International Journal of Business and Technology Management
e-ISSN: 2682-7646 | Vol.6, No. 1,692-706, 2024
http://myjms.mohe.gov.my/index.php/ijbtm

Interactive Game "Purple Seahorse" Raises Public Awareness, Caring for Individuals with Epilepsy

Hammuzamer Irwan Hamzah[1*], Tuan Zalizam Tuan Muda[1], Mohd. Nizam Saad[1]

[1] School of Multimedia Technology and Communication, Universiti Utara Malaysia, Kedah, Malaysia

*Corresponding Author: zamer@uum.edu.my

Received: 3 February 2024 | Accepted: 18 April 2024 | Published: 30 April 2024

DOI: https://doi.org/10.55057/ijbtm.2024.6.1.57

Abstract: *This initiative focuses on developing a Role-Playing Game (RPG) centred on epilepsy to provide fundamental knowledge about the condition. Utilizing interactive features and storytelling enhances user engagement. The main goals of this interactive learning game are to promote a community of respect and tolerance, increase public awareness of epilepsy, and combat associated prejudice. The project follows an Enhanced 3 Production methodology, comprising pre-production, production, and post-production phases. Data collection employs both qualitative and quantitative methods, with formative and summative evaluations contributing to the assessment process. Feedback from experts and end-users has guided improvements to the game. Results from game reviews show positive responses, indicating users' engagement with the epilepsy theme and their preference for interactive learning. These findings suggest opportunities for further research to expand the content.*

Keywords: Interactive Learning Game, Public Awareness, Epilepsy, Formative and Summative Evaluation

---

1. Introduction

This project revolves around the development of a role-playing game (RPG) with the primary aim of addressing the obstacles encountered by individuals living with epilepsy. Its overarching goal is to challenge and dispel the negative stereotypes and biases associated with this medical condition (Boller, 2013). The main target audience for this RPG is the public, intending to augment their understanding of epilepsy and nurture sentiments of empathy, tolerance, and respect towards affected individuals (Al-Dossari et al., 2018).

Through immersive gameplay, players are not only anticipated to acquire knowledge about epilepsy but also to acquire practical skills in administering first aid during seizure episodes, thus contributing to the safety and welfare of those affected by epilepsy. The project follows a comprehensive lifecycle, encompassing pre-production, production, and post-production phases. During pre-production, meticulous planning and storyboarding lay the groundwork for the design, development, testing, and evaluation of the game in the production phase. Post-production activities include the official launch of the game, gathering user feedback, and addressing any identified issues (Understanding Formative Evaluation, n.d.).

Aligned with Sustainable Development Goal (SDG) 10 - Reduced Inequalities, the project is specifically geared towards diminishing discrimination against individuals living with

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

epilepsy, a condition characterized by seizures that significantly impair daily functioning (Abbasi Kangevari et al., 2019). The societal ramifications of epilepsy encompass widespread stigma and discrimination, which impede individuals in various spheres of life (Wubetu et al., 2020).

By confronting educational obstacles, negative perceptions, and knowledge deficits, the project is in alignment with the SDG's commitment to eradicating discriminatory practices. Driven by the acknowledgement of the challenges faced by individuals with epilepsy and the imperative to counteract societal stigma (Epilepsy, 2016), the project endeavours to heighten public awareness, debunk myths, and foster empathy towards individuals living with epilepsy through the creation of an engaging RPG.

Problem Statement

People living with epilepsy frequently face discrimination and social stigma stemming from misunderstandings and a lack of public knowledge (Bashir & Cumber, 2019). Social exclusion, unfair treatment, and mental health struggles are common experiences. This initiative seeks to address these challenges by increasing public awareness and knowledge about epilepsy, ultimately diminishing societal discrimination.

Objectives

The project is guided by a set of comprehensive goals aimed at tackling different facets of epilepsy awareness and education. These objectives extend beyond simply providing accurate information about epilepsy; they also focus on fostering empathy, understanding, and inclusivity towards individuals affected by this condition. The primary aims of the project can be outlined as follows:

- Evaluate the game's effectiveness in fostering empathy and understanding of epilepsy (Ai, 2021).
- Develop and introduce an interactive game to enhance public awareness and understanding of epilepsy (Farias et al., 2019).
- Validate the game's ability to dispel misconceptions, counter negative attitudes, and reduce societal stigma through formative and summative evaluations (Understanding Formative Evaluation, n.d.) and (Understanding Summative Evaluation, n.d.).

The result is a role-playing game that presents a narrative where characters encounter epilepsy-related challenges. Intending to provide an authentic view, the game integrates epilepsy information to foster comprehension (England et al., 2012). It is tailored for the public, with a gameplay duration estimated at 20 minutes, excluding individuals with epilepsy.

Significance of Project

This initiative plays a vital role in dispelling misunderstandings and diminishing discrimination against individuals with epilepsy (Alzahrani & Alhalafawy, 2023). Due to the prevalent lack of accurate information about epilepsy, which often leads to misconceptions and social stigma, the project aims to educate about epilepsy and its effects, ultimately striving to eradicate stigma and ensure equal opportunities for those affected. Furthermore, the project provided valuable insights into game development, guiding the team in creating and releasing games using relevant software and platforms (Ismail et al., 2022). Throughout the project, there was a profound realization of how an idea can progress into a functional product through systematic development. Additionally, it fostered teamwork and communication skills among the team members, emphasizing the importance of seeking expertise for overall success.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

2. Comprehensive Review of Epilepsy Awareness and Education Initiatives

This extensive literature review synthesizes a wide array of scholarly studies, establishing a solid groundwork for an interdisciplinary project centred on epilepsy awareness and education. The integration of these diverse works enriches the project's breadth, ensuring a comprehensive and informed strategy.

i. Public Awareness and Attitudes Towards Epilepsy:

- Abbasi Kangevari et al. (2019): Conducted in Tehran, this study provides foundational insights into public awareness, attitudes, and first-aid measures concerning epilepsy. It underscores the necessity for targeted interventions to dispel misconceptions and foster informed responses.
- Al-Dossari et al. (2018): Offering a global perspective, this research from Saudi Arabia highlights cultural nuances influencing public knowledge and attitudes toward epilepsy. It emphasizes the importance of tailoring educational interventions to specific cultural contexts, a vital consideration for the project.

ii. Educational Game Development:

- Ai (2021): Ai's focus on video game interactivity significantly contributes to the project's educational game development, aligning to create engaging and interactive educational games to promote understanding and awareness of epilepsy.
- Fabricatore (2007): Fabricatore's principles for effective game design influence the development of educational games for the epilepsy awareness initiative, ensuring that the game is both informative and user-friendly.
- Alzahrani and Alhalafawy (2023): This study on gamification provides valuable insights into motivators and obstacles in learning sustainability. Incorporating these findings enhances the project's game design, ensuring sustained player engagement.

iii. Evaluation Frameworks and Models:

- Von Wangenheim (2019): The Model for the Evaluation of Educational Games (MEEGA+) serves as a crucial framework for assessing the educational game's effectiveness within the project, ensuring a systematic and comprehensive evaluation.

iv. Health-Related Game Development:

- Hemingway et al. (2019) and Ismail et al. (2022): Insights from these studies demonstrate the potential impact of gamified approaches in health-related interventions. Lessons learned can be applied to the epilepsy awareness initiative, shaping a thoughtful and impactful game design.

v. Learning Game Design Principles:

- Boller (2013) and Designing Digitality (2021): These resources offer nuanced perspectives on effective game design principles, guiding the project to create an educational game that adheres to best practices for engaging and effective learning experiences.

vi. Community-Based Studies on Epilepsy:

- Wubetu et al. (2020): This community-based cross-sectional study in Ethiopia provides insights into public knowledge and attitudes towards epilepsy, informing the tailoring of the educational game to address prevalent misconceptions and knowledge gaps.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

vii. Other Relevant Studies:

- Wee and A Hamid (2021): While focusing on ocean pollution, this study on the development of a mobile game application illustrates the versatility of games as tools for diverse educational purposes, underscoring the potential for raising awareness through gaming.

This comprehensive review forms a robust foundation for the epilepsy awareness and education project, integrating studies on public awareness, game interactivity, and educational game design principles to ensure a well-rounded and informed approach.

3. Methodology

The methodology used in crafting the epilepsy awareness role-playing game (RPG) adopts a structured and iterative approach to tackle the hurdles faced by individuals with epilepsy. Building upon the findings of Abbasi Kangevari et al. (2019), the project aims to develop an engaging RPG to augment public awareness and understanding of epilepsy. This segment elucidates the essential phases of pre-production, production, and post-production, emphasizing the assimilation of client feedback, adherence to established game design principles, and integration of insights from relevant research. Through this methodology, the project endeavors to create a meaningful and impactful educational experience.

In the pre-production phase:

- Problem Identification:
  - The project conducts discussions and interviews to grasp the hurdles faced by individuals with epilepsy (Abbasi Kangevari et al., 2019). The identified solution entails creating an RPG to heighten public awareness about epilepsy.
- Concept Refinement:
  - This stage entails meticulous planning of the game's theme, narrative, characters, gameplay mechanics, controls, and environment.
- Storyboarding:
  - After delineating key elements, a storyboard illustrating each game scene is developed, seeking client feedback for alignment (Abbasi Kangevari et al., 2019).

During production:

- Game Design:
  - This phase involves translating planned elements into a digital format, encompassing scenes, characters, and the user interface.
- Development:
  - The core gameplay development commences, integrating game logic using the RPG Maker MZ game engine and Javascript programming language (Fabricatore, 2007).
- Testing:
  - Rigorous testing evaluates various aspects of functionality, with client engagement in iterative testing and feedback sessions (Fabricatore, 2007).

In post-production:

- Official Launch:
  - Following confirmation of seamless functionality, the game is officially launched for public download, with emphasis on promotion at Pusat Kesihatan Universiti, Universiti Utara Malaysia.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

- Player Feedback and Review:
  - Questionnaires are disseminated to players via a survey to assess if the game aligns with its objectives (Wubetu et al., 2020). Player feedback plays a pivotal role in effecting necessary improvements.
- Debugging:
  - After a wider release, players may detect bugs. Active collection and analysis of feedback are conducted to rectify errors and ensure optimal game functionality (Wubetu et al., 2020).

This methodology adopts a systematic approach, integrating problem identification, concept refinement, client feedback, and rigorous testing. Emphasis on educational objectives, adherence to game design principles, and continual refinement based on player feedback ensures the development of an impactful and effective epilepsy awareness RPG. In the post-production phase, the focus lies on the official launch, soliciting player feedback, and addressing any issues to deliver a seamless and engaging gaming experience to the target audience.

4. Prototyping and Formative Evaluation

Low Fidelity Prototype

To refine game and storyline concepts, low-fidelity prototypes were employed, which included customized storyboards and wireframes to suit the project's requirements (Boller, 2013). Storyboards visually illustrate the game's flow and scenes (Abbasi Kangevari et al., 2019), while wireframes, along with advanced storyboards, integrate interactive elements (Boller, 2013). The storyboard presents an outline of the game's progression, whereas wireframes provide a more detailed insight into game mechanics. Below, Figure 1 displays screenshots of the low-fidelity prototype, showcasing the storyboard for various scenes in this project.

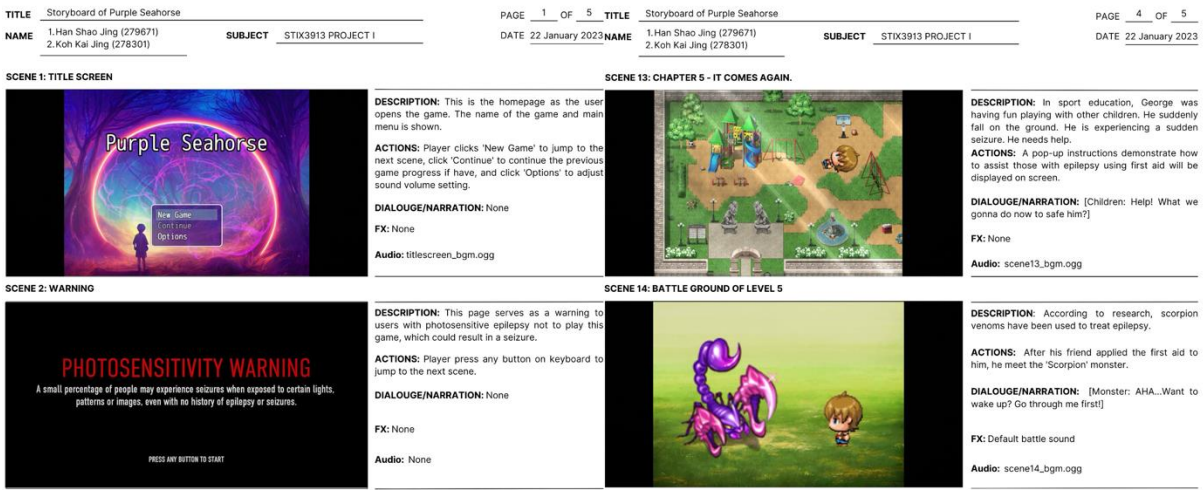


Figure 1: Screenshots Exemplifying the Low-Fidelity Prototype

The supervisory team reviewed the low-fidelity prototypes, providing key insights for improvement. They focused on enhancing gameplay flow, visual appeal, and user interface design. Their feedback aimed to refine the gaming experience and prepare for the high-fidelity stage. Their input significantly influenced the prototype's development.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

Table 1: Supervisor's Feedback

Feedback	Details
Flowcharts and Alternative Processes:	• Emphasized the need for a clear flowchart outlining the progress of each level, including player loss outcomes. • Suggested improving the flowchart by incorporating alternative paths or branching options for enhanced gameplay variety.
Adding Sound into Wireframes:	• Noted that the wireframes lacked sound elements, emphasizing the importance of sound for a comprehensive game experience. • Recommended considering the integration of sound into wireframes to provide a more complete representation of the game's architecture.
Handling Level Progress for Restarting the Game:	• Highlighted the necessity of an interface in low-fidelity prototypes for displaying scenes related to handling level progress and restarting the game, especially after a loss. • Stressed the importance of this feature for a smoother gameplay experience and further game development.
Demonstrating Additional Technical Capabilities:	• Recommended enhancing the wireframes by demonstrating more technical aspects beyond the game flow. • Suggested integrating techniques to showcase elements not covered in storyboards, such as the dynamic nature of characters, special effects in battle scenes, and other technical features.

To summarize, the feedback centres on enhancing the clarity of game progression, improving the audio-visual presentation, refining elements related to level progress and restarts, and showcasing additional technical details in the low-fidelity prototype. Drawing from supervisor feedback, this project iteratively refined the low-fidelity prototype by implementing suggested adjustments and incorporating essential enhancements. This iterative approach facilitated the improvement of the game's flow, mechanics, and user interface in readiness for the development of the high-fidelity prototype.

High Fidelity Prototype

After completing the low-fidelity prototype, the project seamlessly transitioned to developing the high-fidelity prototype, marking a significant milestone in the project's progression. Unlike the low-fidelity stage, which focuses on outlining basic structure and flow, the high-fidelity prototype breathes life into the game with a refined and polished appearance. The primary aim is to offer users a tangible and immersive gaming experience by integrating visually captivating elements and ensuring all interactive features are fully functional. This transition represents a significant leap forward in realizing the envisioned game concept.

To demonstrate the progress, several screenshots of the high-fidelity prototype are provided below, offering glimpses of intricate details, vibrant visuals, and enhanced user interface elements. Each screenshot offers a snapshot of the evolving game, showcasing meticulous attention to design, functionality, and overall user experience. As the high-fidelity prototype continues to evolve, the project team remains committed to refining every aspect. This phase is pivotal in bridging the gap between conceptualization and realization, ensuring the final product aligns seamlessly with project objectives. The included screenshots provide a preview of the visual richness and interactive nature of the high-fidelity prototype, laying the groundwork for subsequent testing, evaluation, and eventual public release.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

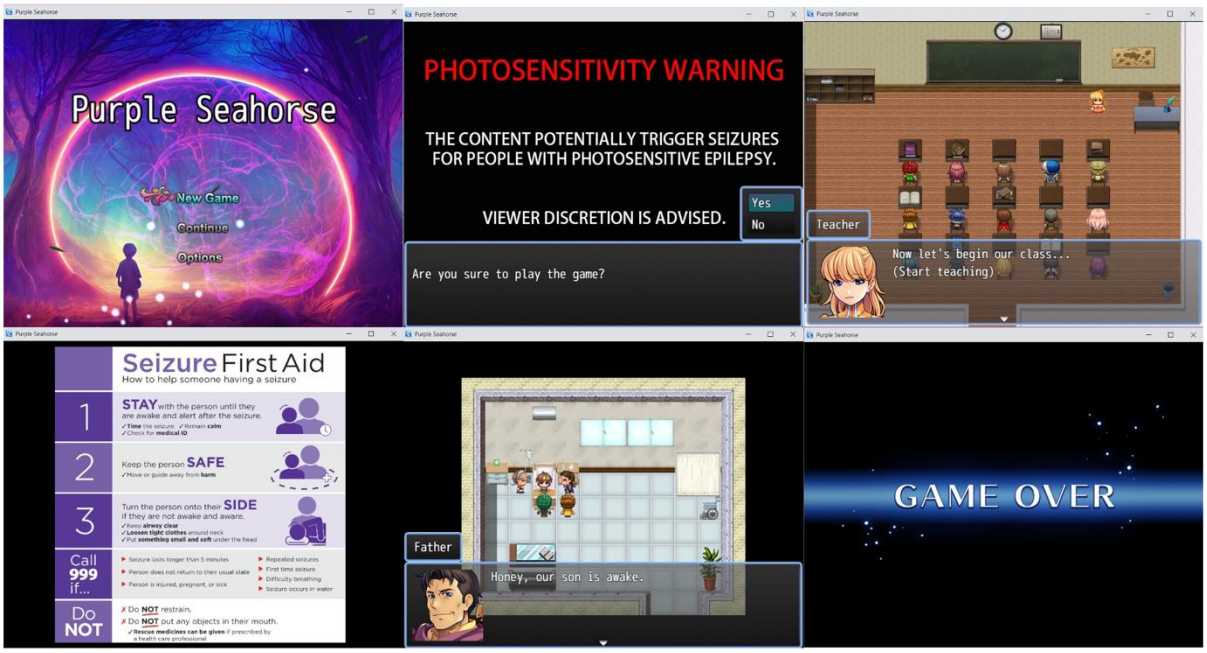


Figure 2: Screenshots Exemplifying the Hi-Fidelity Prototype

During the development of the high-fidelity prototype, a formative evaluation was conducted to gather insights and feedback from experts specializing in game design, content, and multimedia applications (Wubetu et al., 2020). This evaluation utilized qualitative methods, including open-ended questions, through both asynchronous and synchronous interview sessions on platforms like Webex and WhatsApp.

To cover various aspects comprehensively, three distinct interview protocols were created, introducing experts to the game project, and facilitating interaction. The project team designed tailored questionnaires to evaluate game design, content, and multimedia applications. Valuable feedback from experts included positive remarks, enhancement suggestions, and highlighted areas for improving the gaming experience and advancing epilepsy knowledge.

Experts advised selecting a more fitting soundtrack, refining dialogue grammar, and using relevant terminology. They suggested labelling in-game monsters with terms closely related to epilepsy and incorporating images or animations depicting seizures. Concerns about scene transitions prompted recommendations for smoother gameplay. They also suggested replacing gold coins with epilepsy awareness-raising items as rewards.

Emphasizing the importance of avoiding repetitive gameplay, maintaining high interaction levels, and ensuring consistent UI design for visual coherence, experts provided valuable insights. The formative evaluation significantly contributed to advancing epilepsy awareness and dispelling misconceptions, guiding the project team in making necessary enhancements to the game.

In summary, the formative evaluation involved experts providing valuable feedback on various game aspects, leading to substantial improvements. The project team acknowledges the experts' contributions, implementing enhancements in various areas. While not all suggestions were adopted, their importance for future endeavours is recognized, and the formative evaluation played a crucial role in refining the game.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

5. User Evaluation (Field Testing)

The methodology utilized for the summative evaluation involved conducting efficiency testing through a quantitative approach to evaluate the achievement of project objectives. The evaluation instrument employed was the Model for the Evaluation of Educational Games (MEEGA+) questionnaire. As described in Petri et al.'s (2017) study, MEEGA+ is a structured framework tailored for assessing educational games, encompassing elements such as effectiveness, usability, and learning outcomes. It facilitates the examination of pedagogy, game mechanics, usability, and learner engagement, providing insights into the educational significance and influence of games. MEEGA+ aids in guiding decisions regarding game design and its integration into educational contexts, having undergone rigorous research methodology to ensure reliability and validity.

Methodology

Google Forms was utilized as the data collection platform for this study, featuring three sections of quantitative inquiries aligned with the research objectives of the project. These inquiries employed Likert scale responses to measure respondent agreement with statements. Strategically distributed to a diverse audience via WhatsApp and various social media channels, the questionnaires were accompanied by a link to access the game. After playing the game on their respective devices, respondents provided their feedback through the distributed Google Form. Using quantitative inquiries ensured a substantial sample size and statistical accuracy in data gathering. After completing the questionnaires, the survey was predominantly distributed to respondents through the WhatsApp platform, ultimately garnering responses from 30 participants.

Participants

The project meticulously recruited a diverse pool of 30 participants to partake in the questionnaire, ensuring a broad representation across various demographics. This inclusive approach encompassed individuals spanning different age groups, genders, ethnicities, occupational roles, and geographical locations. By incorporating such diversity, the evaluation aimed to gather comprehensive feedback reflective of a wide spectrum of perspectives and experiences. This diverse participant pool not only enriched the data collection process but also contributed to a more robust analysis and interpretation of the results.

Questionnaire Design

The questionnaire's structure was influenced by Von Wangenheim's framework (2019), which encompasses dimensions such as aesthetics, learnability, operability, and satisfaction. It featured demographic inquiries followed by questions adapted from the MEEGA+ framework, aimed at assessing the game's quality. Each dimension comprised two questions, allowing for a comprehensive evaluation of the game's effectiveness in public education. By incorporating these dimensions, the questionnaire aimed to gather diverse insights into the game's various aspects, including its visual appeal, ease of learning, operational efficiency, and overall satisfaction. The inclusion of demographic details provided context to the responses, enabling a more nuanced analysis of the data. This structured approach ensured that the questionnaire covered essential aspects relevant to the evaluation process, facilitating a thorough assessment of the game's educational value and impact.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

Section A: Demographic

1. Gender
   a. Male
   b. Female
2. Race
   a. Malay
   b. Chinese
   c. Indian
   d. Other
3. Your Role
   a. UUM Students
   b. UUM Staff
   c. Public (not citizens of UUM)
4. Age (years old)
   a. Under 12
   b. 13 to 17
   c. 18 to 39
   d. 40 to 64
   e. 64 and above
5. Have you heard about epilepsy before?
   a. Yes
   b. No
   c. Maybe

Section B: Usability

[5 Point Likert-Scale: 1- Strongly disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly agree]

Aesthetics:

6. The game design is attractive (interface, graphics, etc.).
7. The text font and colours are well-blended and consistent.

Learnability:

8. I needed to learn a few things before I could play the game.
9. Learning to play this game was easy for me.

Operability:

10. I think that the game is easy to play.
11. The instructions are clear and easy to understand.

Accessibility:

12. The font size and style used in the game are easy to read.
13. The colours used in the game are meaningful and suitable.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

Section C: Player Experience

Challenge:

14. This game provides new challenges (offers new obstacles, situations, or variations) at an appropriate pace.
15. This game does not become monotonous as it progresses (repetitive or boring tasks).

Satisfaction:

16. I feel satisfied with the things that I learned from the game.
17. I would recommend this game to my family/friends/colleagues.

Fun:

18. I had fun with this game.
19. Some things happened during the game (elements of the game, battles, etc.) that I found interesting.

Focused Attention:

20. Something was interesting in the game that captured my attention.
21. I forgot about my immediate surroundings while playing this game.

Relevance:

22. It is clear to me how the contents of the game are related to the theme.
23. I prefer learning with this game to learning through other ways (e.g. other teaching methods).

Perceived Learning:

24. The game contributed to my learning in this issue.
25. The game allowed for efficient learning compared with other methods.

Results

The assessment findings indicate a positive reception for the game, which is designed to boost public awareness of epilepsy and diminish discrimination against those with the condition. Respondents expressed satisfaction with the game's usability and player engagement. Regarding usability, most respondents appreciate the game's visual appeal, commending its clear fonts, legible text, and thoughtful colour schemes. This favourable feedback underscores the game's effectiveness in conveying its message and ensuring an enjoyable gaming experience. While many respondents find the game easy to navigate, some note a slight learning curve, likely influenced by varying gaming backgrounds and familiarity with similar mechanics. To address this, the refinement phase aims to enhance the clarity of instructions.

The second aspect, player engagement, encompasses elements such as challenge, satisfaction, enjoyment, focused attention, relevance, and perceived learning. Respondents view the game's challenge positively, noting its ability to introduce new hurdles without becoming repetitive. Satisfaction levels are high, with many expressing contentment and a willingness to recommend the game. The game is deemed enjoyable, reflecting strong player interest. Focused attention is evident, with players immersed in the game and unaware of their surroundings. Respondents feel connected to the game's content, preferring to learn through this medium. In terms of perceived learning, the game effectively communicates messages, enhancing understanding of epilepsy issues. Respondents praise the game's efficacy in facilitating learning compared to alternative methods.

Refinements to the Final Product

Following user feedback, the final product underwent refinements aimed at enhancing the overall user experience, with a primary focus on providing clearer instructions tailored to users accessing the game across a variety of devices. The objective was to ensure a seamless and consistent experience irrespective of the platform, encompassing mobile devices, tablets, and

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

PCs. By implementing precise instructions customized for each digital platform, the usability and accessibility of the product were significantly improved. These adjustments were pivotal in addressing user concerns and facilitating smoother interaction with the game, ultimately enhancing overall user satisfaction and engagement.



Figure 3: Enhancements in Game Instructions

Summary

In summary, the summative evaluation, based on the analysis of data collected from 30 respondents, has emphasized key aspects such as the game's usability and player experience. Respondents expressed satisfaction with the game's design, highlighting features like readable text, clear fonts, and meaningful colour schemes. The game effectively conveys its message, providing a positive gaming experience. While some users initially required learning, the game's moderate difficulty level contributed to its overall user-friendly nature.

Positive feedback was received across various dimensions of player experience, including challenge, satisfaction, enjoyment, focused attention, relevance, and perceived learning. The game introduced new challenges at an appropriate pace, maintaining interest without becoming tedious, and successfully engaging the focused attention of respondents. Satisfaction, interest, and engagement were common sentiments, with participants viewing the game as a valuable educational tool.

The user evaluation confirms the game's success in promoting epilepsy awareness, offering an enjoyable experience, and facilitating effective learning compared to alternative methods. These insights are crucial for future development and highlight the game's potential as a potent educational instrument. The feedback from respondents provides valuable insights into the game's effectiveness as an educational tool, particularly regarding usability and perceived learning. Overall, the summative evaluation demonstrates the game's achievement of the primary project goal of dispelling misconceptions, negative attitudes, and community stigma associated with epilepsy. The positive feedback and active participation of participants affirm that the game has indeed heightened awareness and promoted understanding of epilepsy, contributing to the establishment of a more inclusive and supportive community.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

6. Discussion

Advancements and Efficacy of the Current Project

The development of the 'Purple Seahorse' RPG aimed at bolstering public comprehension of epilepsy and countering discrimination has garnered widespread positive feedback, indicating the achievement of project objectives. The formative evaluation, incorporating expert reviews and feedback, played a crucial role in refining the game. Expert recommendations influenced comprehensive enhancements, including music selection, language refinement, renaming of in-game creatures, strategic integration of multimedia elements, seamless transition incorporation, and innovative combat mechanics. Summative evaluation outcomes further affirmed the game's effectiveness in promoting epilepsy awareness and providing a satisfying player experience. Users expressed contentment with usability, visual attractiveness, navigational ease, and the game's ability to present challenges effectively. Positive feedback underscored the educational aspect of the game, with participants reporting increased knowledge and expressing readiness to recommend it. Overall, both formative and summative evaluations authenticate the efficacy of the Purple Seahorse RPG in heightening epilepsy awareness and combating discrimination, underscoring its significance as an immersive educational tool.

Constraints

Throughout the transition from conceptualization to a finalized product, the design and development phase of this project encountered several limitations that affected its overall scope. Initially, the challenge of acquiring authentic experiences arose, as individuals with epilepsy exhibited hesitancy in participating in interviews, restricting the project's access to firsthand information and personal narratives. This limitation posed a hurdle to the game's authenticity. Secondly, software-related limitations, including constraints in character design, game world design, and available music tracks, imposed restrictions during development. Efforts to mitigate these limitations were hampered by time constraints and resource availability, potentially impacting the game's aesthetic variety. Resource constraints, particularly time limitations, influenced the depth and breadth of content creation and refinement. Despite endeavours to optimize available resources, compromises were necessary, prioritizing optimization based on time and material constraints, potentially affecting the game's overall richness and breadth.

Future Directions

To further amplify epilepsy awareness and combat stigmatization, future initiatives should explore alternative avenues for engaging people with epilepsy. Establishing support groups or collaborating with epilepsy organizations could provide safe environments for individuals to voluntarily share personal experiences, enriching the game's authenticity and relevance. Exploring alternative software tools with broader options for character and game world design, along with integrating original music tracks, holds the potential to enhance overall aesthetics and diversity. The incorporation of Virtual Reality (VR), Augmented Reality (AR), or sensory enhancement technologies could amplify immersive gaming experiences, offering a more interactive and sensory-enriched environment. Allocating additional resources and time in future endeavours could focus on expanding game content and depth, integrating diverse epilepsy-related topics, educational components, and interactive experiences to deepen player comprehension. Implementing distribution and promotion strategies, including partnerships with educational institutions and healthcare organizations, can broaden the game's reach. Leveraging social media and online communities can further elevate awareness and foster player engagement.

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

7. Conclusion

To conclude, this project sheds light on the widespread lack of awareness surrounding epilepsy, the educational potential inherent in interactive gameplay, and the crucial necessity for first-aid training. As William Hazlitt aptly expressed, "Prejudice is the child of ignorance," underscoring the intrinsic connection between ignorance and discrimination (Oxford Essential Quotations, 2016). Combatting prejudice hinges on education and enlightenment, fostering empathy, acceptance, and inclusivity through knowledge dissemination. This insight involves educating individuals about epilepsy through interactive gameplay, allowing them to simulate the experiences of those with epilepsy firsthand, and imparting proper first-aid measures during seizures. The learning journey entailed extensive research, exploring various aspects of epilepsy, from symptoms to treatments, revealing the challenge of accessing information beyond formal education. Despite epilepsy's prevalence, societal misconceptions persist, highlighting the critical importance of empathy and comprehension. The game's impact on the public is apparent, providing a unique and immersive platform for epilepsy education, enhancing empathy, and reducing bias. Ultimately, the research objectives were successfully achieved, with the Purple Seahorse game emerging as an effective educational tool, dispelling misunderstandings, raising awareness, and fostering respect for individuals with epilepsy.

Acknowledgements
We extend our gratitude to Han Shao Jing and Koh Kai Jing, dedicated final-year students at the School of Multimedia Technology and Communication, Universiti Utara Malaysia, for their invaluable contributions to this project. We also acknowledge Assoc. Prof. Dr. Siti Mahfuzah binti Sarif for her guidance throughout their efforts. Special thanks are extended to Dr. Nurul Asiah Binti Abd Shukor, MD, from UUM Medical Center, for her invaluable contributions to shaping the game's content, ensuring its accuracy, and enhancing its effectiveness as an educational resource. We appreciate the participation of other experts in the interview sessions and respondents in the user evaluation sessions for this project.

References

Abbasi Kangevari, M., Kolahi, A. A., Farsar, A. R., & Kermaniranjbar, S. (2019). Public Awareness, Attitudes, and First-Aid Measures on Epilepsy in Tehran. Iranian Journal of Child Neurology, 13(1), 91–106.

Ahuja, N. (2011). Is Your Content Hazardous? Retrieved from https://www.interrasystems.com/pdf/technical_partner/WP_InterraSystems_Paper_Broadcast_Asia_2011.pdf

Ai, R. (2021, December 15). Research on Video Game Interactivity. rct AI - Medium. Retrieved from https://rctai.medium.com/research-on-video-game-interactivity-460df8f42791#:~:text=A%20game%20with%20good%20interactivity,and%20fun%20they%20can%20get.

Al-Dossari, K., Al-Ghamdi, S., Al-Zahrani, J., Abdulmajeed, I., Alotaibi, M., Almutairi, H., BinSwilim, A., & Alhatlan, O. (2018). Public knowledge awareness and attitudes toward epilepsy in Al-Kharj Governorate Saudi Arabia. Journal of Family Medicine and Primary Care, 7(1), 184. https://doi.org/10.4103/jfmpc.jfmpc_281_17

Alzahrani, F. K., & Alhalafawy, W. S. (2023). Gamification for Learning Sustainability in the Blackboard System: Motivators and Obstacles from Faculty Members' Perspectives. Sustainability, 15(5), 4613. https://www.mdpi.com/2071-1050/15/5/4613

Bashir, M. B. A., & Cumber, S. N. (2019). The quality of life and inequalities in health services for epilepsy treatment among patients in the urban cities of Sudan. The Pan African

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

Medical Journal, 33, 10. https://doi.org/10.11604/pamj.2019.33.10.15440
Boller, S. (2013, July 17). Learning Game Design: Game Mechanics. Knowledge Guru. http://www.theknowledgeguru.com/learning-game-design-mechanics/
Canarias, E. (2019, January 18). Effects of Mobile Gaming on the Performance of Students in Palahanan National High School. https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/4508
Canarias, E. (2019, January 18). Effects of Mobile Gaming on the Performance of Students in Palahanan National High School. Retrieved from https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/4508Epilepsy. (2016, May 3). Intellectual Disability and Health. Retrieved December 26, 2022, from http://www.intellectualdisability.info/physical-health/articles/epilepsy
England, M. J., Liverman, C. T., Schultz, A. M., & Strawbridge, L. M. (2012). Epilepsy across the spectrum: Promoting health and understanding. Epilepsy & Behavior, 25(2), 266–276. https://doi.org/10.1016/j.yebeh.2012.06.016
Epilepsy. (2016, May 3). Intellectual Disability and Health. Retrieved December 26, 2022, from http://www.intellectualdisability.info/physical-health/articles/epilepsy
Epilepsy. (2022, February 9). https://www.who.int/news-room/fact-sheets/detail/epilepsy
Fabricatore, C. (2007). Gameplay and game mechanics design: A key to quality in video games. ResearchGate. https://doi.org/10.13140/RG.2.1.1125.4167
Farias, G., Leitzke, B., Born, M., Aguiar, M., & Adamatti, D. F. (2019). Systematic Review of Natural Resource Management using Multiagent Systems and Role-Playing Games. Research in Computing Science, 148(11), 91–102. https://doi.org/10.13053/rcs-148-11-7
Frequently Asked Questions About Epilepsy | CDC. (n.d.-b). Centers for Disease Control and Prevention (CDC). Retrieved December 26, 2022, from https://www.cdc.gov/epilepsy/about/faq.htm
Hemingway, C., Baja, E. S., Dalmacion, G. V., Medina, P. M. B., Guevara, E. G., Sy, T. R., Dacombe, R., Dormann, C., & Taegtmeyer, M. (2019). Development of a mobile game to influence behavior determinants of HIV service uptake among key populations in the Philippines: User-centered design process. JMIR Serious Games, 7(4), e13695. https://doi.org/10.2196/13695
Ismail, M., Aazmi, S., Nazamuddin, A., Joseph, S., Abdul Hamid, S., Abdullah, B., & Daud, S. (2022). The Design and Evaluation of 'MoM (Microbiome of Maternity)' Role-Playing Game (RPG) in Educating on the Importance of Diet and Lifestyle and Its Interactions with the Gut Microbiota During Pregnancy. Asian Journal Of University Education, 18(3), 830-846. doi:10.24191/ajue.v18i3.19000
Ramasundrum, V., Mohd Hussin, Z. A., & TAN, C. T. (2000). Public awareness, attitudes and understanding towards epilepsy in Kelantan, Malaysia. Neurol J Southeast Asia, 5, 55–60. http://www.neurology-asia.org/articles/20002_055.pdf
Top game mechanics to use in learning. (2021, January 21). Designing Digitality. https://www.designingdigitally.com/blog/top-game-mechanics-use-learning
Understanding Formative Evaluation: Definition, Benefits, and Best Practices. (n.d.). EvalCommunity. Retrieve 21 June 2023, from https://www.evalcommunity.com/career-center/formative-evaluation/
Understanding Summative Evaluation: Definition, Benefits, and Best Practices. (n.d.). EvalCommunity. Retrieve 21 June 2023, from https://www.evalcommunity.com/career-center/summative-evaluation/
Von Wangenheim, C. G. (2019). Model for the Evaluation of Educational Games (MEEGA+): Development and Validation. Educational Technology Research and Development, 67(6), 1403–1424. https://doi.org/10.1007/s11423-019-09667-8

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved

Wee, S. Y. N., & A Hamid, R. (2021, November 30). Save Ocean: Development of a Mobile Game Application to Create Awareness on Ocean Pollution. Applied Information Technology And Computer Science, 2(2), 612–626. https://doi.org/10.30880/aitcs.2021.02.02.040

Wubetu, A. D., Admasu Basha, E., & Alemnew Engidaw, N. (2020). Public Knowledge and Attitude towards Epilepsy and Its Associated Factors: Community-Based Cross-Sectional Study, Ethiopia, 2019. Journal of Environmental and Public Health, 2020, 1–8. https://doi.org/10.1155/2020/6801979

Copyright © 2024 ASIAN SCHOLARS NETWORK - All rights reserved