



PRIMARY RESEARCH

# Cognitive skill games: Brain booster

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## Keywords

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## Abstract

In today's digital era, maintaining cognitive health is increasingly essential, especially as the global population ages and children experience heightened screen time. This research, "Brain Boosters," seeks to address these challenges by developing a mobile game designed to enhance cognitive functions across different age groups, specifically targeting young children and the elderly. The game integrates educational and brain-stimulating activities to promote memory, problem-solving skills, and mental agility. Through interactive and enjoyable gameplay, "Brain Boosters" aims to offer a constructive alternative to traditional mobile games, fostering cognitive development while providing entertainment. This research outlines the design, development, and evaluation phases necessary to create a mobile game that bridges generational gaps and contributes positively to cognitive well-being.

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## I. INTRODUCTION

In an era dominated by digital devices, there is an increasing need for engaging and beneficial content that caters to a diverse age range. Cognitive health is a critical aspect of overall well-being, and this research aims to address this need by developing a mobile game, "Brain Boosters," designed to stimulate the minds of both children and the elderly. The game will offer a fun and interactive way to exercise cognitive functions, promoting mental agility and well-being across generations [1].

### A. Problems Statements

- Traditional mobile games often lack a focus on brain stimulation.
- There is a growing need for inclusive, cross-generational mobile games that cater to both children and teenagers.
- There is a gap in the market for content that can simultaneously engage and benefit users at a young age.

### B. Research Objectives

- Develop an interactive and inclusive mobile game, "Brain Boosters," specifically designed to stimulate cognitive func-

tions in both children and teenagers.

- Combining entertainment with cognitive exercises, the research aims to contribute positively to the cognitive well-being of users.

### Scope and Limitation

1) *Scope* Create an engaging mobile game that promotes cognitive function improvement across various age groups, from young children to teenagers.

- Develop game mechanics that specifically target and enhance key cognitive functions such as memory, attention, problem-solving, critical thinking, and spatial awareness.
- Include puzzles, memory challenges, and strategy-based tasks that are both enjoyable and mentally stimulating.
- Design the game to include relaxing and stress-relieving elements to ensure cognitive exercises are balanced with activities that promote overall mental well-being and reduce cognitive fatigue.

The "Brain Boosters" research aims for ambitious goals, but faces constraints such as limited resources for user testing, requiring a focused approach. Ethical guidelines must be followed to ensure the game is suitable for children. Tech-

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nical limitations on mobile devices may affect feature implementation, necessitating compatibility considerations. Balancing feature richness with resource and technical constraints is crucial for the research's development.

## II. LITERATURE REVIEW

This research delves into the current benefits of mobile video games to understand the research's focus. It highlights the prevalence of smartphones among children aged 5 to 14 in Malaysia, indicating frequent usage. However, excessive screen time, especially on interactive devices, can hinder crucial developmental processes like attention span, memory, problem-solving, and critical thinking. There's a recognized need for multimedia that stimulates cognitive functions to counteract this disruption [2].

Numerous mobile games already target young children to enhance cognitive function, offering benefits like memory enhancement, hand-eye coordination improvement, and critical thinking development. However, some prioritize entertainment over education, potentially leading to addiction and passive consumption. Parents and educators need to choose high-quality games and balance screen time with other activities for holistic cognitive development. Thus, this research aims to create a mobile game that meets these criteria [3, 4, 5, 6].

### A. Existing Game

- Brain Test: Tricky Puzzle
- Ball Sort Puzzle – Color Game
- Avoiding Poop: Drop The Poop

All of the games have one common disadvantage which is the not very interactive main menu. The games focus only on the gameplay and not the whole game which this research plan to create a mobile game that are fully interactive.

## III. METHODOLOGY

Preproduction establishes the game's foundation by developing the storyline, characters, and overall theme, as well as defining gameplay mechanics and technical considerations. Detailed design documents and prototypes are created to refine the game's vision.

Production involves implementing game design, character animations, and mechanics using the chosen game engine, Unity. Artists create assets while level designers construct the game world. Continuous testing and refinement ensure alignment with the original vision.

Postproduction focuses on testing and quality assurance. Rigorous playtesting identifies and fixes glitches or bugs,

and adjustments are made based on feedback to enhance gameplay. Once polished, the game is prepared for launch, including finalizing marketing materials and coordinating distribution channels [7, 8, 9].

### A. Storyboard

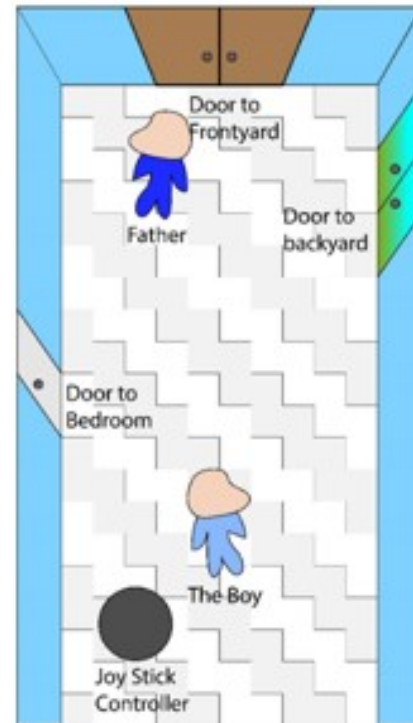


Fig. 1. Home living room

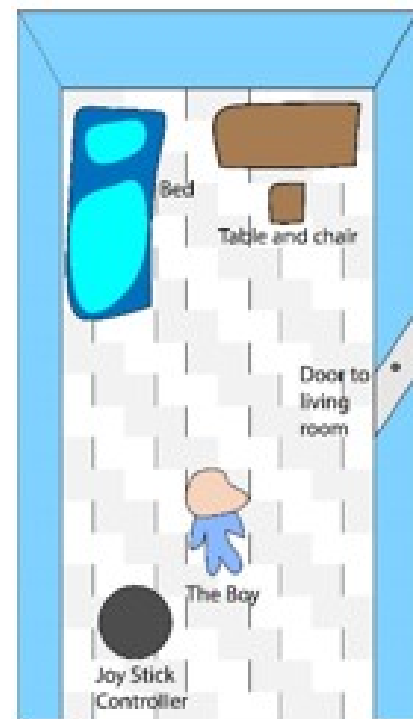


Fig. 2. Bedroom



Fig. 3. Backyard



Fig. 4. Front Yard

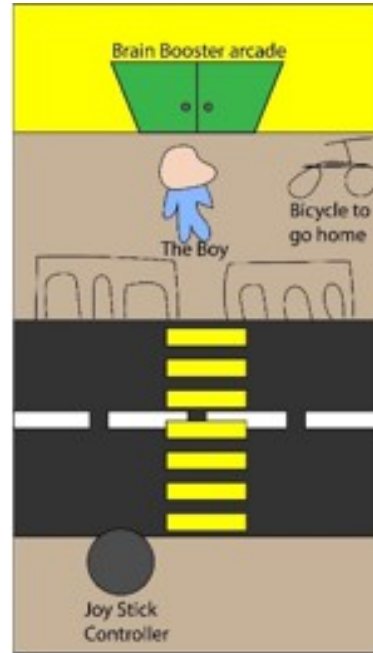


Fig. 5. Arcade entrance

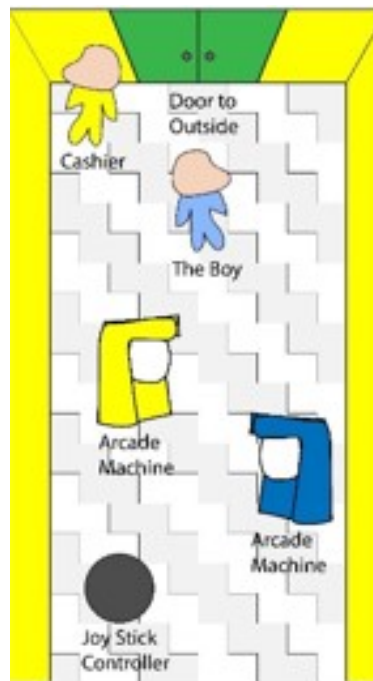


Fig. 6. Arcade

#### IV. CONCLUSION

"Brain Boosters" is a mobile game research that aims to revolutionize digital entertainment by combining fun and cognitive exercise for users of all ages. By addressing the growing concerns related to cognitive health, the research aims to make a positive impact on society's well-being. The game's inclusive design and focus on intergenerational benefits make it a unique and valuable addition to the digital content landscape.

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