

FMP Proposal

by Andrew Davis

Submission date: 21-Oct-2024 12:09PM (UTC+0100)

Submission ID: 240754959

File name: 41576_Andrew_Davis_FMP_Proposal_611634_1595159744.docx (929.93K)

Word count: 1899

Character count: 11315



INDEPENDENT PROJECT

**Smart Play: Balancing the positive and negative
aspects of screen time through puzzle game design**

BA (hons) Computer Game Design - ACCA6020

Project Supervisor:

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1.0 Table of Contents

1.0 Contents.....	1-2
2.0 Identification of the problem	3
3.0 Aims & SMART Objectives	3
3.1 Specific.....	3
3.2 Measurable	3
3.3 Achievable.....	3
3.4 Relevant.....	3
3.5 Time-Bound.....	3
4.0 Why This Project Is Worth Doing	4
5.0 What the Project Needs to Do to Succeed	4-5
5.1 Educational Value.....	4
5.2 Screen Time Management Features.....	4
5.3 Engagement and Usability	4
5.4 User Testing and Feedback.....	5
6.0 Deliverables	5
6.1 Game Prototype.....	5
6.2 Screen Time Analysis Report	5
6.3 Project Documentation	5
6.4 Presentation and Demo.....	5
7.0 Relation to Literature Review	5
8.0 Ethical Issues Raised by the Project.....	5
9.0 What Has Already Been Done in the Field:	6
10.0 Topic Familiarity	6
11.0 Brief Literature Review	7

12.0 Selection of Model & Concepts	7
12.1 Flow Theory	7
12.2 Gamification Principles.....	7
12.3 Screen Time and Cognitive Development Models	7
13.0 Conclusion	8
14.0 References	9
15.0 Image References	10
16.0 Bibliography	10-11

2.0 Identification of the Problem

Research highlights the importance of mindful screen use, but many educational games lack mechanisms to manage this balance effectively. This project investigates

how to balance the positive aspects of screen-based learning with the drawbacks of excessive screen time by designing a puzzle game that promotes learning and encourages users to manage their screen time mindfully.

3.0 Aims & SMART Objectives

The primary aim of this project is to design and develop a puzzle game that integrates educational content while incorporating features to encourage mindful screen time management.

SMART Objectives

- 3.1 Specific:** Develop a puzzle game that promotes learning in subjects such as logic, problem-solving, and critical thinking, while also integrating features like break reminders and screen time tracking to manage digital habits.
- 3.2 Measurable:** The game will log user interactions and provide insights into how often players take breaks, how long they play, and how well they retain the educational content.
- 3.3 Achievable:** Use accessible tools like *Unreal Engine* [1] and existing frameworks for puzzle design to create a functional game within the project timeline.
- 3.4 Relevant:** Align the project with current debates about the risks of prolonged screen time and the potential benefits of educational gaming, ensuring relevance to real-world digital habits.
- 3.5 Time-bound:** Complete all stages—research, design, development, testing, and documentation—over eight months, with clearly defined milestones for each phase.

4.0 Why This Project Is Worth Doing

This project addresses a significant gap in the market by designing educational games that promote responsible screen usage. The game will contribute to the growing field

of educational game design, offering insights into how structured screen time can enhance learning while avoiding digital fatigue.

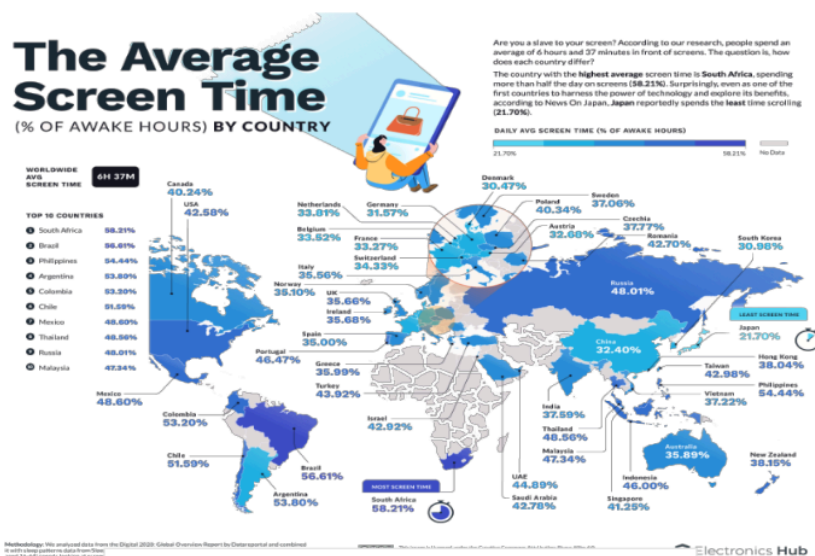


Figure:1 Average Screen Time from 45 countries

5.0 What the Project Needs to Do to Succeed

For the project to succeed, it must meet the following criteria:

- 5.1 Educational Value:** The puzzles must effectively teach or reinforce learning concepts such as critical thinking, logic, and memory retention.
- 5.2 Screen Time Management Features:** The game must include features such as timers and reminders to prompt users to take breaks and monitor their digital habits.
- 5.3 Engagement and Usability:** The game should offer an engaging and user-friendly experience, balancing puzzle difficulty to appeal to a broad audience.
- 5.4 User Testing and Feedback:** Conduct user testing to verify the educational impact and effectiveness of screen time management features. Feedback should guide refinements before final delivery.

6.0 Deliverables

- 6.1 Game Prototype:** A functional puzzle game that integrates educational content and screen time management features.

6.2 Screen Time Analysis Report: A report analysing break frequency, total playtime, and educational outcomes.

6.3 Project Documentation: Comprehensive documentation outlining the research, design process, educational approach, and user testing results.

6.4 Presentation and Demo: A presentation showcasing the game, summarizing findings, and demonstrating its impact on learning and screen time management.

7.0 Relation to Literature Review

This project builds on existing research in educational game design and the cognitive effects of screen time. Studies by Gentile et al. [2] and Anderson and Dill [3] highlight the benefits and risks of video game use, particularly the balance between learning and negative outcomes like cognitive overload. Csikszentmihalyi's Flow Theory [4] provides a foundation for balancing engagement and avoiding screen fatigue, ensuring the game maintains motivation without overstimulation. Przybylski and Weinstein's work [5] on screen time limits provides insights into how to integrate screen time management into educational settings.

8.0 Ethical Issues Raised by the Project

Ethical concerns include preventing excessive screen time through game design. To address this, the game will incorporate reminders and suggestions for breaks. Data privacy is another issue; user data (e.g., screen time behaviour) will be anonymized and used solely for research, with clear consent protocols in place. Ethical considerations will also extend to the inclusivity and accessibility of the game, ensuring it is suitable for a wide range of players.

9.0 What Has Already Been Done in the Field

While educational games like *Lumosity* [6] and *Big Brain Academy* [7] have made significant strides in promoting cognitive development, few integrate mechanisms to actively limit screen time. Research shows that games can improve learning outcomes, but excessive use can reduce attention and negatively impact physical health [3]. Therefore, this project seeks to address a gap by promoting screen time awareness within an educational gaming context.



Figure: 2 Lumosity

Figure: 3 Big Brain Academy

10.0 Topic Familiarity

Coursework and independent research during the degree have developed familiarity with game design, while screen time research and cognitive psychology will need to be extensively researched. Technical proficiency in game development tools, including *Unreal Engine* [1], and an understanding of *user-centred design principles* [10] will inform the project's design and execution.



Figure: 4 Unreal Engine Logo

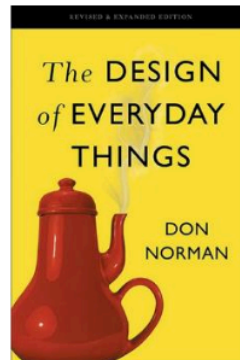


Figure: 5 The Design of Everyday Things

11.0

Brief Literature Review

- Gentile, D.A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., and Khoo, A., "Pathological video game use among youths: A two-year longitudinal study," *Paediatrics*, vol. 127, no. 2, pp. 319-329, 2014.
- Anderson, C.A. and Dill, K.E., "Video games and aggressive thoughts, feelings, and behaviour in the laboratory and in life," *Journal of Personality and Social Psychology*, vol. 78, no. 4, pp. 772-790, 2000.

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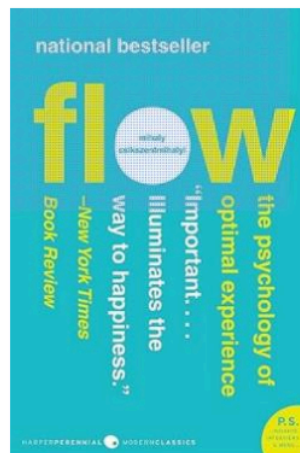


Figure 6: FLOW: The Psychology of optimal

12.0 Selection of Models & Concepts

12.1 Flow Theory [4]: Essential for ensuring the game remains engaging without overwhelming players, maintaining a balance between challenge and motivation.

12.2 Gamification Principles [8]: To guide the integration of educational elements, rewards, and feedback on screen time use.

12.3 Screen Time and Cognitive Development Models [2][3]: Informing the balance between productive screen-based learning and mindful screen time management.

13.0 Conclusion

This project seeks to tackle a pertinent issue in the digital age: balancing screen time with effective learning. By creating a puzzle game that promotes educational engagement and mindful screen use, the project addresses an important gap in the field of educational game design. Grounded in academic research, the project aims to offer insights into optimal screen time management and learning efficiency, providing a valuable tool for users and educators alike.

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- [3] D.A. Gentile, H. Choo, A. Liau, T. Sim, D. Li, D. Fung, and A. Khoo, "Pathological video game use among youths: A two-year longitudinal study," *Pediatrics*, vol. 127, no. 2, pp. 319-329, 2014. (accessed Oct. 6, 2024).

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[6] Lumosity, "Lumosity: Daily Brain Games," *Lumosity*, 2011.

<https://www.lumosity.com/en/> (accessed Oct. 9, 2024).

[7] Big Brain Academy, "Big Brain Academy," *Nintendo of Europe AG*, 2015. <https://www.nintendo.com/en-gb/Games/Nintendo-DS/Big-Brain-Academy-270143.html> (accessed Oct. 10, 2024).

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[10] D. A. Norman, *The design of everyday things*. New York, New York: Basic Books, 2013.

15.0 Image References

[Figure 1] R. Navarro, "The Average Screen Time and Usage by Country," *ElectronicsHub*, Apr. 18, 2023. <https://www.electronicshub.org/the-average-screen-time-and-usage-by-country/>

[Figure2] Lumosity, "Lumosity: Daily Brain Games," *Lumosity*, 2011.

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[Figure 4] E. GAMES, *Unreal Engine Logo*. Available: <https://www.unrealengine.com/en-US>

[Figure 5] D. A. Norman, *The design of everyday things*. New York, New York: Basic Books, 2013.

[Figure 6] "Flow: The Psychology of Optimal Experience [FLOW: THE PSYCHOLOGY OF OPTIMAL EXPERIENCE] By Csikszentmihalyi, Mihaly (Author) Jul-01-2008 Paperback: Amazon.co.uk: Mihaly Csikszentmihalyi: 9780061339202: Books," *Amazon.co.uk*, 2022. <https://www.amazon.co.uk/Flow-Psychology-Experience-Csikszentmihalyi-Jul-01-2008/dp/0061339202> (accessed Aug. 02, 2022).

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FMP Proposal

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

79/100

BA GAMES – PROJECT PROPOSAL – ACCA6020
INDEPENDENT PROJECT (5%)

Student **Andrew Davis**
Mark **79**

Intro / A&O (500 words)		
Project title; Identification of a specific problem to be investigated; Well-defined aims and SMART objectives; Explaining why this project is worth doing; Discussion of what the project needs to do in order to be a success; Description any deliverables that will be produced at the end of the project	40	32
Smart goals have been clearly defined within the context of an autonomous project and within the narrative of a written proposal. A breakdown of the project's purpose and motivation is provided in a clear and concise manner, presenting essential information quickly – this		

is good to see as the aims are easy to identify.

Background to the Project (500 words)

Description of how the work to be done by in the project relates to the work identified in the literature review; Discussion of any ethical issues raised by the project Identifying what has already been done within the field; Topic familiarity; Brief literature review using appropriate sources – 6-8 journal papers and book chapters rather than just websites; Selection of relevant models & concepts References in text have been presented showing an application of research to the work. A number of research sources have been cited in text as potential areas to investigate, displaying an application of knowledge and potential for this project to be explored. Ethical considerations have been presented related to screen time and exposure. This shouldn't be too much of a concern though depending on your testing methods we may have to look at completing an ethics form.	40	31
Document Presentation		
Correct spelling, grammar and punctuation; Flow of narrative/fluency; Coherence; Word processed ; Correct use of referencing with bibliography; Strict word limit	20	16

Document is well presented with clear section headings, title page, contents and references/bibliography. The proposal submitted is a clear and professional document containing information that will provide a good foundation for the early stages of your dissertation. Good work.		
TOTAL	100	79

PAGE 1
PAGE 2
PAGE 3
PAGE 4
PAGE 5
PAGE 6
PAGE 7
PAGE 8
PAGE 9
PAGE 10
PAGE 11

