



Case Study



GAME DOCTOR
CASE STUDY

REMEDY QUEST

Contact: info@gamedoctor.co.uk
Website: www.gamedoctor.co.uk

The Company

Game Door is a technology company based in Glasgow, U.K that makes meaningful games for education and behaviour change. Working with customers, we use a co-creation model for game development. This has produced over 20 titles for mobile and web. All of our games are supported by scientific research and big data, and combine techniques in gaming and psychology to boost engagement and learning.



Game Doctor work with global partners to create impactful technology for behaviour change.

Since 2015, we have worked with health and sciences organisations to create innovative gaming technology for mobile and web. Our customers include research institutions, government organisations, health start-ups and IT firms. We operate B2B and B2C models for game development.

The Game Doctor Method

1. Game Development

Games developed on Unity engine using agile methodology

2. Behavioural Analytics

Game analytics aligned with psychology frameworks measure learning, engagement and behaviours.

3. Player Profiles

Analytics data used to segment players into profiles to tell insightful stories.

Case Study Summary



The goal of this project was to develop and implement a mobile gaming technology that would **improve and measure COVID compliance** behaviours in young people. This case study reports the outcomes of this project that was funded by Innovate UK, COVID-19 Rapid Response Funding.

1 Innovative gaming technology to improve COVID compliance

Remedy Quest is a mobile strategy game developed on Unity game engine for iOS and Android. In the game players protect against COVID infection using real-world tools such as vaccines, medicines and immune system. Analytics were implemented in Unity to measure player game usage and performance. The game was soft launched on Google Play for UK and Americas between November 1 2020 and January 31 2021. During this period, it received 6000+ downloads, with majority being in US, UK and Brazil.

2 Players show good engagement with gaming technology

50% of all users (n=3000) became active players for the game (they completed 1 or more activities in the game). Over 800 hours of play time was recorded during the pilot for active players. More than 50% of players completed the educational tutorial on COVID and the game. The average day 1 and day 7 retention values were 20% and 10% respectively. Player engagement correlated with COVID case rates in each country (higher engagement seen in regions with higher cases).

3 Player performance increased over time

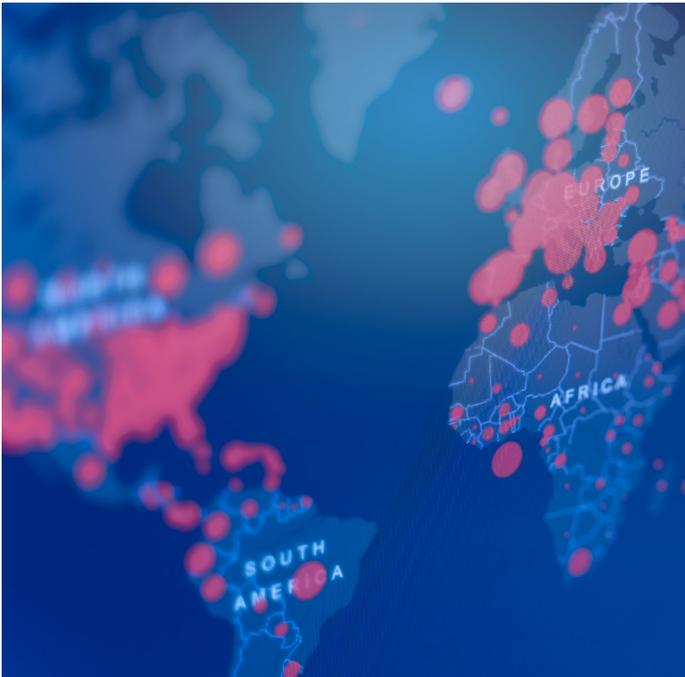
To measure learning and progress in game, a game currency was implemented to track positive behaviours. Players are rewarded 'research points' when they defeat a virus, or use a COVID remedy effectively. Analytics showed research points awarded increased over time for players in US. 80% of all game sessions recorded, ended in the 'win' state, meaning that the player had defeated all COVID in that session. Vaccine use by players increased between November and December, but dropped in January.

4 Gaming community established for COVID and vaccine education

Remedy Quest game has facilitated the creation of a gaming community for COVID and vaccine education. The pilot on Google Play gave players an opportunity to provide honest feedback on the beta game, and suggest improvements and additional content. The game is currently rated 3.5/5 on Google Play with 36 total reviews. We have received reviews from players across the globe including US, Singapore, Mexico, Brazil, UK.



Problem



Multiple waves are expected for the COVID-19 pandemic. To reduce cases and deaths, public adherence to infection prevention rules such as vaccination and social distancing is crucial. This is especially important for demographics such as teenagers and young adults, who have greater social contacts and have been shown to contribute significantly to COVID waves.

However, changing behaviours for this demographic is extremely difficult as they are not typically engaged with public health content. New strategies are required that use interactive technology and appear on recognisable platforms used by this group.

In March 2020, Game Doctor conducted research with young people



Game Doctor conducted a survey with young people to assess knowledge on COVID-19. Survey received 134 respondents with 50% being aged between 5-16. Data showed that young people felt invincible against the virus. Only 17% of the participants believed they would catch coronavirus. 51% did not think a vaccine was needed to fight the virus.

Only 17% of young people believed they would catch coronavirus

7

Average age that children own a personal device in UK

Behaviour change requires personalised approach.

Young people are used to highly interactive and personalised content such as video games and social media. COVID-19 educational content must adopt similar strategies to engage

this demographic and change health behaviours. Real-time data is also required to better understand COVID behaviours, to better protect against future waves and pandemics.

Mobile games as the solution?

2.7 billion people play video games worldwide. The most popular segment of this market is **mobile games**. The UK mobile game market is valued at \$3bn. Approximately 90% of 12-15-year olds play video games and spend 14 hours playing per week (Pew Research, 2018). There is great evidence to support use of gaming to change behaviours in young people (King et al, 2013; Chow et al, 2020).



In a recent study by Oxford University, video games were shown to boost player mental health and wellbeing.

Johannes, N., Vuorre, M. and Przybylski, A.K., 2021. Royal Society Open Science.

Gaming technology is proven in multiple industries and has great potential for COVID compliance:



- 01** Mobile games are ubiquitous across society
- 02** Games are effective for behaviour change
- 03** Game analytics provide real-time data collection on player behaviours
- 04** Games provide personalised feedback for players

Game Doctor platform for game development:



Mobile Game

Mobile game developed using techniques in psychology, gamification and big data. Game delivered as mobile application that is accessible via personal devices.

+ Engagement, + Education



Analytics

Game analytics developed using scientific frameworks for behaviour change. Analytics measure player behaviours using in-game events and activities.

+ Real-time data collection



Innovative data

Real-time data generated from game analytics provides insights on player engagement and behaviours to improve product and long-term strategy.

+ Innovative data for healthcare

The Project

In April 2020, Game Doctor received Innovate UK funding to develop a mobile game that would be used as an educational tool for young people (8-16) on COVID-19 compliance during the pandemic. The goal of the project was to develop a beta that would be piloted on Google Play in UK and US. The key objective was to assess the effectiveness of gaming technology and analytics as a tool to both change and measure COVID compliance behaviours. Findings from the pilot will inform updates to the game product and data collection method, to support governments with COVID strategy.



Concept

Remedy Quest design was informed by user research carried out with 370 school students across U.K. Casual gaming genre was selected due to its popularity and alignment with budget and project scope.



Timeline

Game Doctor designed, developed and soft launched Remedy Quest beta game in 6 months (June-November 2020). All work was completed remotely due to pandemic and COVID impacts.

Co-design approach for development



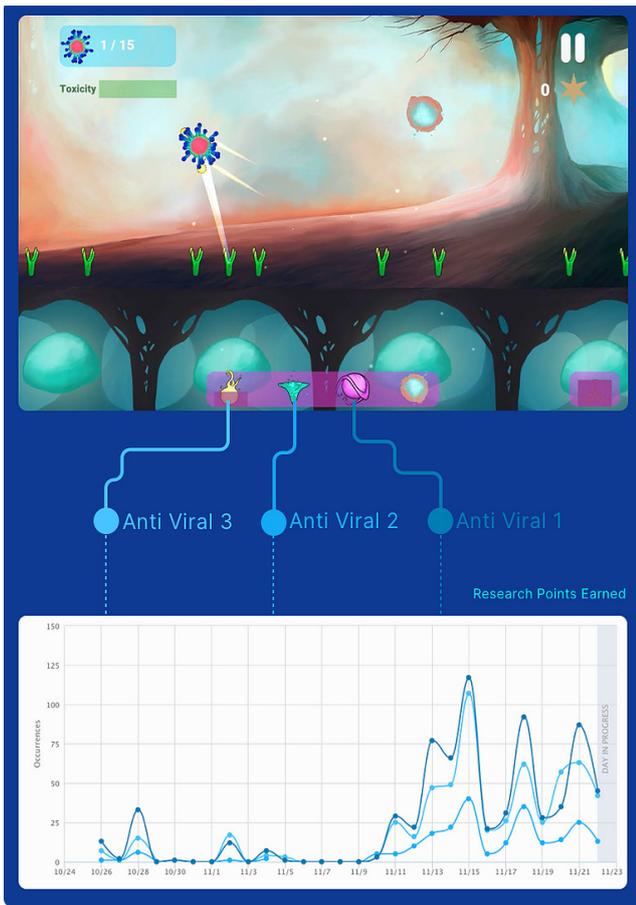
Remedy Quest was developed by agile methodology involving development of 5 prototypes that were tested with students and COVID-19 scientists from UK.

Technology Stack

Remedy Quest was developed using Unity game engine and was deployed for Android and iOS devices. Unity analytics was to measure player engagement and game usage. Analytics were designed to track behaviours in game environment (score, vaccines used, duration) and engagement with educational content associated with COVID. Standards analytics were used to measure engagement and retention.

Data Analysis

Data was exported as JSON files from Unity analytics raw data export dashboard. JSON data was transformed in R studio and uploaded to AWS S3 as csv. Database was created using AWS Glue and Athena. Data was analysed and visualised using Athena and Quicksight respectively. Open source data for COVID cases was obtained from John Hopkins database, which was combined with game data in database.



Remedy Quest: Product Summary

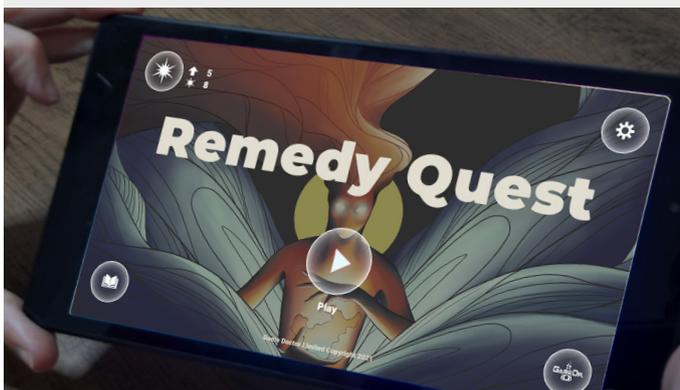
Remedy Quest is a casual mobile game designed to engage players with COVID compliance and motivate them to practice positive behaviours in the real world. Players must defend their world from virus invasion using different tools and remedies - concurrent with real life defenses. Positive actions reward players with 'research points' which they can use to upgrade and develop their vaccines. Game difficulty (intensity of virus waves) increases between levels as social distancing and facemask levels decrease.

The selected game mechanics were used as they are easy to pick up and master; and create a positive environment that does not cause anxiety. **The game can be played and understood by a wide range of players, and has great potential for expansion and further development.**

Project Stakeholders

COVID-19 researchers from University of Glasgow and Queens Belfast University validated scientific content in game. Psychology researcher from University of Stirling supported user research and checked content would not increase anxiety in players. Public Health Lecturer from University of Manchester was

supported public health content. Cyber Schools Gloucestershire supported testing of prototype games with English schools. Microbiology Society, Scottish Games Network, Times Education Supplement supported with marketing. Sheridans supported all legal work. The Data Lab Scotland supported with funding proposals. Masters students from Heriot Watt University supported data analysis.



CONTRIBUTORS

- Dr Pamela Rackow, University of Stirling
- Professor David Robertson, University of Glasgow
- Dr Lindsay Broadbent, Queens Belfast University
- Dr Connor Bamford, Queens Belfast University
- Prof Roger Harrison, Manchester University

Results

Remedy Quest beta version was soft launched for free on Google Play. The pilot was conducted between November 1st 2020 until January 31st 2021. Google Ads marketing campaigns and YouTube trailer was used to target game to UK and Americas. Game analytics were used to track player engagement, usage and in-game behaviours during the pilot. Only minor game updates (bug fixes) were made during the pilot phase. The pilot phase correlated with the second COVID wave in UK and US, and approval of COVID vaccine. Personal information was not collected from players during pilot.



Players

6000+



No of unique players

During the pilot, the game received 6000 unique players and 3000 active players (players who completed a game session). Top 5 countries for active users were US, UK, Brazil and Mexico.

- ❑ US: 1500 Active Users
- ❑ UK: 500 Active Users
- ❑ Brazil: 500 Active Users
- ❑ Mexico: 300 Active Users

Engagement

800+



Gameplay hours

Active players spent a total of 800 hours in Remedy Quest. The game received highest number of players in January 2021. Player engagement was higher in countries with higher cases of COVID-19 during pilot period.

- ❑ Players spent an average of 0.2 hours in game
- ❑ November 2020 = 928 active players
- ❑ December 2020 = 1006 active players
- ❑ January 2021 = 1142 active players

80% ↑

% of sessions completed successfully.

To measure player performance, we used analytics to track win/lose outcomes. 80% of all games played by players ended in the 'win state'. This is achieved when all COVID are defeated from the level. Research points are rewarded when players use remedies correctly. Research points increased over time for US players, suggesting that repeated gameplay was important to learn how COVID and remedies worked in the game.

20% ↑

Players using vaccine in game

Analytics were used to measure how engaged players were with the vaccine remedy. 20% of players were shown to use the vaccine remedy in game sessions. Brazil players were shown to be the highest users of the vaccine remedy, followed by US. Vaccine usage by players was highest in December 2020, despite player numbers being highest in January 2021.

50% ↑

Players are motivated to learn

Of the 3000 active users, 1.7k used the tutorial and 1.3k completed the tutorial. This indicates players were educationally motivated and had good intentions to learn about COVID-19 and the concepts depicted in the game. Tutorial included short overview of COVID-19 infection, introduction into the scientific function of each remedy, and instructions on how to play the game.

10% ↑

7 day retention in player community

Remedy Quest pilot allowed Game Doctor to establish a gaming community for COVID and vaccine education. Analytics data showed that day 1 retention for Remedy Quest (number of players using game two days in a row) was 20%. Day 7 retention (players who opened game 7 days after first session) was 10%. The game is currently rated 3.5/5 on Google Play with 36 total reviews.

Future Work

Global Tool for Vaccine Education

This pilot project has provided an excellent platform to validate the technical approach for Remedy Quest. Our biggest goal for 2021/22 is to expand Remedy Quest into a global tool for vaccine education. To achieve this, we will improve learning content on how vaccines work and add quizzes to measure player understanding of these concepts. We will work with governments and health agencies to support vaccine campaigns in hard to reach groups. We are looking for funding support to achieve this goal and update the game.

Analytics Updates

Pandemic management has relied significantly on innovative sources of health data. Using scientific frameworks for behaviour change, we will update the analytics to measure player attitudes and motivations towards vaccines. This will be achieved by implementation of engaging quiz module. Anonymised data will be analysed and used to demonstrate efficacy of game at improving vaccine understanding and acceptance.



The Ask

We are looking for marketing and sponsorship partners to elevate the product and reach. We are interested in working with:

- Educational or game publishers
- Health companies and agencies

Contact

If you are interested in the project please contact the team:

Email: info@gamedoctor.co.uk
Website: www.gamedoctor.co.uk
Phone: +441444390607