

Gamification for Sustainable Management Education: Prosper Management Edition's Role in South Africa's Climate Policy Engagement

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Abstract: The escalating climate crisis necessitates inventive strategies to engage diverse stakeholders in sustainable management and policy-making, particularly in regions like South Africa. "Prosper Management Edition," developed under the GREAT project, leverages gamification to foster communication between future corporate leaders, citizens, and policy stakeholders. This educational game connects sustainability principles with their practical application in management and policy, focusing on the integration of Sustainable Development Goals (SDGs) into business operations. This paper presents the initial design stages, implementation strategy, expected outcomes, and theoretical underpinnings of the game, aiming to enhance participants' awareness of sustainability and strategic thinking.

1. Introduction

In today's rapidly changing educational landscape, innovative methods that merge entertainment with educational outcomes are increasingly crucial, especially in addressing complex global challenges such as climate change and sustainability. "Prosper Management Edition," developed as part of the GREAT project, represents a pioneering approach in this direction. It utilizes the principles of gamification to transform traditional educational paradigms into dynamic and engaging learning experiences. This game targets university students and young professionals, integrating key sustainability practices into a virtual management and policy-making environment. By doing so, it not only aims to educate but also to deeply engage the players, encouraging them to think critically and apply their knowledge in practical, impactful ways.

The rationale behind integrating gamification with education, particularly in the field of environmental policy and sustainability, is supported by a growing body of research indicating that active learning environments significantly enhance both engagement and retention of complex material. "Prosper Management Edition" is designed to challenge players to navigate the multifaceted issues surrounding sustainable management practices, aligning business operations with the Sustainable Development Goals (SDGs). The research questions guiding the development and implementation of this game include: How effectively does gamification promote understanding and engagement with sustainability practices among university students? Can a well-designed educational game enhance participants' strategic thinking and decision-making skills in the context of climate policy? These questions reflect the game's core objectives: to foster a practical understanding of sustainability issues and to develop capable future leaders in the field of environmental policy and management. This game not only serves as an educational tool but also as a platform for vital research into the effectiveness of gamification in higher education settings, particularly in enhancing learning outcomes related to complex societal challenges.

2. Theoretical Foundations in Game-Based Learning

The integration of game-based learning (GBL) within educational environments leverages the motivational potential of games to facilitate deeper engagement and understanding, particularly in complex subject areas such as sustainability and climate policy. Fundamental to this approach is the application of key educational theories, including constructivism and cognitive engagement theories, which suggest that learners construct knowledge best through active participation rather than passive reception. In "Prosper Management Edition," these theories are operationalized through immersive gameplay that requires players to make strategic decisions that reflect real-world sustainability challenges. By placing players in roles that simulate real-life positions of influence, the game facilitates experiential learning, allowing players to experience the outcomes of their decisions and thereby enhancing their understanding of the principles of sustainable management and policy-making.

Additionally, the game design incorporates elements of intrinsic motivation theory, as outlined by Ryan and Deci in their Self-Determination Theory, which posits that effective learning is driven by intrinsic motivators such as autonomy, competence, and relatedness. "Prosper Management Edition" is crafted to satisfy these motivational needs by providing players with autonomy in decision-making processes, challenging tasks that enhance their sense of competence, and opportunities for social interaction that fulfill their need for relatedness. These elements are crucial for maintaining engagement and promoting a deep, meaningful learning experience that translates beyond the game. The educational efficacy of this gamified approach is anchored in the ability to scaffold learning content, offering progressive challenges that adapt to the player's growing skill set, thus maintaining a balance between skill level and challenge that keeps players in a state of flow, as conceptualized by Csikszentmihalyi. This theoretical framework supports the game's goal to not only educate about sustainability but also to inspire a proactive approach to global environmental challenges.

3. Sustainable Development Goals as a Framework

"Prosper Management Edition" strategically employs the United Nations Sustainable Development Goals (SDGs) as a foundational framework to inform its gameplay mechanics and content. By embedding the SDGs directly into the game's structure, it ensures that each decision and strategy undertaken by the players is anchored to these global objectives. The game features problem cards that each represent a significant global issue related to one or more SDGs, such as climate action, economic inequality, or sustainable cities and communities. Players are then tasked with matching these problem cards with appropriate solution cards, which represent actionable strategies or interventions designed to address the specific issues depicted on the problem cards.

The gameplay is designed to promote collaborative problem-solving and discussion among players. Each solution card must not only be relevant to the problem card but should also be justified and discussed among team members, ensuring that the proposed solutions are understood and agreed upon by all players. This discussion phase is crucial as it encourages players to engage deeply with the SDGs by thinking critically about how best to implement sustainable solutions in various scenarios. The game thus serves as a dynamic educational tool, providing players with a practical understanding of how SDGs can be applied to real-world problems. It emphasizes the complexity and interconnectedness of global challenges and highlights the necessity of teamwork and collective action in achieving sustainable solutions. Through this interactive and cooperative approach, "Prosper Management Edition" not only educates players about the SDGs but also instills essential skills such as strategic thinking, negotiation, and consensus-building, which are vital for fostering global citizenship and achieving sustainable development.

4. Game Design and Implementation

"Prosper Management Edition" employs a thoughtful design that immerses players in real-world scenarios through the strategic use of problem and solution cards, each intricately linked to the Sustainable Development Goals (SDGs). The game design hinges on a unique mechanic where problem cards, depicting global issues such as environmental degradation or social inequality, are presented to the players. These cards require players to apply critical thinking and collaborative decision-making skills to match them with appropriate solution cards. Solution cards offer a range of interventions or strategies that could realistically be implemented to address the problems. This matching process is not only about finding correct answers but also about stimulating discussion and debate among players, fostering a deeper understanding and awareness of complex global challenges.

To enhance the learning experience and ensure that the game mechanics promote active engagement, the game also incorporates a narrative element that contextualizes the challenges within a broader story of global interconnectivity and collective responsibility. Each session of gameplay is designed to build upon previous experiences, gradually increasing in complexity and requiring players to synthesize knowledge from various domains. This progressive complexity helps maintain player engagement and interest throughout the game, while also mirroring the increasing difficulty of addressing global issues in reality. Additionally, the game is designed to be inclusive and accessible, featuring clear, intuitive interfaces and inclusive visuals that reflect a diverse range of cultures and perspectives. This inclusivity ensures that players from different backgrounds feel represented and that the game can be used effectively in a variety of educational settings, from classrooms to informal learning groups. Through its thoughtful design and implementation, "Prosper Management Edition" not only educates about the SDGs but also empowers players to think critically and collaborate effectively to tackle some of the most pressing issues facing the world today.

5. Methodology

The game's rollout involves collaboration with educational institutions and businesses to facilitate pilot testing in South Africa. These implementations are monitored to gather both quantitative and qualitative data on the effectiveness of the game in improving understanding of and engagement with sustainability issues. Methodologies include pre- and post-game surveys to assess knowledge gains and attitudinal changes, focus groups for in-depth feedback, and gameplay analytics to understand player behavior and learning patterns.

6. Expected Results and Impact

We anticipate that the "Prosper Management Edition" will significantly enhance participants' comprehension of sustainability and their ability to engage in meaningful policy discussions. Expected results include improved strategic thinking regarding environmental challenges, heightened awareness of sustainable management practices, and enhanced ability to communicate complex policies effectively. The project also aims to contribute to the broader discourse on the potential of gamification in education, especially in promoting engagement with complex global issues like climate change.

7. Conclusion

"Prosper Management Edition" represents a pioneering approach to combining gamification with serious educational content on climate policy and sustainability. Through strategic gameplay, theoretical rigor, and a focus on SDGs, the game seeks to transform traditional education on sustainability into an engaging, impactful learning experience. This initiative aligns with global educational trends and addresses critical needs in both academic and professional development contexts.

References

- Adams, S., & Preez, R D. (2021, February 17). Supporting Student Engagement Through the Gamification of Learning Activities: A Design-Based Research Approach. *Technology, Knowledge, and Learning*, 27(1), 119-138. <https://doi.org/10.1007/s10758-021-09500-x>
- Douglas, B D., & Brauer, M. (2021, May 1). Gamification to prevent climate change: a review of games and apps for sustainability. <https://www.sciencedirect.com/science/article/pii/S2352250X21000555>
- Galeote, D F., Rajanen, M., Rajanen, D., Legaki, N., Langley, D., & Hamari, J. (2021, June 1). Gamification for climate change engagement: review of corpus and future agenda. *Environmental Research Letters*, 16(6), 063004-063004. <https://doi.org/10.1088/1748-9326/abec05>
- Lasekan, O., & Godoy, M. (2020, September 9). Towards a Sustainable Local Development of Instructional Material: An Impact Assessment of Locally Produced Videos on EFL Learners' Skills and Individual Difference Factors. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.02075>
- Mandujano, G G., Quist, J., & Hamari, J. (2021, June 1). Gamification of backcasting for sustainability: The development of the gameful backcasting framework (GAMEBACK). *Journal of Cleaner Production*, 302, 126609-126609. <https://doi.org/10.1016/j.jclepro.2021.126609>
- Ouariachi, T., Elving, W., & Li, C. (2020, June 3). Gamification Approaches for Education and Engagement on Pro-Environmental Behaviors: Searching for Best Practices. *Sustainability*, 12(11), 4565-4565. <https://doi.org/10.3390/su12114565>
- Schlösser, A., Sokolov, A P., Strzepek, K., Thomas, T S., Gao, X., & Arndt, C. (2021, October 1). The changing nature of hydroclimatic risks across South Africa. *Climatic Change*, 168(3-4). <https://doi.org/10.1007/s10584-021-03235-5>