



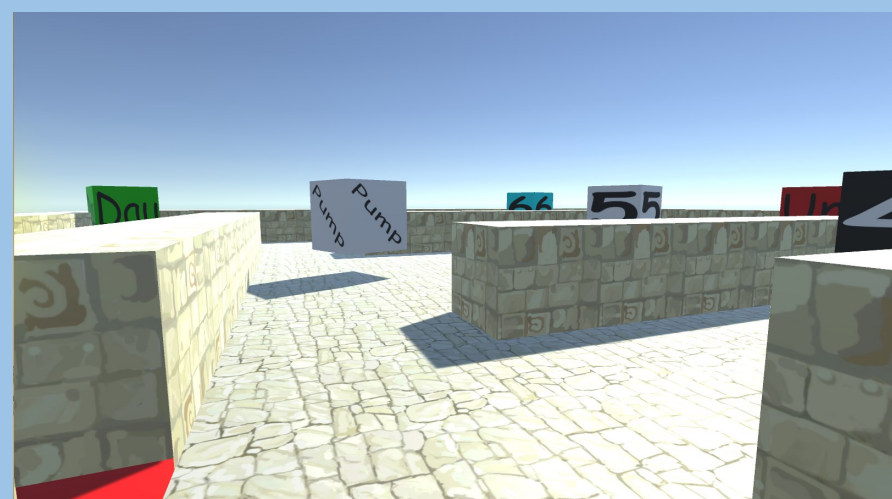
Teaching Through Motivation in Video Games

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1. Introduction and Aims & Objectives

As the key factor in influencing our decisions and actions, motivation has a high importance within education. Motivation is also a factor involved in development of video games and over the years as more and more research has gone into improving the techniques & mechanics deployed to promote play and enjoyment. As both fields benefit from motivation, this project will investigate the binding of education and video games with motivation to promote learning.



There are 2 Aims which were outlined to be followed to the completion of the project:

- To Investigate the Techniques and Mechanics that promote Motivation.
- To Develop an Educational Video Game incorporating Motivational Techniques.

To achieve these aims, 4 objectives were designed to guide the flow of the project to achieve the aims:

- To Research Popular Motivational Theories in Psychology.
- To Research Motivational Techniques and Mechanics used in Video Games.
- To Implement the Motivational Elements into the Game.
- To Promote Learning through Gameplay”

2. Methodology

A review of literature was conducted to research and discover motivational theories and techniques before design & development began. An adaptation of the SCRUM methodology was used with adaptations to accommodate the lone developer nature of the project. Some features of Feature Driven Design were brought in to guide the development also, promoting completion of features in every SCRUM sprint.

3. Design & Implementation

3 Motivational Theories were decided to be gamified and implemented which were:

- Don't Break the Chain/The Seinfeld Hack - Habit Motivation [1]
- Reward Motivation Theory [2]
- Goal Setting Theory [3]

Other Key Design Decisions that were Implemented include:

- Unity was chosen as the development engine due to it's ability to produce fast prototypes and the range of documentation and features it possesses.
- Short but Regular Lessons in order for flexibility in allowing the game to fit into busy schedules.
- Emphasising the player is learning on a journey by exploring for one's self to give sense of control.
- Quiz levels differ from the learning levels to keep game fresh and test progress.
- Interesting words extra feature to allow motivated individuals to explore further.

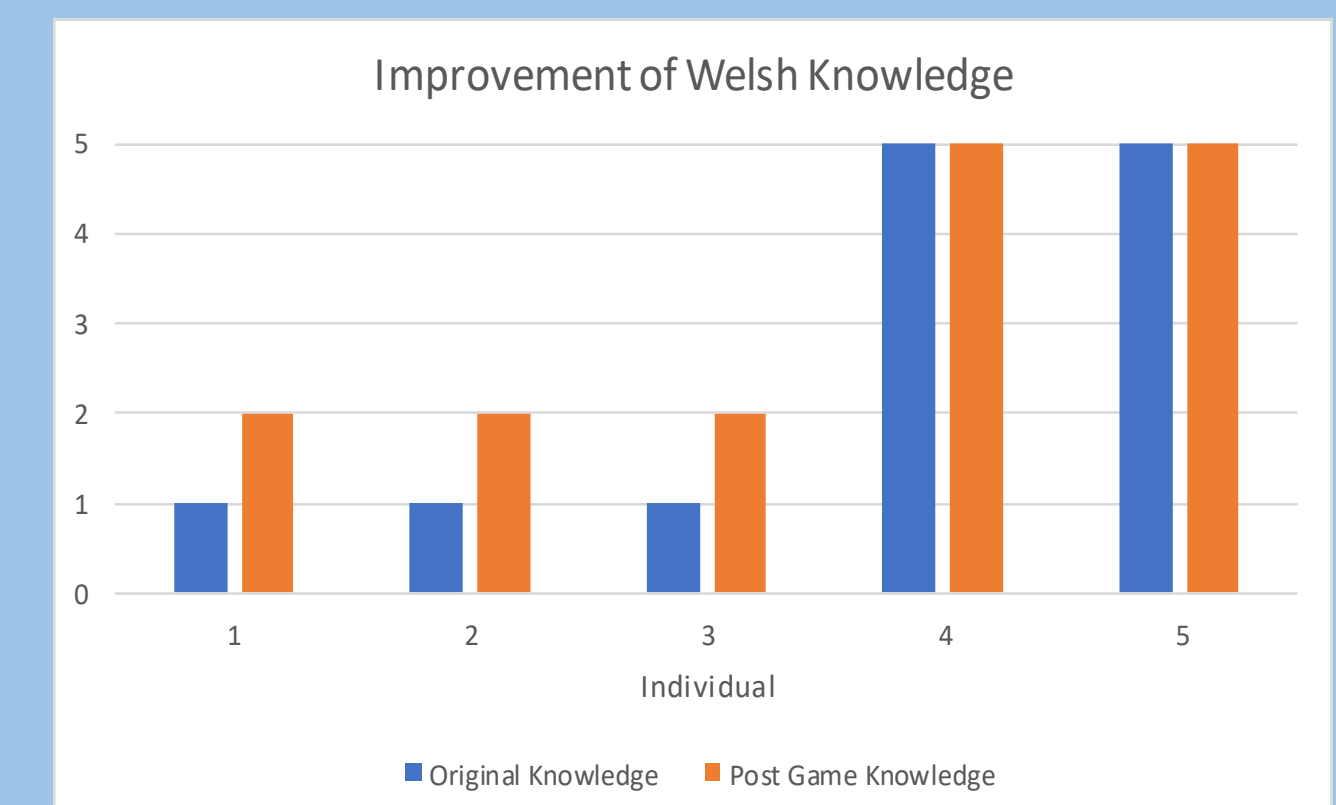
References

- [1] P. Lally, C. H. M. Van Jaarsveld, H. W. W. Potts, and J. Wardle, "How are habits formed: Modeling habit formation in the real world," *Eur. J. Soc. Psychol.*, vol. 40, no. 6, pp. 998–1009, 2010.
- [2] D. Jovanovic and M. Matejevic, "Relationship between Rewards and Intrinsic Motivation for Learning – Researches Review," *Procedia - Soc. Behav. Sci.*, vol. 149, pp. 456–460, 2014.
- [3] E. A. Locke, "Toward a theory of task motivation and incentives," *Organ. Behav. Hum. Perform.*, vol. 3, no. 2, pp. 157–189, 1968.

Conclusion & Future Improvements

From the feedback of the survey, it can be concluded that the 3 motivational theories contribute greatly to improving the motivation of an individual within the game in their gamified versions. Along with these, the other key decisions made during the design phase of the SCRUM seem to have also had the desired effect. In general, there was an improvement seen in the knowledge of over half the users playing the game for the 2 week period.

Despite this feedback proving positive, there is still room for future improvement of these techniques which is reflected in the scores achieved by these methods.



The feedback provided has allowed many improvements to be planned in order to further boost the effectiveness of this game. Some of these improvements include:

- Improve the Learning Levels by introducing Scoring or other Competitive nature features.
- Daily Streak Rewards to Further Reward continuous play.
- Mix up the Testing Levels by introducing an adaption on the learning levels to pair the words without help.
- Graphical upgrade from the textured cubes to 3D rotating words.