Tech Girls are Superheroes 2016

Somerset College
Year 8 Tech Girls Group

Team Members: Azaria Barr-Hamilton
                         Cassidy Fifield
                         Katrina Howard
                         Ava Luxford
                         Lara Shirley

Team Coach: Mrs Elke Schneider
                         Teacher, Somerset College

Team Mentor: Belinda Lawrence
                         Suncorp

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1 Introduction

The Somerset College Year 8 Tech Girls group are excited to submit an app idea to the 2016 Tech Girls are Superheroes competition. The group consists of five Year 8 girls from Somerset College, Gold Coast. The group's mentor is Elke Schneider, a teacher at Somerset College. The group has been fortunate to also receive industry feedback, inspiration and motivation from Belinda Lawrence from the Suncorp organisation in Brisbane.

The community that we live in is important to us, simply because we live within this community and we are part of it. Therefore, we also feel that we should support our community when we can and this is one of the main reasons the members of this group formed to create an app for good. The Somerset College Year 8 Tech Girls group is made up of teenagers and so it is especially important that we support our friends and other teenagers within our community. There are many issues in our local community that can be seen in the broader community of Australia and in the world, such as environmental concerns from increasing urbanisation, educational inequities for indigenous students, and an increase in unhealthy activities. The Year 8 Tech Girls group decided to focus on an issue that impacts communities around the world: the increase in obesity and unhealthy lifestyles of teenagers.

2 Ideation Phase

2.1 Identifying the Problem

Australian teenagers are increasingly overweight and diagnosed with obesity; 25% of children are estimated to be overweight or obese (Australian Institute of Health and Welfare, 2016b; Williams, Mesidor, Winters, Dubbert, & Wyatt, 2015). Teenagers are generally not as physically active as recommended (Australian Institute of Health and Welfare, 2016a). It is also important that teenagers eat well-balanced meals that are nutritious (Nutrition Australia, 2012). The health and fitness of teenagers is a community issue because unhealthy teenagers may have low self-esteem due to social stigma (American Academy of Pediatrics, 2015), which may be associated to depression (Gatineau & Dent, 2011, p. 9) and lowered academic achievement (Kantomaa, et al., 2013). There are also major medical risks for people who are long-term overweight or obese, including an increased risk of developing cardiovascular conditions (Australian Institute of Health and Welfare, 2011, p. 62). It is important to note that childhood obesity is a major concern around the world and it is reported to be on the increase (World Health Organisation, 2016).

2.2 Product Description

The Somerset College Year 8 Tech Girls android app, Zombie Fitness, is designed to help teenagers increase their fitness and make nutritious food choices. The Zombie Fitness app has been designed to be a fun, interactive way for teenagers to learn about developing a good healthy balance of fitness and nutrition. The app also includes game-based activities, which tracks the user's time spent doing these activities. The Zombie Fitness app has three key features; Game mode, Fitness Education and Health Education.

In the Game mode the player is given an exercise to perform, which is one of many activities that are randomly sequenced to display. The types of exercise activities that the user will be asked to do includes, running outside, push-ups, star-jumps, and sit-ups, and these activities will vary between 15 to 30 seconds in duration to ensure that the user does not get bored with the activity. The "Zombies" in the app name refers to the zombie images and background-sounds that are intended to give the app-user the feeling of urgency to perform these activities. The longer the user engages in the game the higher level that they will achieve. Ultimately it is envisioned that the levels achieved by app users would be on a Leader Board which could be displayed on either the app itself or a linked a website.

The Food Education section of the app includes basic information about the food groups, such as dairy, protein, vegetables, fruit, grains and fat. Information about the amounts of each food group that is required by the average teenager will be available. Positive messages about a balanced lifestyle and the good impact on healthy eating on a teenager's growth, self-esteem and well-being will also be included. A possible addition to this section is a quiz-based game that requires that the user uses a barcode scanning function in the Zombie Fitness app to scan items in their kitchen that includes ingredients such as protein, dairy and sugar. This barcode scanning quiz-based game should help the user test their nutritional knowledge.

The Fitness Education section of the app includes basic information about why physical activity is good for the body and mind. The app will list exercises and fitness activities that require no cost to the user. Some of this section will also include information about the risks and concerns associated with inactivity and being overweight or obese. The user will be able to read about the benefits of physical activity, as well as how to find out about different fitness activities in their community.

2.3 Potential Market Size

The Zombie Fitness designers aim to develop and implement their app in two iterative stages. The first implementation of the app will focus on an initial primary target made up of Somerset College teenagers. Since the Zombie Fitness designers are current Year 8 students at Somerset College, it is assumed that promoting their app to students in their school should be relatively easy. This initial target market will also be easy to survey to gain feedback to further develop the app for a wider audience. It is estimated that the potential size of the target market at Somerset College is 148 teenagers; these are the approximate number of teens that own an Android smartphone (983 teenage students x 15%).

An estimated 15% of Android users are suggested for the Somerset College target market. It is difficult to know the exact number of the Somerset College teenagers that own an Android phone. However, in the experience of the students designing the Zombie Fitness app, it is agreed that teenagers at this school and elsewhere tend to own iPhones more commonly than Android smartphones. This view is supported by various current research and articles on the topic of teenagers' smartphone ownership referencing surveys with teen Apple phone users at approximately 70% (Cell Phone Tracking Reviews, 2016; Mastroianni, 2015; Seitz, 2015; Spence, 2016). Interestingly the percentage of Apple users is less in Australian 18-75 year olds where 80% of survey respondents owned a phone with approximately 41% Apple ownership (Deloitte Australia, 2015). The increased prevalence of Apple users in the youth market may be a result of Apple marketing efforts directed at youth combined with the tendency of youth wanting to copy their peers. It is identified that more research should be conducted on this youth target market in the future to ascertain the trend in smartphone choice and also to identify the reasons for these choices. It may be important that the Zombie Fitness app designers develop Apple apps instead of Android apps to gain the biggest target market possible.

The second stage of implementation of this app would focus on targeting all teenagers in Australia. This is a comparatively large target market compared to the initial stage of aiming at Somerset College students. It is important to learn from user feedback and survey data from the initial stage to update the Zombie Fitness app with new features, to fix bugs and to develop a robust app for a larger market. It is estimated, based on 2011 Australian Census data, that there are approximately 2.78 million teenagers between the ages of 10 and 19 in Australia (Australian Bureau of Statistics, 2016). The potential target market of an Android app for teenagers is 417,000 (2.78 million x 15%).

2.4 Competitive Analysis

App/Website name	Description	Market size & potential revenue	Comparison
Zombies, Run!	A fitness app that uses the idea of running away from zombies to motivate people to go running. The app includes rewards in game items and gifts in exchange.	This app is extremely popular with over 1 million sales from 2012-15. Initially the app (available in both Android & Apple) was over 5£. The app is now free including a few of the stories and users have to pay for more stories/levels of the game (Dredge, 2015).	Most similar to Zombie Fitness App but targets runners not teens. Its Kickstarter crowdsourced funding for development is inspiring.
7 Minute Workout	A workout app that shows workouts (7 minute workouts) and allows you to track your progress and gives detailed tutorials on how to do certain exercises.	The 7 minute workout app is free and has over 1.4 million downloads, though the app has no in-app purchases.	Instructions to do a type of workout & then times it is similar to Zombie Fitness.
That Sugar App	An app that tracks sugars in your food (by having a barcode scanner) and sets challenges for the amount of sugar you can eat per today.	The app is free and has no in app-purchases. It has 10,000 – 50,000 installs on google play.	Barcode functionality is similar but found in many apps today.
Happify	An app that tracks and improves your emotional health just by playing games, doing activities and giving tips on how to keep the user emotionally healthy.	The app is free but has in-app purchases. They offer 'Happify plus' which has more developed features and costs $5 per month.	The Zombie Fitness app will include information about emotional health
Inspirational and Motivational Quotes – Daily Quote of the Day	An app that sends the user motivational quotes every day and allows you to save certain quotes to re-read later.	The app is free and has in app-purchases	One section of the Zombie Fitness app will include motivational quotes
Run for your Life	A 5km run that is held all over the world that includes running and zombies in one event. The aim of the run is to go through the whole course with at least 1 life. At the start of the run you are given 3 lives and when doing the race zombies can take away your lives by ripping them off you. Users learn about the run and sign-up via a website.	To participate you have to pay a fee	Run for your Life is a one-time 'experience' with many other people involved. The Zombie Fitness app is focused on getting the user active often throughout the day or week.
Fooducate	An app that uses a barcode scanner to identify nutritional content of food. It provides alternative foods options and informs the user of the amount of calories in the product. This app includes a feature that tracks the amount of calories the user burns in a day.	The app is free to download but has in-app purchases for gluten and dairy free options.	Barcode scanning and nutritional content will be included in the Zombie Fitness app.

2.5 Potential Revenue

The vision for this app was that it would be a free app for teenagers to download. This app should be free and sponsored by local councils or governments. The purpose of the Zombie Fitness app is to increase health and fitness awareness while also helping teenagers get physically active. It is in the best interest of the community that teenagers are encouraged to get fit and therefore this app idea should be pitched to local city councils and governments.

What do you think would be a reasonable price for this app?

Answered: 91   Skipped: 0
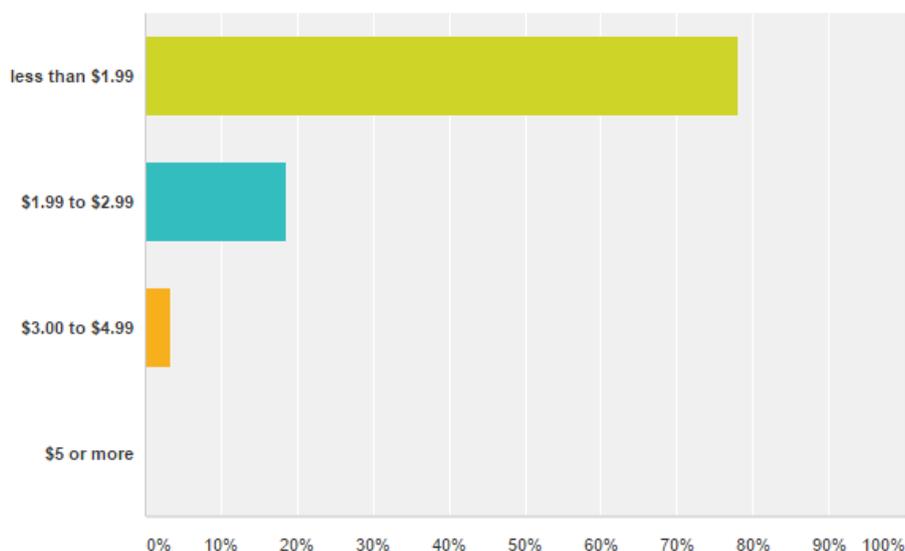
Answer Choices	Responses	
less than $1.99	78.02%	71
$1.99 to $2.99	18.68%	17
$3.00 to $4.99	3.30%	3
$5 or more	0.00%	0
Total		91

A survey conducted with 91 teenage student respondents from both private and public schools in the Gold Coast, Queensland, shows that the majority of teenagers would pay "less than $1.99". It was recognised after the survey results were gathered that many of the respondents may have only downloaded the app if it was free and therefore under $1.99. Subsequent interviews with teenagers were completed after the survey and it was clear that many respondents would not be willing to pay for this app. This may be due to the generally typical low-income (or level of pocket money) of teenagers. Ultimately, if we are to change the physical activity habits of teenagers, then promoting free apps that could help in this pursuit would be ideal for this particular target market.

2.6 Branding and Promotion

The Zombie Fitness app is going to be branded and promoted with a catchy and relevant logo and slogan. The logo of our app is includes the words Zombie fitness in a green colour with black outline. The suggested app slogan is *"may the terror be in your fitness"* to align with the zombie theme and to engage the target market in a fun way.

Initially the app would be promoted to teenagers at Somerset College. The Zombie Fitness developers all attend Somerset College. Teenagers that download and use the app will be asked to give feedback to the developers. User testing is very important and may also result in new ideas. Once the app is tested and fully functional it will be downloadable from the Google Play Store, along with extra planned promotional activities at other schools.
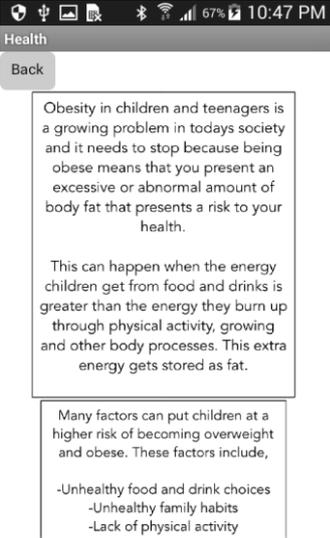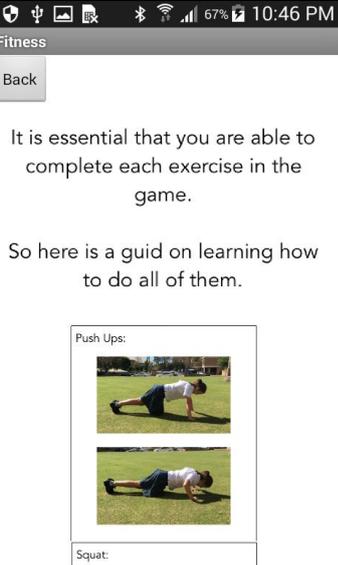
3 Design Phase

3.1 Design Specification

Specification	Explanation
Colour	The colour scheme is green, red, black, orange and mostly gloomy colours. We are using these colours for our zombies according to zevendesigns website's colour harmony guide. These colours are recognisable as colours associated with zombies. The splash screen is black so it makes the zombies stand out.
Zombie Pictures	Our pictures that we are using for our starter page is three zombies with different attributes and characteristics. The pictures are also cartoonish and sort of realistic because it is targeted to teenagers. The pictures are also going to be original and created in PhotoShop.
Information about health/fitness	Our app should include information about health and fitness to inform teenagers why it is important to maintain a good physical, emotional, social and mental health and the consequences of not doing so.
Quotes and inspirational messages	We believe that including quotes and inspirational messages is important because it may boost the app user's self-esteem and motivate them to exercise and eat healthy food.
Game levels	Games are fun and this should encourage the user to adopt the app. To keep the user hooked to using the game, it is important that the game includes a common and popular feature known as 'levelling up'. To level up, it is important to first track the user's time spent completing the activities and then to check the amount of time the user has engaged in the game. The higher the time spent, the higher the level.
Opening 'splash' screen	When the app opens the app should display the splash screen for 2 seconds. This was difficult to do due to an issue with MIT App Inventor. This screen is now shown when the user clicks on the Exit button on the Main Screen.

4 Development Phase

4.1 App Screen Development

App screen/code	Features & functionality	Issues
	Opening 'splash' screen This screen was developed last and due to a limitation (bug) found in MIT App Inventor the team could not force the application to start with this screen because it was not the 1st screen that had been developed. This is the screen that the user is moved to first when they click on the Exit button on the Home screen	• Developing the original images for the app was difficult and required learning of new software. This lead the team to develop the other screens first. • Not being able to change the first application screen in MIT App Inventor is a major issue. The team will need to recreate their app again and ensure that they develop the opening screen first.
	Home Screen The team had liked the design choice of including clickable images. There are 3 clickable images and an Exit button on the Home screen. The top image is a zombie walking and clicking this navigates the user to the zombie fitness game. The middle zombie takes the user to the Health screen and the bottom zombie image navigates to the Fitness screen.	• Developing original images for the app was difficult since the team did not have prior experience in this • Exit button originally included simple "close application" code which often gave varying results in testing; this is potentially a bug in MIT App Inventor. Finally a decision to navigate to the originally planned 'splash' screen was implemented so that the judges may see it.
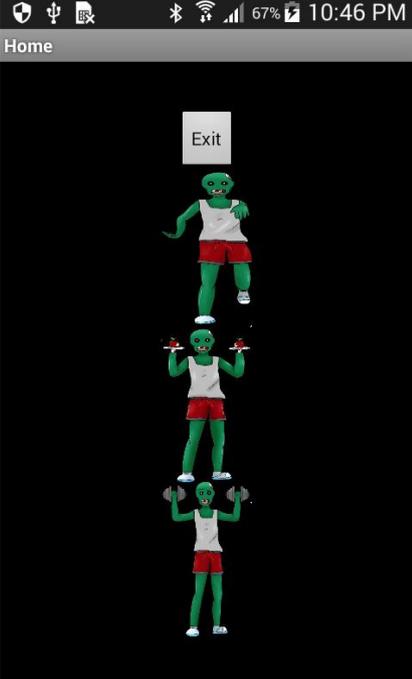
Game screenshot Game Back Pause Play Level 1 THE ZOMBIES ARE COMING! Do push-ups for **19** Seconds Total time played: 9	**Game Screen** The game screen includes the majority of the technically complex code. This screen instructs the user to do a variety of different activities for a set time range. The total time played is saved within a local (on the phone only) database. The total time is checked when the user opens this screen. The more the user plays the game (gets fit), the higher the level. Timers were utilised to ensure that the total time played was as accurate as possible.	• The team had envisioned animated zombies but this was beyond their current technical capability. • Music, zombie screams and a voice-over with instructions to the user were all planned to be included but time issues and developer ability were major factors for not including these desired features. • The database works and tests correctly at first but after a few tests where the user goes 'Back' and enters back into the game, causes the total time played to double unnecessarily. This is likely caused by the use of label text as a placeholder for this value.
Health screenshot Health Back Obesity in children and teenagers is a growing problem in todays society and it needs to stop because being obese means that you present an excessive or abnormal amount of body fat that presents a risk to your health. This can happen when the energy children get from food and drinks is greater than the energy they burn up through physical activity, growing and other body processes. This extra energy gets stored as fat. Many factors can put children at a higher risk of becoming overweight and obese. These factors include, -Unhealthy food and drink choices -Unhealthy family habits -Lack of physical activity	**Health screen** This is a simple screen with text-based information. Research on these topics was performed to ensure that the content is current information. The Zombie Fitness team also believed it was important to present a balanced view of a healthy lifestyle. A section at the end includes information about eating disorders.	• Due to the issues of sourcing or developing original, non-copyrighted images, this screen does not include any visually pleasing elements. The team would continue to improve the visual aspects of this game over time. • In the early stages of this app the team had wanted to include a quiz or a drag/drop game to help the user remember information about a healthy lifestyle. A quiz or app should be developed in the future
Fitness screenshot Fitness Back It is essential that you are able to complete each exercise in the game. So here is a guid on learning how to do all of them. Push Ups: Squat:	**Fitness Screen** The fitness screen shows images of teenagers performing physical activities that appear in the app's game.	• Given more time, the team would include brief video demonstrations of these activities on this screen. • The images are likely a bit small for some people, so larger and expandable images are suggested for future upgrades to this app.

4.2 App Code Development

MIT App Inventor and computer programming were new skills for the team to learn. All team members completed some MIT App Inventor tutorials first to familiarise themselves with the code. A separation of roles occurred in the team which resulted in only two 'coders' in the group. There was a large learning curve for these two coders. The complex programming requirements included the use of a local database, structuring code with if/else, utilising lists (arrays), and using clocks to ensure correct addition of user time spent completing the activities.

The code presented below shows the use of clocks to ensure correct time. A database was employed to remember the user's total time played. Saving the total time played value is important so that the user does not have to start from zero when starting the app more than once.

The code presented below shows the game programming, including using an array of strings that is randomly chosen from by the app. Each activity may run between 15 to 30 seconds in length. An If/Else decision functionality was employed to check for the user's game level.

5 Evaluation Phase

5.1 Product Success

The Zombie Fitness app has had varying success in meeting the original design specifications. The Tech Girls team are very excited about what they have accomplished considering they have had no prior knowledge or experience in developing digital applications. The original idea included parts that either had to be eliminated at this time or scaled back to align with the technical ability of the coders in the team. Given more time and motivation, the Somerset Tech Girls Year 8 team would spend more time learning complex code techniques so that they could implement the more vigorous coding requirements of their original idea.

5.2 Product Impact

The team believe that the idea behind this app is a valuable pursuit, since there is a growing trend of obesity in Australia and the world. The Zombie Fitness app has the potential to have a positive impact on teenagers' physical activity and increasing knowledge about their own health. Future upgrades to this app would be to include animated zombie characters, background music, and web database implementation. If this app used a linked web database, then added features such as social media engagement and online leader-boards would result in an increased impact on the issue of teenage physical activity and health issues.

6 Conclusion

The Zombie Fitness app has been designed and partially developed to encourage teenagers to get fit and to help them gain knowledge about physical activity and their health. This app has the potential to improve the health and fitness of our youth, which would result in a healthier future for Australia. Given more time and improved technical skills the Somerset College Year 8 Tech Girls team would be keen to make their original design a reality for both android and iOS phones. The envisioned Zombies Fitness app would be a benefit for our local community and all communities in Australia.

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