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RED HERRINGS: AN INTERACTIVE MURDER MYSTERY GAME

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ABSTRACT

In this highly competitive world, critical thinking and problem-solving skills provide fundamental skills to be successful. Though traditional learning methods such as reading offer a great tool to enhance these skills further, implementing gamification in education, especially in the 21st century, has proven to not only develop these soft skills but also enhance an individual's creativity simultaneously. Hence, this project was created to explore how mystery-solving games contribute to critical thinking and problem-solving development. This project aims to design a mystery-solving game that challenges the players' analytical and theoretical skills while also encouraging reading in a more engaging way. The game was developed with puzzles requiring logical deduction and pattern recognition. A feedback survey was conducted to assess players' engagement and cognitive improvements. The findings proved that players demonstrated improved problem-solving skills after finishing the gameplay. Feedback suggests that interactive storytelling and created scenarios enhance learning outcomes. This study supports the use of gamified learning for critical thinking and problem-solving enhancement and suggests further exploration into educational game design.

Keywords: *critical thinking skills, problem-solving skills, gamification, mystery-solving games, educational game design*

INTRODUCTION

In this ever-changing world, critical thinking and problem-solving are crucial soft skills that one must obtain to survive in today's reality. With the rise of technology, the content displayed on social media brings more harm rather than good. Chen and Xiao (2022) found that social media addiction harms a student's mental repertoire and capacity, resulting in students losing focus in class. Due to social media, young adults nowadays do not have the brain cells to analyse situations critically and think outside of the box. Critical thinking is a domain-general thinking skill that is fundamentally used no matter what path or profession an individual pursues (Writers of UoPeople, 2024). Therefore, this project aims to sharpen critical thinking skills among young adults with a passion for mysteries.

‘Red Herrings’ is an interactive murder mystery game that challenges the players to solve the cases and scenarios by analysing clues and enhancing critical thinking and problem-solving skills while providing enjoyable and interactive gameplay. The game allows players to play the role of a detective, and they are obligated to solve the murder of Yasmine Mohamad, who is a first-year medical degree student. The three main suspects are Jasmine Mohamad, Haiqal Zariq, and Sofia Armin, who are all closely related to the victim. In the game, the players are provided with articles, police reports, victim case files, text message screenshots, and diary entries – all of which are intricately designed to give the realistic feel of a detective when handling real-life cases. This game is targeted at players over the age of 16, as the clues are written at a higher proficiency level. As the world is rapidly evolving, education must be adapted in creative ways. Hence, gamification in education is highlighted in this project. By combining gamification and education, individuals get to sharpen their critical thinking and problem-solving skills further, enabling them to create more innovative solutions to the complex problems that the digitalised era is providing nowadays. The primary purpose of ‘Red Herrings’ is to offer young adults an alternative tool to enhance their critical thinking and problem-solving skills in an interactive and immersive gameplay and promote reading in a more compelling way that encourages analytical skills. Therefore, this project intends to design a game that enhances critical thinking and problem-solving skills, creates scenarios that challenge communication skills, and promotes thoughtful analysis through games. This project holds entrepreneurial potential for expansion due to its gamification features that help enhance critical thinking and problem-solving skills. It can gain profit by conducting physical game sales in retail bookstores or e-commerce apps such as Shopee and Lazada, selling it at the estimated price of RM65. ‘Red Herrings’ also collaborated with other students by conducting a mini event where we showcased our innovations, giving us the opportunity to increase engagement among the potential buyers while also obtaining feedback.

METHODOLOGY

Three stages of development were conducted when creating this project. The first stage includes extensive drafting and planning on the game’s content. The second stage is developing the product based on the outline. The third stage is feedback collection and data analysis. The detailed explanation of each stage is as follows:

Content drafting

Since no pre-survey was conducted for this project, the first stage of developing ‘Red Herrings’ involved designing the game’s narrative structure and combining it with the critical thinking elements, such as analysing, evaluating, and creating (Ahuja, 2024), which are central to the gameplay. The focus was on creating a compelling storyline that would challenge players to think critically and solve problems. This process included creating detailed characters, suspenseful plot twists, and ambiguous plot holes that spur players to use logic and reasoning.

In developing the storyline, each plot element was taken into thorough consideration to ensure every sentence would contribute to fostering critical thinking, ensuring that the players’ choices

impacted the storyline and led to multiple outcomes. The content drafting of the game was constant, as continuous testing was involved to ensure that the game challenged critical thinking seamlessly.

Development Process

The next stage of creating 'Red Herrings' is the development stage, in which it was executed as a single-phase process, with the initial version of the game functioning as both the prototype and the final product. Firstly, the designs for the visual components of the game were drafted. For this project, each clue had different ways of creation. Clues, such as the Questioning Transcripts, were created using Google Documents, as the interface is foolproof and organised. Canva and Gemini AI were used to develop and inspire visual clues in the game fully, such as police logos and letterhead, victim and suspect files, victim and suspect pictures, diary entries, and text message screenshots, because of their convenient features. Extensive research on realistic components such as police reports and suspect files was done to ensure the players undergo an authentic detective-like experience.

The material creation of the game focused on creating scenarios in each clue, where players are compelled to analyse and critically connect the dots between each narrative provided in the game. Each clue was written and created ambiguously so as not to give out too much information and to allow the players to use their critical thinking and problem-solving skills to find the murderer.

After proofreading and editing the finalised clues, the refined game was sent out for printing. The production took only a day to complete. High-quality paper materials were used during the printing process to provide a professional and durable-looking appearance, ensuring that it is fitting to be played multiple times with many players. Then, the finalised product was ready for testing. Game testimony included young adults ranging from the ages of 16 to 21. After engaging in gameplay, participants were asked to fill in the feedback form to provide their insights on the game's ability to achieve its objectives and areas for improvement for the project.

This project began with pitching ideas to the appointed supervisor during consultation. Once the project is approved, research on game mechanics begins, including rules, processes, and game elements. After that, the outline of the game's plot is drafted for a week. In weeks 3 and 4, the game concept is designed. Four weeks are spent developing the clues, ensuring they are intricate and flow smoothly. During the clue development, the visual creation of the game is also made to attract more focus to the game. The game was then proofread and edited in weeks 9 and 10, ensuring correct grammar and structure. After printing, fellow students test and play the game during weeks 12 and 13. A feedback form is handed out to the players to fill out after the gameplay.

Data Analysis

A quantitative and qualitative method was employed to collect data for the feedback survey. Twenty-five respondents, aged 16 to 21-year-old young adults, completed a set of questionnaires to evaluate their personal experience carrying out the game and their judgement on its effectiveness,

usability, and design. The feedback collected was analysed through frequency counts while also adopting thematic analysis to identify the strengths and effectiveness of the game.

RESULTS AND DISCUSSION

Effectiveness in Improving Critical Thinking and Problem-Solving Skills

Respondents were required to answer whether the game improved their critical thinking and problem-solving skills. 14 out of 25 agreed that it was satisfactory in enhancing their critical thinking and problem-solving skills. In contrast, eight stated that it was excellent. 4 out of 25 decided that it was fair, and three stated that ‘Red Herrings’ improved their critical thinking and problem-solving skills

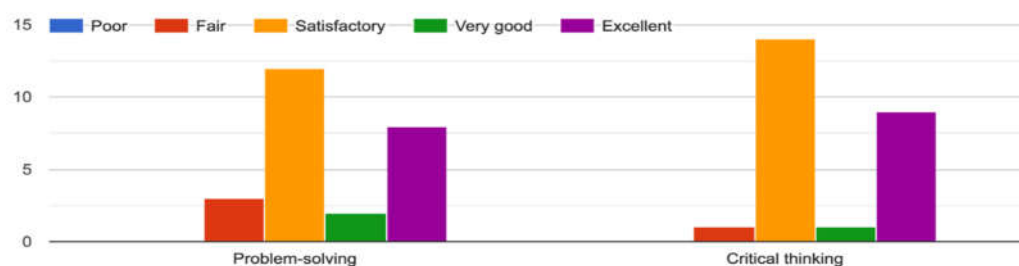


Figure 1.: Bar chart illustrating the effectiveness of the game

Opinion Whether More Games Like This Should Be Produced

The result indicates that respondents agree that games like Red Herrings should be produced more. When asked for reasoning, many emphasised how these games require them to analyse clues and make informed decisions, enhancing their critical thinking and problem-solving skills effectively in a more engaging way. Others noted that the ambiguity of the clues allowed them to become more detail-oriented when playing the game, which affected their decision-making and allowed them to create out-of-the-box theories when discussing the case.

Areas for Improvement

The findings underline several suggestions from participants to improve the game. While 16 stated that there should be no improvements on the game, 5 recommended that more visual aids should be added to the game to help the players find the murderer easier. Additionally, 3 respondents requested that there should be more plot twists in the game to enhance the engagement and suspense of the gameplay. Furthermore, another 2 respondents suggested creating better packaging for the game

display. While the game was a success in achieving its intended objectives, these suggestions will help further refine the project, allowing it to succeed in a wider audience.

CONCLUSION

In conclusion, this project explores how interactive games enhance critical thinking and problem-solving skills by engaging players with immersive gameplay. The findings highlight the educational potential of such games by examining the interactive visual elements that challenge players to analyse clues and draw conclusions. These insights suggest that incorporating mystery-solving mechanics into learning environments can foster cognitive development while creating enjoyable gameplay that ensures players do not lose interest. While respondents provided practical suggestions to improve the game, such as creating more clues and designing better packaging, it has allowed this project to be refined in the future. All in all, 'Red Herrings' successfully achieved its initial goal of creating an engaging game that enhances young adults' critical thinking and problem-solving skills.

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