How can a gamified mobile app be designed to help motivate and facilitate outdoor exploration among 18-24-year-olds?

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Abstract

The concept of gamification, originating in the early 21st century, finds applications in various fields. This project delves into the fusion of gamification and outdoor exploration among young adults, seeking to leverage these strategies to enhance engagement and motivation. Yu-Kai Chou's 'Octalysis Framework' serves as a guiding force throughout much of this project providing key core human drives.

The initial phases of the project explored the application of the Octalysis Framework in conceptualising app features and user flows. Subsequent experiments delved into the impact of visual design on user experience, user-testing low-fidelity prototypes, and refining the app's gamification elements, culminating in a coded application. The user test and experiment findings highlighted the significance of engagement, emotional design, and the potential for social influence in motivating outdoor exploration.

The project's success in meeting its initial objectives lays the foundation for future development and user testing. This research serves as a springboard for ongoing advancements, driving the app's evolution to better engage and motivate young adults in their outdoor exploration journey.

Introduction

When you think of gamification you probably think of video games, when in reality this concept casts a much wider net than one would initially think. There are examples of gamification being applied to education, healthcare, employee training and more. Yu-Kai Chou, one of the earliest pioneers of gamification developed a framework named the 'Octalysis Framework', which was designed to help with understanding and implementing gamification strategies (Figure 1). Chou defined gamification as the craft of deriving fun and engaging elements found typically in games and thoughtfully applying them to real-world or productive activities (Chou, 2015).

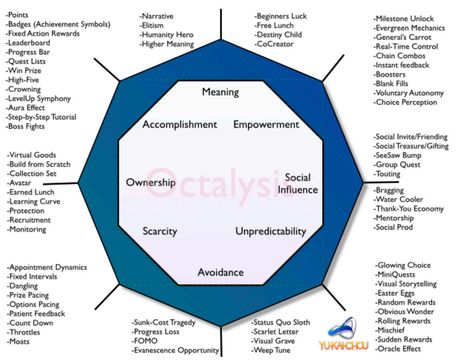

Figure 1. The Octalysis Framework, 2015. Courtesy of Yu-Kai Chou.

To use gamification, there must be a subject to apply it to. The subject that this report investigates is outdoor exploration among young adults, exploring how gamification can be utilised to enhance their interaction with the outdoors. Outdoor environments have been found to have a profound impact on adolescent wellbeing by serving social life, nature contact and other recreational activities. However, many young people spend much time indoors in sedentary activity with negative consequences for their wellbeing. This is a concerning trend attributed to circumstances in family, school and everyday life linked to globalisation, urbanisation, digitalisation and environmental degradation (Wales et al., 2022). Poorer mental health status was also found among adolescents using screen time more than 2–3 hours per day (Hoare et al., 2016).

For these reasons, it's vital to reach this audience in a way that they will respond to it. By combining gamification to target the core human drives outlined in the Octalysis Framework, and a mobile application to access the target audience in a place where their attention is being used most.

Method

Each experiment investigated a question which was derived from the overarching research question. The project incorporated mixed research methods which covered areas that required inquiry and development to reach a final artefact.

The first experiment involved using the Octalysis Framework to help in the creation of concepts and user flows. The second experiment involved creating designs which were representative of a design style discovered through academic research, and then preference testing them amongst the target audience. For the third and fourth experiments, low-fidelity prototypes were created and then user-tested among members of the audience to gain insights for further development which took place during experiment four. The two final refinements involved further development of the visual designs, and development of the app from high fidelity prototype to coded product.

Experiments

Experiment 1: Octalysis Framework Implementation

In order to understand gamification and how it can be utilised, the first experiment was conducted using a concept called the 'Octalysis Framework'. As discussed previously, this framework is designed to help with understanding and implementing gamification strategies. Results from one study revealed that the framework itself can be helpful in the creation and evaluation of concepts, especially when extensive user research is not possible (Weber et al., 2022). So to begin, an outline of the app user flows and features was created to establish what was thought to be a part of the app. Then, the core drives from the framework were used to assist with generating revised ideas, user flows and features (Figure 2).

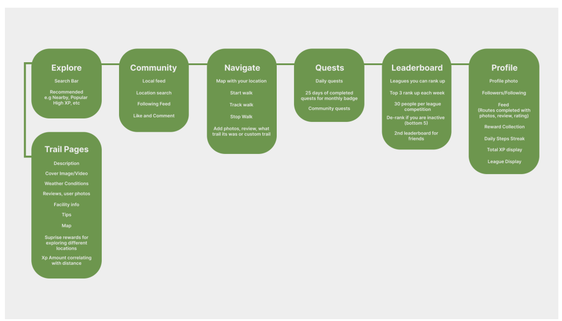

Figure 2. Experiment 1.

Although this may be observed as a basic experiment, it helped with establishing the initial ideas and groundwork for the experiments to come, providing a direction for where the project should go.

Experiment 2: Visual Design Influence

With an initial understanding of gamification and how it could be applied within the context of this app, this second experiment was aimed at the visual aspect of the project and how this can be used to enhance the user experience of the final artefact.

A study assessing usability and quality in visual design interfaces for tablet games concluded with findings that participants experienced a higher level of user engagement in the game interface with high-quality visual design (Kokil & Harwood, 2022). In addition to this, findings from another study showed that school learners using academic material featuring cheerful emotional designs with circular forms, warm colours, and anthropomorphisms had more positive emotions and higher comprehension and transfer test scores (Ahdab Najib Hijazi & Hanif Baharin, 2023).

This research provided a clear description of what the design should incorporate, and so three variations of designs were distributed to members of the target audience to preference test and provide written feedback (Figure 3). From the results, the clean shapes with strokes were generally the favourite, with some varying results (Figure 4). This was also confirmed when participants were asked whether they preferred the addition of a stroke or not, almost everyone said they did.

Figure 3. Experiment 2.

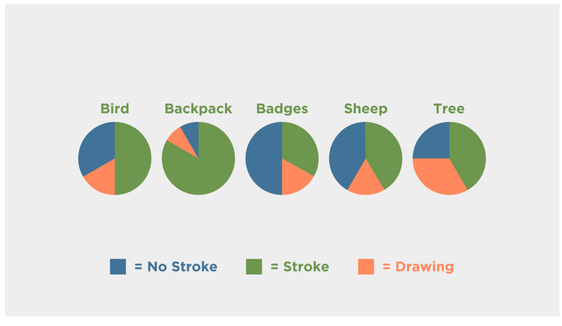

Figure 4. Experiment 2.

The results indicated that despite a mixed response, there was a pull towards the simple shape options, and more specifically including a stroke. Conducting this experiment was important as visual designs have the power to induce emotions in users such as motivation and contentment (Ahdab Najib Hijazi & Hanif Baharin, 2023). The ability to induce/influence emotions is something which has great importance when attempting to connect with a target audience effectively.

Experiment 3: App Implementation

After researching some initial ideas and concepts, it was time to implement the information gained to create a low fidelity prototype, and in the process gain an improved understanding of the user flows and how these can be optimised.

As established in the first experiment, the prototype featured an Explore page; for finding different walking trails, Trail pages; pages which feature the information of each trail, a Community page; for keeping up to date with locals' and friends' walks, a Navigate page; for tracking and posting your walks, a Quests page; for earning your monthly badge via daily challenges, a Leaderboard page; for seeing how you're doing compared to your league and your friends, and a Profile page; for displaying your stats, info, and a log of trails you've been on.

This prototype was user-tested amongst members of the target audience, and valuable insights were gained. The first insight was that users didn't think a monthly badge would be a factor that would motivate them to complete Quests. One example from a study analysing various gamification concepts in a learning environment found that teacher candidates responded positively and above average towards interpersonal competition in the gamification process (Bicen et al., 2022). This is something the Quests page did not possess. Secondly, the Navigate tab was perceived to be lacking immersion, and lastly, the navigation bar appeared confusing and overcrowded. There were a lot of things to improve, but the user tests proved effective in analysing what was at fault.

Experiment 4: Furthering Core Drives

From the previous week, it was clear what areas of the prototype were weaker. Focusing on two dimensions of the Octalysis framework 'Social Influence and Relatedness' and 'Development and Accomplishment', these core drives were selected in relation to the identified weak points discovered. The quests tab had to be substituted with an improved solution which was more effective, and this required a deeper dive on these specific core drives.

One study observed that during walking competitions they set up within a fitness app, the average user increased physical activity by 23% (Shameli et al., 2016). Another study stated that staying healthy, achieving specific goals and socialising represent key motivational factors for young adults to be active (Capel et al., 2015). With these insights, this led to the implementation of an 'Events' tab. This tab would be utilised for hosting different events such as joinable competitions, challenges, or social events. This taps into both the targeted core drive as users desire to be seen as excelling ahead of others, while also developing and accomplishing goals via earning awards.

From the user test feedback, changes which had been made were received well, but it became evident further development was required to establish a complete high-fidelity prototype ready for production. So further development was made to the overall aesthetic of the app, the Navigate tab, and the Events tab (Figure 5).

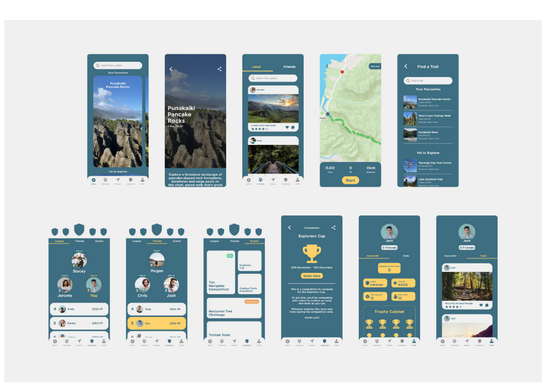

Figure 5. Experiment 4.

Refinements

Refinement 1: Applying Informed Visual Design

Since the preference tests of visual designs were conducted in Experiment 2, there weren't any further developments on this front. To develop a well-rounded response to the research question, further visual designs were required to be made based on the research from Experiment 2.

Refinement 2: Developing with Code

Using HTML, CSS and Javascript, a coded web version of the app prototype was created with the goal of serving as an MVP (Figure 6). Adapting this response from prototype to code was particularly important for bringing the final response one step closer to being consumer-ready. It allowed for gathering further insights into how the app operates and the technical practicality of the application's implementation.

Conclusion

Throughout this project, exploring the fusion of gamification and outdoor exploration for young adults has been a compelling venture. The project evolved through an iterative process that was deeply influenced by the Octalysis framework. This framework allowed for the translation of research insights into engaging features within the app. As this research project has reached its conclusion with the implementation of a mobile application, it also paves the way for further development. The current research and iteration of the app lays the groundwork for additional user testing and enhancements and serves as a good point for ongoing progression, opening an opportunity for the evolution of the app to better serve and motivate its users in their outdoor exploration journeys.

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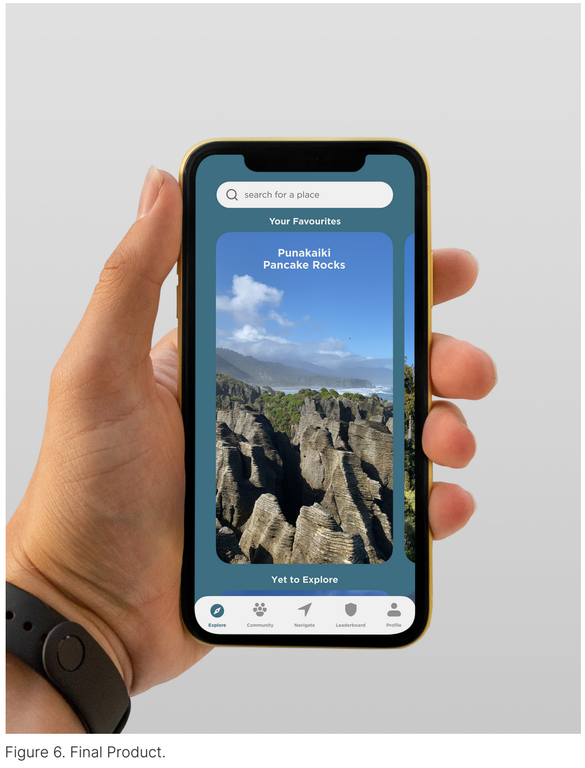

Figure 6. Final Product.