on education Marc Prensky calls “Digital Natives”. Digital natives are the generation that grew up with new technology. They have spent their entire lives surrounded by and using computers, video games, digital music players, video cams, cell phones and all the other toys and tools of the digital age (Prensky, 2001). Looking at the world population more than 50% are digital natives (Neises, 2013). In countries like China or India digital natives already account for an even more significant share of the population (Tapscott, 2009). Since at some point in time there will be more digital natives than digital immigrants, producers and companies will have to deal with these consumers, and they will add up as the primary target audience (Neises,2013).

They are leading markets and are becoming the centre of attention when it comes to the target audience as they are becoming the largest group of consumers. PwC says: "Last year, for the first time, consumers spent more on mobile internet access than fixed broadband access. PwC now expects smartphone ownership in the UK to hit more than 70 million and, as a result, mobile internet access is forecast to account for more than half of overall internet access revenue in four years' time." (Schofield, 2018). The digital natives present an attractive target group because They possess a significant amount of disposable money and a higher spending power than earlier generations (Manafy and Gautschi, 2011). To illustrate in the United States students earned almost 200 billion dollars a year in part or full-time jobs and in 2006, they purchased 190 billion dollars worth of goods. (Tapscott, 2009 ). As the digital native's age, their spending power will increase even further. In fact, Americans born after 1981 5% of cars in 2003 but this percentage will climb to 40% by 2020. (Tapscott, 2009). Given this high disposable income and keenness to spend it the digital natives will become the dominant consumer Force. (Manafy and Gautschi, 2011) This suggests that this target group are willing to spend and try new things if it is encompassing their desires, wants and needs.

***what do they want?***

Research shows that the current wave of students “is characterised as preferring teamwork, experiential activities, and the use of technology” (Oblinger and Oblinger 2005). According to Marc Prensky based on interviews of almost 1000 of today, students from all economic, social, intellectual and age strata all over the world I have found that what they say it is remarkably consistent.

• They do not want to be lectured to.

• They want to follow their interests and Passions.

• They want to create using the tools of their time.

• They want to work with their peers on group work and projects.

• They want to make decisions and share control.

• They want to connect with their peers to express and share their opinion in class and around the world.

• They want to co-operate and compete with each other.

(Prensky, 2010)

Therefore, this project is an excellent way of merging Educational documentaries/ video content with current technology as it will appeal to this generation of Digital Native students. Thus allowing them to be fully engaged when learning new things. According to PwC data consumption will grow by 22 per cent CAGR to 57 trillion megabytes in 2022, thanks to superfast broadband. It says that "video will account for over 80 per cent of data traffic over the next five years with the popularity of services such as Netflix, Amazon Prime Video and Sky's digital offerings fuelling traffic, as well as the BBC's iPlayer." (Schofield, 2018). This suggests target group are more likely going to be engrossed in watching educational and informative videos rather than reading a blog, newsletter or book. Therefore, the best method of delivering the information collected is through mini films/ documentary that is being featured in Project 360.

The way this information is delivered plays a significant role in how likely the audience stay interested. As shown above, this target group do not like the idea of being lectured to. Reaching the digital natives' attention presents another major Challenge for companies. One reason is information overload the dramatically growing number of digital content, and media types compete for that attention of the digital natives. 1.8 trillion GB of digital information had been created in 2011, and this number is more than doubling every two years. (Neises, 2013). These gigabytes represent digital content such as website images movies and user-generated content on social media sites. However, people have the cognitive ability two processes only a limited amount of information. (Palfrey and Gasser, 2011). Therefore, by creating short and concise documentaries/ short films along with an appealing cutting-edge design, I would be attracting the target audience’s attention.

With more children being exposed to technology, it is only natural to understand that this will also lead towards the creation of a new type of user group. The development of Human-Computer Interaction (HCI) has always been affected by the struggle between the physiological and the psychological abilities of the users. This can be further expanded when dealing with the digital natives. Children have their own inherent psychological and physiological limitations that strongly affect the software that is being developed for them. The entire development process has to be tailored to these realities ( Dingli and Seychell, 2015). I have done some background research into the genre and the target audience so that I would be confident to produce something that will be tailored specifically to their needs, expectations and desires. I created some questionnaires to learn more about the different types of audience and potential users, also to see what they would like to see featured on our project and to have an insight on what they currently use. Based on the results I gathered I was able to see the different types of digital natives I would have to appeal to. Then was able to create user personas that would accurately portray them. This allowed me to target this demographic when testing my project.

I have also researched and analysed mobile applications, which are within the same genre and target audience to see their design, app structure how pages are ordered and loaded and features (what tabs they have etc.) But, mainly to see if they meet the current demands of the audience and what gap there is in the market that Project 360 can fill. I mind mapped name, logo, colour scheme and the style ideas I was going for and created a style guide. It is essential to create this as “Visual style guides are used to define the way the brand will look and keep corporate graphics consistent and uniform across materials” (Launch Marketing, 2018). For this, I also analysed popular professional apps (within the same genre) that where praised for the sleek and modern designs and usability to get inspiration and to build upon design ideas. After the research, I created full prototypes for the mobile app, documentary and VR cardboard headset. For the mobile app, I created a version on Adobe Experience Design so that I could conduct a task analysis to see if they are correctly conducting the tasks required (efficiently navigating) and generally to see how people interacted with the app and design and for usability and accessibility testing. This work helped me stay organised and generate enough information to understand the audience I am targeting and ensuring that I conform to accessibility guidelines and cater for their needs.

To maximise the contribution of the users in the development of software that is ultimately targeted for their use. User-centred Design (UCD) [which reaffirms the importance of including the user in the three major phases of Design, Implementation and Evaluation. Considered to be the easiest to be adapted to facilitate the inclusion of the digital natives, UCD can generally be defined as the process in which users are consulted throughout, generally as evaluators of each stage ( Dingli and Seychell, 2015). To achieve that I followed a UCD process to stay organised and be realistic when setting goals. We believed that its essential to have a UCD process ass “In the Human Factors International (HFI) video, The ROI of User Experience, Dr Susan Weinschenk notes that of those IT investments, up to 15% of IT projects are abandoned and at least 50% of a programmers’ time during the project is spent doing rework that is avoidable. Following UCD best practices, helps to identify challenges upfront so that a solution can be found early.” (Washington, 2013).

Designing and creating a project like this alone can be time-consuming and challenging to manage and track. Therefore, I used an agile methodology Scrum for the ideation process to manage this project effectively. I was able to note what tasks needed to be done, what I was in the process of creating, and what I have tested or completed. This helped with setting personal little tasks and goals for each week and also to track what I am spending time on which helped with time management. I also used a digital management system such as Github where I was able to version control my app and also post the updated codes I’m working on. “Version control systems are essential for any form of distributed, collaborative development. Whether it is the history of a wiki page or large software development project, the ability to track each change as it was made, and to reverse changes when necessary can make all the difference between a well managed and controlled process and an uncontrolled ‘first come, first served’ system”. (Yeates, 2013). The importance of version controlling is that developers may wish to compare the current version of software with that of the week before or even months/years before to track change and to also easily be able to fix bugs on the code as you would be able to understand what changes you made that corrupted files. Both of these methods assisted in allowing me to work in highly professional and creative standard.

***how did you make it?***

To create Project 360, multiple programming, editing, managing software’s as well as hardware technology such as digital cameras and 360 cameras I were used. I was keen on learning and developing my knowledge and skills in software and app development and to also experiment and learn how to use programs I had not used before. This stretched my learning and challenged me through the production process of this project which strengthened my resilience and attitude towards struggles or dips in this process. To film the documentaries, I used the Kodak 360 cameras as it shot in 4k video resolution and I attended classes at the beginning of the year to learn how to use it. Its very important to master the technique of filming with a Kodak as making any mistakes during the filming would result in difficulty when editing and stitching the footage together. To avoid mistakes and to be prepared I had created a storyboard using a different method for 360 filming which allowed me to envision what I needed to film before going abroad and filming. When filming with the kodak, I used a tripod and extended the height to be exactly the average eye level so that it is natural to the viewers when they are watching. This step was crucial as if the filming height was too high or too low it can cause discomfort for the viewer and feel very unnatural. For post-production, I used PIXPRO\_360\_STITCH to align and calibrate the footage of the two cameras together. This software is open source, therefore, to use software and allows you to do the first editing before taking to another editing software. I chose to use this software as it is free to use fast and compatible with mac. Others such as VeeR editor are either on the market for a high price or don’t allow for sound calibration. Therefore, PIXPRO\_360\_STITCH seemed like the safest and the most sensible option to use to save time, quality and money.

After the basic primary editing was done, I exported the video, and after ensuring its 4k video quality was not disrupted, I transferred it Adobe Premiere Pro where I was able to edit the colour, add sound/music, cut and arrange the footage order. The reasoning behind using premiere pro is that Adobe showcased new 360/VR editing tools for Premiere Pro and After Effects, centered around the acquisition of the Skybox Studio plugins from Mettle and their inclusion inside Premiere Pro CC and After Effects CC. (Medium, 2018). To record the audio, I used a Zoom H1 recorder. I opted to used this external audio recorder as It maximised the audio quality and I am then able to intricately edit the sound and reduce any extra noise wind etc. in the background resulting in a good quality sound. To edit the audio, I used adobe audition as I am most confident with using this software and also it has features that allow precise editing. After the filming and editing process, I tested parts of the documentary out with a select focus group and gathered some feedback on how they felt and what changes should be made. I then went on to make those changes ready to publish.

Once the recording and editing phase had finished, I moved on to working on the mobile app coding. Since I had the desired wireframes and mock-ups based on the usability feedback, I was able to begin working on the code straight away. There were many options I could have used to when working on the app development. However, I chose to use the ionic framework running on Cordova. There are many reasons for my decision as firstly, Ionic is an open source software and therefore within my budget range. While working on a complex project, I needed a framework that was suitable for my requirements. Not many frameworks had options for VR app developing, and since Cordova runs ionic, I was able to incorporate the VR plugin that allows my videos to be played through 360 interaction or even using a VR headset. Ionic also comes with many javascript and CSS components which allowed me to add very sleek touch to the appearance of my app. When creating project 360, I was acutely aware of the budgeting. One of the main reasons why navigated towards open source applications and software was to stick with the price range as I could not afford to go out of the budgeting since I had directed most of the funding towards travel costs and essential plugins. To manage budgeting I used Microsoft excel and made a list of the prices and expenditure that was to be made for this project. This really helped as it allowed me to not go over set funds which could have hindered the progress of the project.

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