Reading Through Gaming in Primary Schools- A pilot study

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Introduction:

Game-based learning (GBL) has emerged as a well-established pedagogical approach that integrates game elements into educational contexts, promoting student engagement and improving learning outcomes (Cheng & Su, 2012; Mao et al., 2021)). By leveraging the motivational and interactive aspects of games, GBL fosters deeper comprehension and enhances knowledge retention (Hakulinen & Auvinen, 2014; Smiderle et al., 2020). Among various forms of GBL, board games have garnered particular attention for their ability to support cognitive and literacy development, including improvements in reading comprehension (Frazier, 2022; Pope, 2021).The relationship between reading proficiency and gameplay is bidirectional: gameplay has been shown to improve reading abilities, while strong reading skills enhance gameplay (Antzaka et al., 2017; Kurniawan et al., 2023). Many games require players to read and comprehend instructions, narratives, and other textual elements, necessitating a certain level of literacy to engage effectively with the game's mechanics. Consequently, players with higher reading proficiency can navigate and enjoy these games more fully.

While much research supports the role of games in learning, there is a gap in understanding how to assess the reading difficulty of games, especially in comparison to graded reading materials. Hatcher (2000) developed a widely applied scale for grading children's books based on various linguistic and structural features such as page number, word count, sentence length, the frequency of polysyllabic words, and the presence of auxiliary verbs. This scale has been extended to assess other text-based content, like websites, demonstrating its flexibility in evaluating readability. However, to date, there has been little exploration of how this framework can be applied to board games to assess their reading demands. Our research aims to extend Hatcher's framework to board games, addressing the gap in literature concerning the readability of games and their alignment with children's literacy levels. By adapting Hatcher's scale to evaluate board games, this study seeks to develop a systematic method for categorising games based on their reading difficulty. This tool will allow educators to match games with students' reading abilities, ensuring that games provide an optimal challenge to support literacy development.

This research has practical significance for educators, as it offers a means to align game selection with students' literacy levels, thereby maximizing the effectiveness of game-based learning. By ensuring that children engage with games suited to their reading proficiency, we can enhance literacy development and overall learning outcomes. Ultimately, this study aims to contribute to the broader discourse on educational game design and provide evidence-based recommendations for integrating board games into literacy instruction.

The Research Process

Participants:

Seventy-two students aged 5 to 8 years (Year 1 to Year 3) from a local UK primary school participated. Ethical approval was granted by the University of Leeds Faculty Research Ethics Committee (Reference number: 1640), and informed consent was obtained from both parents and participants.

Preparation and Methods:

The research process involved three researchers working collaboratively to develop and test a grading system for assessing the reading difficulty of board games.

1. Familiarisation with the Hatcher Reading Scale: To begin, researchers familiarised themselves with Hatcher's (2000) grading scale, initially applying it to books. To ensure consistency and reliability in applying the scale, we cross-checked our ratings by comparing each researcher's assessments, discussing discrepancies, and refining our understanding of the scale's criteria.

2. Engagement with Board Games: The next step involved playing a variety of board games. By doing so, we gained firsthand experience with the gameplay, understanding the demands of each game. This hands-on approach allowed us to critically evaluate how reading proficiency might be important for assessing the reading difficulty of board games.

3. Adapting the Hatcher Scale to Board Games: After familiarising ourselves with the Hatcher scale and the board games, we began adapting the scale to evaluate the reading demands of board games. We identified specific features that were relevant for assessing reading difficulty in games, such as the complexity of the instructions, narrative elements, and the presence of text-based interactions. These features were then integrated into an adapted version of the scale, tailored to the unique demands of board games.

3. Selecting and Grading Board Games: Using our adapted scale, we selected seven board games to assess their reading difficulty. Each game was rated based on its linguistic and structural features, and we assigned provisional reading levels according to the scale. This allowed us to categorize the games and match them with appropriate age groups.

4. Field Testing in a Primary School: The next stage of the research involved taking the games to a primary school. We played the selected games with different age groups, with children of different reading levels (indicated by their graded reading books). This real-world testing provided valuable insight into the appropriateness of our ratings and the suitability of each game for specific reading levels. During these sessions, one researcher facilitated the gameplay, whilst the other two ran running records of the students reading (they were instructed to read relevant written material aloud).

Findings and Conclusions:

The collected running records were quantified into percentage accuracies for each students reading. A Pearsons correlation was conducted, comparing the percentage accuracy and reading level of each child across the 7 games. A positive correlation was observed in 4 out of 7 games, demonstrating a potential relationship between a student's reading level and the accuracy of gameplay reading. However, no correlation was observed between ready level and accuracy across 3 of the games. Below are 3 scatter graphs to show the correlations we found for "Juniour Colour brain" (Figure 1), "Monopoly Juniour Level 1" (Figure 2) and "Unstable Unicorns" (Figure 3).

Figure 1: "Juniour colour brain

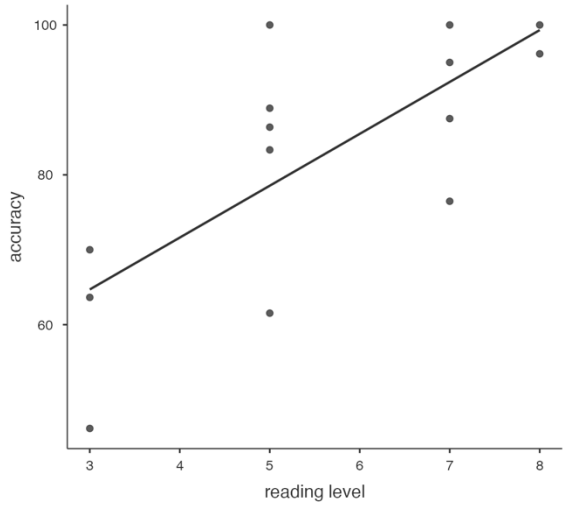

Figure 1: A very strong positive correlation between accuracy and reading level

Figure 2: "Monopoly Juniour Level 1"

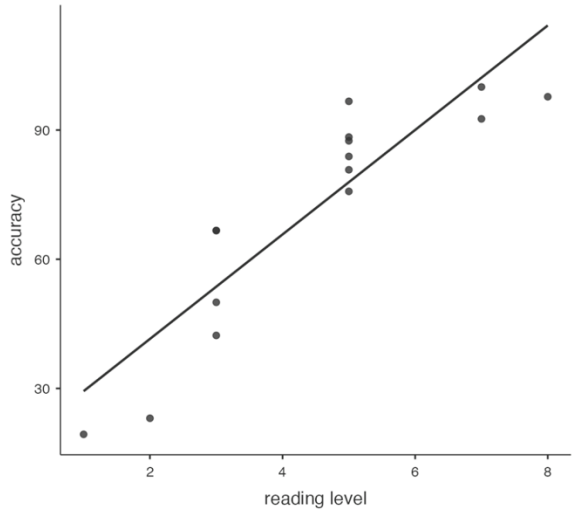

Figure 2: A strong positive correlation between accuracy and reading level

Figure 3: "Unstable Unicorns"

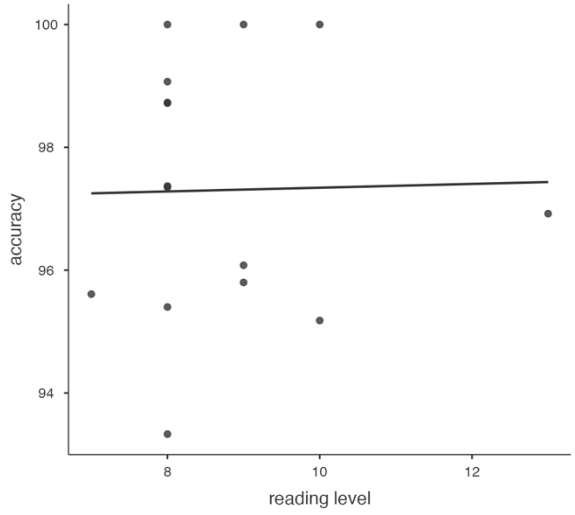

Figure 3: No statistically significant correlation between accuracy and reading level

The primary aim of this research was to develop a scale that accurately assesses and identifies the reading level of a board game. However, this objective revealed to be too broad to investigate within the limited time constraints of our research project. In addition, the research sample was too limited and homogenous to form generalisable findings. Therefore, despite observing a potential link between reading levels and accuracy, the data collected is too limited to form definitive conclusions. Further research may utilise this pilot study as a foundation to build on and continue to investigate a system to grade the reading level of a boardgame.

Personal Reflections

The importance of my research

The wider impact of this research lies in its potential to transform educational practices by providing educators with a practical tool for matching board games to students' reading abilities. By quantifying the reading demands of board games, this study supports the integration of game-based learning in a manner that is both accessible and developmentally appropriate. In the real world, teachers can more confidently select games that not only engage students but also reinforce and build upon their literacy skills. Additionally, the framework developed here could guide game designers in creating more inclusive and educationally effective products, ultimately contributing to improved literacy outcomes and fostering a love for reading among young learners.

Furthermore, this research is important as it addresses the growing need to bridge traditional literacy education with innovative, game-based approaches. In an era where digital and interactive learning environments are increasingly prevalent, the ability to accurately assess and match reading materials, whether in books or games, to student ability is crucial for ensuring equitable access to learning opportunities. By tailoring educational tools to individual needs, we can help mitigate disparities in literacy development, laying a stronger foundation for academic success across diverse student populations. Moreover, the insights gained from this work can inform policy makers and curriculum developers, promoting a more holistic approach to education that values both engagement and academic rigor. Ultimately, this research not only enhances our understanding of how game-based learning can be optimized for literacy development, but it also paves the way for innovative teaching strategies that empower educators, enrich learning experiences, and contribute to the long-term academic and personal growth of future generations.

Personal impact of my project

To understand the impact this research opportunity has had on me, it is primarily my duty to reflect on my motivations, reflect on the process and reflect on the position I hold as a result. So, I need to reflect. I believe I touched on this in a previous account, but I find reflecting to be a daunting process. To truly contend with my successes and shortcomings is to navigate the blurred space between self-awareness and self-doubt, a task both necessary yet seemingly impossible.

That being said, I know with absolute certainty that the support of my peers was the undercurrent of my experience, shaping the very way I engaged with this project. Their perspectives did not simply challenge me—they stretched me, pulled me beyond the safety of self-imposed limitations. They forced me to confront imposter syndrome, not as an immovable truth, but as a transient obstacle, one that resilience could dismantle piece by piece. I've come to realise that personal development is rarely a personal endeavour—it is shaped by the people around us, by the way we challenge, support, and push each other forward. Growth does not happen in isolation; it is found in the friction, the encouragement, the disagreements, and the shared efforts of a team. This project has been proof of that. Through it, I have learned to strive for more, to take initiative, to hold confidence in my own insights, and most importantly, to trust myself. Learning to trust my abilities, my perspective, and my instincts has been a transformative experience—one that I know will be indispensable in becoming the person I strive to be.

Beyond this, the project has reshaped my understanding of leadership. I used to think of leaders as people who are naturally decisive, who take charge with certainty and direction—qualities I have not always identified in myself. Because of this, I never saw myself as a leader. However, this experience has made me reconsider—what if leadership is not always a loud declaration? What if it can exist in observation, in knowing when to step back, in understanding the rhythms of a team and guiding without force? I have begun to see leadership not as a fixed mold to step into, but as something fluid, something that bends and shifts to fit the hands of those who hold it. I know I must still cultivate decisiveness, and with time, I will. But I have also come to realise that I may already possess the essence of what makes a leader: the desire to see a group succeed above the self.

In this team, we stumbled. We retraced our steps, abandoned hours of work, and built from the ground up more times than I can count. And yet, every moment felt purposeful, not despite these struggles, but because of them. It was in these moments that leadership revealed itself—not in solitary decisions, but in the unspoken understanding among us, in the way we adapted, supported, and moved forward together. Leadership, I have come to see, is not just about making decisions. It is about knowing your team. Empathy is powerful, but it is meaningless without connection. And if this project has taught me anything, it is that emotion has a place in the spaces we often deem too professional, too academic, too structured for human tenderness. Without it, leadership is hollow.

Additionally, in October, as a part of extending our research, we were invited to present and play the games developed for our study across various public libraries in Leeds. This provided a valuable opportunity to observe how these games were received by the public, further informing our understanding of their educational potential beyond the

classroom setting. This experience allowed us to connect with a broader audience and further refine the applicability of our findings in real-world educational environments.

Figure 4 & 5: Pictures from our time in Local libraries

To conclude, this research has left me with more questions than answers, but perhaps that is the most valuable outcome of all. It has reinforced my belief that learning is not a rigid, one-size-fits-all process but something fluid, deeply personal, and shaped by the environments we create. Whether through clinical work, educational policy, or further research, I want to continue exploring how we can make learning more intuitive, meaningful, and accessible. The way we teach and the way we learn should evolve with us—adaptive, engaging, and rooted in the complexities of human experience. This project has been a small step in that direction, but I hope it is only the beginning.

Acknowledgements

This project would not have been possible without the invaluable guidance of Dr. Peter Hart and Dr. Paula Clarke, who's support struck the perfect balance between providing direction and allowing us the independence to explore, make mistakes, and ultimately grow as researchers. I am deeply grateful for the opportunity they have given us. I would also like to express my appreciation to Anna Harwood for her unwavering support and

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Supervisor Comments:

Fatima, and the rest of the team, were a pleasure to work with. She suggested the supervisory team had a good balance of direction and allowing independence, however in reality the team had an exemplary approach to research and were able to work within our direction, but also were confident enough to improvise when required and wise enough to seek advice when needed. Fatima went above-and-beyond what is often expected of Laidlaw scholars, showing a keen interest in the topic of gaming and reading, leading on the development of the project as it progressed. She understood what was being asked of her throughout the project, and was able to facilitate the understanding of her peers within the team. She engaged in quantitative analysis that provided important results, showing skills both in ethically conducted research and analysis.

Fatima also demonstrated important 'soft' skills and competencies, not least the school were impressed with the level of communication and professionalism Fatima displayed in the classroom; her approachable and calm manner; and her positive disposition even in the midst of difficult tasks.

This project showed a real strength in having a team of students, rather than one in isolation, on a project like this. They were able to genuinely contribute important findings to the early stages of a feasibility trial which will impact our research in the future through helping to identify strengths and weaknesses of attempting to measure reading ability through gaming.

Dr Peter Hart

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