**COMPUTING HONOURS PROJECT SPECIFICATION FORM**

**Project Title:** Aninvestigation intothe genre of puzzle games: assessing their potential to facilitate and support problem-solving skills, logic and knowledge retention.

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**Supervisor:** Dr Gavin Baxter

**Moderator:** Dr Thomas Hainey

**Outline of Project:**

The aim of this project is to provide an in-depth study on the subject area of puzzle games with a view of assessing whether they are beneficial for aiding in developing problem-solving skills, logic and knowledge retention. To assist the research from a practical perspective a 3D game will be created using the game engine Unity that conforms to the horror genre. The game will be designed in such a way that allows the player to utilise their skills of logic and deduction when making a series of choices throughout the game, having to find clues and retain knowledge to survive in the game. The horror genre has been chosen to underpin the game as it will adopt a puzzle type approach though with stealth and atmospheric elements where the player has to be cognitively aware of their engagement in the game.

The research will undertake a literature review on the subject of puzzles games to provide a theoretical link towards their potential for learning and facilitating cognitive skills. The game will be documented and tested throughout development with subjects being invited to play-test the game – this will form the context of a pre and post-test study. Participant information sheets will be provided and subjects participating in the study will be anonymised. The questionnaires issued to participants in this study will be analysed and interpreted in the overall context of the research.

GitHub will be used throughout the project for the purpose of version control and project management. As previously mentioned all game testing will be documented as will the entire development of the game. The results generated from this research will be reviewed and future research directions will be provided.

**A Passable Project will:**

1. Review the literature surrounding puzzle games.
2. Develop a game that has elements of the literature review.
3. Perform an evaluation of the game via conducting a survey to collect data.
4. Analyse the data for answers and compare them to prior research

**A First-Class Project will:**

1. Undertake an in-depth review of academic literature surrounding puzzle games with the psychological effect they both have on supporting knowledge retention and logic.
2. Create a game and technical design document.
3. Develop a game that reflects the theoretical research carried out.
4. Document the games development and changes via GitHub.
5. Document the testing of the game using the white box method.
6. Perform an evaluation of the game via conducting a comprehensive survey to collect data.
7. Analyse and evaluate the collection of data results, comparing them to research found.
8. Provide recommendations for future research.

**Reading List:**

Adam, C.O. Michael, D.P. (2014) Computers in Human Behavior. [Online] Available: [https://doi.org/10.1016/j.chb.2014.04.046](https://doi.org/10.1016/j.chb.2014.04.046" \o "Persistent link using digital object identifier" \t "_blank) [Accessed: 2 September 2018]

Nanyang Technological University (2014) Puzzle games can improve mental flexibility.

[Online] Available: <https://www.sciencedaily.com/releases/2014/06/140624092528.html> [Accessed: 17 September 2018].

Alexandra, V. Robyn, L. (2016) Cognitive rehabilitation of attention deficits in traumatic brain injury using action video games: A controlled trial. Clinical Psychology & Neuropsychology [Online] Available: <https://doi.org/10.1080/23311908.2016.1143732> [Accessed: 7 September 2018]

Craig, A, A. Brad, J.B. (2001) Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature. Psychological Science [Online] Available: <https://doi.org/10.1111/1467-9280.00366> [Accessed: 17 September 2018]

Walter, R.B. Arthur, F.K. Daniel J.S. Monica, F. Gabriele, G. (2008) The effects of video game playing on attention, memory, and executive control. Acta Psychologica. [Online] Vol129, Pages 387-398. Available: <https://doi.org/10.1016/j.actpsy.2008.09.005> [Accessed: 17 September 2018]

Kasey L. P. Patricia J. B. Naomi J. A. Melissa A. P. Louis A. (2013) Effects of video-game play on information processing: A meta-analytic investigation. Psychonomic Bulletin & Review [Online] Vol.20, Pages 1055-1079. Available: <https://doi.org/10.3758/s13423-013-0418-z> [Accessed: 11 September 2018]

**Resources Required:**

**Software**

Windows 10

Unity

3D Software (Blender or Maya)

Microsoft Word

**Hardware**

Monitor

Speakers

Keyboard

Mouse

GeForce GTX 980

Intel i7-6820HK

32GB of Ram

**Marking Scheme:**

**Marks**

Introduction 10

Literature Review 15

Game Design 15

Game Implementation 35

Testing and evaluation 10

Conclusion 10

Critical Self-Appraisal 5

**Signed:**

**Student Supervisor Moderator Year Leader**

**IMPORTANT: *By signing this form all signatories are confirming that any potential ethical issues have been considered and necessary actions undertaken and that Mark Stansfield (Module Coordinator) and Malcolm Crowe (Chair of School Ethics Committee) have been informed of any potential ethical issues relating to this proposed Hons Project.***