Proceedings of the 2nd International Conference on Global Politics and Socio-Humanities
DOI: 10.54254/2753-7048/63/20240959

Publish or Perish? Game Design Based on Self-Determination Theory and Persuasion

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Abstract: The academic world is known for its competitiveness and collaboration, demanding researchers to possess resilience and adaptablility. In light of this, this paper examines the self-designed game called Publish or Perish and its potential benefits in gamifying academic experiences and replicating the complexities of scholarly researches. The objective of this research is to investigate how game design can improve understanding of academic processes, develop crucial skills such as teamwork and ethical reasoning, and cultivate player resilience. The findings from this study suggest that gamification can effectively engage participants by simulating real academic challenges, offering valuable insights into the nuances of academic life. This research holds significant importance due to its potential in creating an innovative educational tool that not only entertains but also equips researchers with greater confidence and proficiency in navigating the complexities of academia.By expanding on these findings, educators may be able to develop more interactive learning methods that capture students' attention while imparting crucial knowledge about academic life.

Keywords: Gamification, Board Game Design, Resilience in Academia, Collaboration in Research, Ethical Decision-Making.

1. Introduction

The academic research landscape can be described as an elaborate and ever-evolving sandbox where top competitors and partners work together to learn and discover more, better, and faster [1]. Scientists and scholars in different disciplines work hard to make valuable contributions to their respective disciplines; they encounter various difficulties in their work, including financing, resource management, ethical issues, and technical issues [2]. Academic gamification incorporates game design elements into activities to improve students' engagement, motivation, and achievement [3]. Gamification has been applied in different educational settings because it harnesses the elements of games, including challenge, achievement, and social connections, to enhance learning and work environments.

This paper focuses on the design of the game "Publish or Perish" and explains its application of some psychological theories and concepts, including self-determination theory and distancing technique in persuasion. The author of this paper designs this paper in order to capture all the dynamics of the academic research environment while taking advantage of the game elements. Rewriting the research process as a game with clear objectives is important to increase the players'

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awareness of the academic environment, improve key research skills, and build a strong and cooperative attitude [4].

2. Inspirations from Psychological Concepts

2.1. Magic Circle: Self-Determination Theory

This game utilizes the self-determination theory to create a magic circle for the player. According to Huizinga, magic circle refers to a space created by the game experience where the rules of reality don't apply and experiences like loss and failure are less threatening [5]. Edward Deci and Richard Ryan put forward the self-determination theory (SDT). SDT elucidated that humans have three inherent psychological needs: autonomy, competence, and relatedness. If satiated, motivation and engagement will improve [6-7]. This game leverages self-determination theory to establish the magic circle for players, providing a space where their psychological needs for autonomy, competence, and relatedness are satisfied. By creating an environment where players are fully immersed and engaged, the game ensures that they can explore, challenge themselves, and connect with others within the safe and motivating confines of the magic circle.

Besides, Publish or Perish offers players the experience of achieving or showing knowledge of something to satisfy their needs for competence. In this game, players overcome many difficulties in academic research and possess strategic thinking and other skills. They will gain a sense of accomplishment when succeeding in publishing papers, getting funding, or establishing partnerships [8]. In this game, players can decide how to conduct research, allocate resources, and which strategy to choose for cooperation. They can also choose different characters they prefer; each character is good at unique fields and doomed to diverse challenges. Such freedom can develop their sense of ownership and improve their inner motivation because everything in the learning journey is under their control [7].

Furthermore, players can strengthen relatedness through the elements of cooperation in the game. There, they are encouraged to co-work, co-use resources, and support others' progress in interdisciplinary projects. The negotiating of trades, building of partnerships, engagement in team challenges, and other social interactions are set up in it [9-10].

2.2. The Persuasion of Resilience in Research: Distancing Through Fictionalization and Role-Playing

The game Publish or Perish uses the distancing technique in persuasion to achieve its persuasive goals by creating psychological distance between the player and potentially uncomfortable or sensitive topics such as the ethical challenges and pressures of academic research [11].

First, Publish or Perish creates a fictional yet realistic academic setting. This environment enables players to experience the challenges of academic life, including funding issues, ethical quandaries, and publication pressures in a safe, non-threatening manner. By creating a distinction between the game world and reality, players can freely explore these sensitive topics without personal discomfort. This approach, as noted by Salen and Zimmerman, allows participants to consider these issues more objectively and openly [12]. Second, in terms of character and role-playing, players assume the roles of various academic personas, each with unique strengths, weaknesses, and ethical challenges. By role-playing these characters, players are distanced from their own personal identity and are therefore more willing to engage with and reflect on the moral and ethical choices presented in the game. This role-playing aspect makes it easier for players to explore and understand the consequences of unethical behavior or the pressures of the "publish or perish" culture in academia [13].Third, the game uses metaphors and symbolic elements to represent real-world academic challenges, such as tokens and cards representing research ideas, funding, and collaboration. This symbolic representation

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allows players to interact with complex and potentially sensitive topics in a more abstract way, reducing the emotional intensity and making the persuasive messages more accessible [14]. As for hyperbole and humor, elements of exaggeration or dark humor might be used in character narratives or game scenarios to further distance the player from the real-world implications of their actions [15].This can help in presenting critical commentary on academic practices in a way that is engaging and thought-provoking, rather than confrontational.

3. Game Design: Publish or Perish

The setting of Publish or Perish takes place in a rather competitive yet complex academic research environment. Players get to pick their characters in academic fields such as biology, physics, social science, chemistry, engineering, and computer science. Every player is provided with unique resources and abilities corresponding to their profession at the beginning of the round, which leads to developing a proper strategy. As the story progresses, they experience business management, finances, and technical and moral challenges. The number of players is usually 2-6, and each round of playtime is about 30-90 minutes. This setup makes it suitable for small to medium-sized groups, and thus, “Publish or Perish” is a great game for academic enthusiasts, researchers, and board game lovers.

3.1. Game Components

Each player begins the game by drawing a character card (Table 1). These cards represent different academic personas with unique abilities and challenges. Here are five character profiles to choose from.

Table 1: Character Card

Character	Strengths	Unique Abilities	Starting Resources		
			Funding Token	Collaboration Marker	Special Resource Token
Biologist	Research: living organisms & ecosystems	Gains extra progress on projects. Increased success rate for research funding.	2	1	1 (Field Equipment)
Social Scientist	Societal behaviors, economics, and human interactions	Faster progress on survey projects. Higher impact points for policy papers.	2	2	1 (Data Analysis Software)
Chemist	Chemical reactions, materials science, and pharmaceuticals	Reduced lab setbacks. Additional funding for innovative projects.	3	1	1 (Chemical Reagents)
Engineer	Designing, building, and testing engineering projects.	Gains extra progress on projects. Easier access to industry sponsorship.	3	1	1 (Prototype Equipment)
Computer Scientist	Software development, algorithms, and computational theories.	Faster progress on computational projects. Increased chance of securing tech grants.	2	2	1 (Computing Resources)

Personality cards are a crucial element that adds depth and variety to the gameplay by providing each player with unique abilities and challenges. These cards represent different academic personas,

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each with distinct traits that influence how the game unfolds. The cards outline specific advantages or abilities that the character possesses. These could include gaining extra resources, having increased success in certain tasks, or having the ability to mitigate challenges more effectively. These abilities are meant to enhance gameplay by providing strategic options that align with the character's persona. Personality cards significantly impact the overall strategy of the game. Players must consider their character's abilities and limitations when planning their moves, deciding which projects to pursue, and how to interact with other players. For instance, a character with strong collaborative skills might focus on forming alliances, while a more resourceful character might work independently (Table 2).

Table 2: Personality Card

Character	Initial Points	Description	Advantages	Challenges
Academic Daji	3	Uses charm to gain more opportunities for publishing.	Gains extra Collaboration or Funding cards	Ability can be blocked once per game
Academic Zhou Wang	4	Controls academic resources, redistributing them as needed.	Can redistribute resources	Gains a Setback card each time ability is used
Academic Sun Wukong	4	Critical researcher, challenges bad research.	Can discard Setback cards and gain extra Research Idea cards	-1 Collaboration marker
Academic Sha Monk	6	Always agrees, makes no real contributions but is welcomed.	Gains extra Collaboration markers	Cannot initiate trades or use unique abilities
Academic Gossip Girl	6	Knows gossip but lacks scientific contributions.	Can swap Research Idea cards with others	-1 point to each publication
Academic Dung Beetle	5	Combines low-quality papers into one successful publication.	Can combine two low-impact Research Idea cards into one high-impact publication once per game	Must discard one Special Resource token each use

The players will draw different cards in the funding turn, collaboration turn, and research process turn. The drawn cards can be traded during the trade turn. The game has designed a balanced card distribution to make sure that players have a diverse range of cards to strategize with while maintaining balance and fairness throughout the game. The following chart shows the details of the card distribution (Table 3).

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Table 3: Card Distributions

Card Category	Card Type	Quantity	Description
Research Ideas	Basic Research	10	Moderate progress with low resource requirement
Research Ideas	Applied Research	10	Requires more resources but yields higher progress
Research Ideas	Breakthrough Ideas	5	Rare, high-impact ideas with significant progress
Research Ideas	Interdisciplinary Projects	5	Requires collaborations but offers unique benefits
Funding	Small Grants	10	Provides small amounts of resources
Funding	Large Grants	8	Provides substantial resources but may have conditions
Funding	Industry Sponsorship	4	High resources with potential long-term benefits
Collaborations	Local Collaboration	10	Easy to establish, moderate benefits
Collaborations	International Collaboration	8	Harder to establish but provides greater benefits
Collaborations	Interdisciplinary Collaboration	5	Combines expertise from different fields for unique advantages
Setbacks	Equipment Failure	5	Delays progress and requires resources to fix
Setbacks	Grant Rejected	5	Loss of funding and potential delays
Setbacks	Ethical Dilemmas	3	Requires strategic decisions affecting progress and reputation
Special Cards	Conference Opportunities	5	Boosts research progress and collaboration chances

Dice in Publish or Perish is crucial to include randomness and dynamism in the game and affect several aspects such as the order of the turn, the trade, and the competition of the resources. Six-sided dice (D6) are employed in various game stages, and the dice rolls determine the player's actions.

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3.2. Gameplay Mechanism

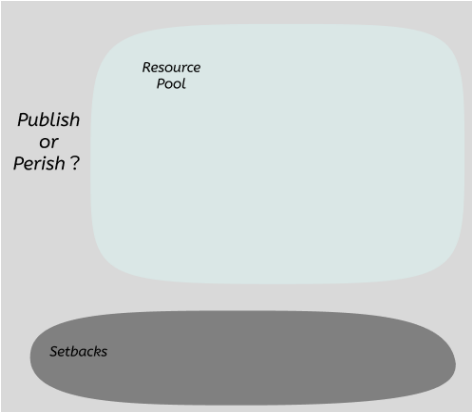

Figure 1: Play board for *Publish or Perish*

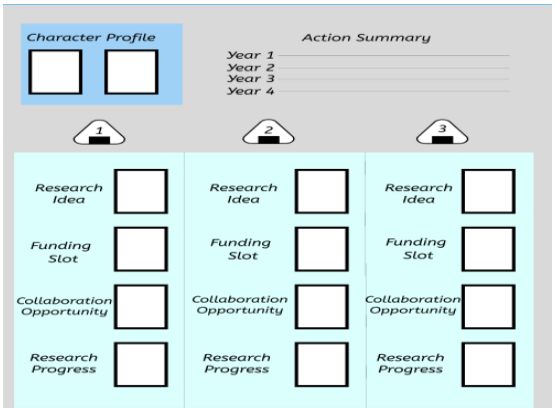

Figure 2: Player's Board for *Publish or Perish*

The game begins with players drawing character and personality cards, which define their academic personas and the unique abilities they bring to the game. Each player then collects resources, such as funding tokens and collaboration markers, based on their character's specific strengths (Figure 1 and 2).

Once the characters are established, all players roll their dice simultaneously. The player with the highest roll becomes the starting player, and they roll the dice again to determine whether the game will proceed clockwise or anti-clockwise based on whether the number rolled is odd or even. The main phase of the game starts with players taking turns drawing research idea cards until each has three projects. These research ideas are kept private from other players, creating a sense of secrecy and strategy.

Following this, the funding round begins, where players draw funding cards for each of their projects and place them into a shared resource pool. Players are then divided into two groups to compete for these resources through a dice-rolling game, with the player who rolls the highest number getting the first pick of the available funding. Next is the collaboration round, where players draw collaboration cards and must strategically assign them to their various projects. Followed by the Process Card, players draw a Research Process card to determine the progress of their projects. These cards can include mentor advice, conference opportunities (which offer additional trade opportunities), or setbacks, adding an element of unpredictability to the game. This is followed by the trading round, an open market phase where players have three minutes to negotiate trades of collaboration cards and funding cards. However, whether a trade is successful is determined by a dice roll: rolling 4-6 means the trade happens, and both parties receive an extra process token or special resource token; rolling 0-3 means the trade fails.

After all turns are completed for the year, players calculate their tokens and points to determine how many papers they will publish. Publications are evaluated based on the total points accumulated, with thresholds set for different levels of publication quality or impact, ranging from low-impact to breakthrough publications. Any unused points can be carried over to the next year.The game repeats this entire process for three years, simulating the experience of a PhD student. If there is a tie for the winner, a fourth year is introduced to break the tie and determine the ultimate victor. Through this detailed and dynamic gameplay, "Publish or Perish" effectively captures the complexities and challenges of academic research.

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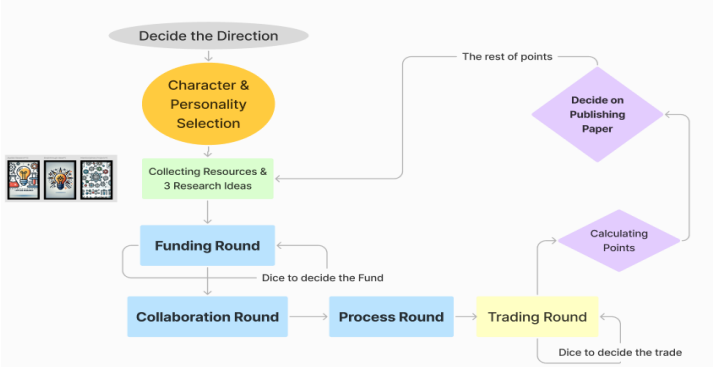

Figure 3: Flowchart of Procedure for Publish or Perish

The chart in Figure 3 illustrates the sequential flow of the game, beginning with the selection of a character and their associated personality traits, which define their academic personas and the unique abilities they bring to the game. Players start by deciding the direction they wish to take, which involves choosing a character and personality that aligns with their strategy.

Once the character is selected, players collect resources, such as funding tokens and collaboration markers, based on their character's specific strengths, and acquire three Research Ideas, initiating the game's active phases.The first active phase is the Funding Round, where players roll dice to determine the amount of funding they receive.Following the Funding Round, players proceed to the Collaboration Round, where they engage in collaborative activities to further their research progress. This is succeeded by the Process Round, where players implement their plans and work towards their research goals. In the Trading Round, players have the opportunity to trade resources or research ideas with others, with dice rolls determining the outcome of these trades.As the game progresses, players accumulate points, which are then used in the final phase to decide on publishing papers. The flow culminates in the calculation of points based on the decisions made during the game, determining the overall success of the players' research endeavors.

3.3. Examples

In a game round between Academic Sun Wukong and Academic Daji, each character's unique abilities are highlighted. Player 1, as Academic Sun Wukong, a biologist, can discard setbacks and gain extra research ideas, helping to manage challenges and expand research. Player 2, as Academic Daji, uses charm to gain more publishing opportunities, excelling in the competitive academic environment.

The game starts with character selection and resource allocation. Sun Wukong receives 2 Funding Tokens, 1 Collaboration Marker, and an Advanced Lab Setup Token, while Daji receives the same resources, with Field Equipment as her special token. Player 1 wins the starting roll and begins the game. Each player draws three research idea cards, keeping their strategies hidden. Sun Wukong draws Basic Research, Applied Research, and an Interdisciplinary Project. Daji draws Basic Research, a Breakthrough Idea, and Applied Research.

In the funding round, they draw funding cards: Sun Wukong pulls Small Grant, Large Grant, and Crowdfunding; Daji pulls Large Grant, Industry Sponsorship, and Small Grant. They roll to compete for these funds, with Sun Wukong getting first choice due to a higher roll. During the collaboration round, Sun Wukong gains Local and International Collaboration, while Daji secures Interdisciplinary and Local Collaboration. These enhance their projects' potential outcomes. In the trading round, players negotiate and successfully trade collaboration cards, boosting their research efforts. They then draw Special Resources Cards—Sun Wukong gets Mentor Advice, and Daji gains a Conference

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Opportunity, both enhancing their projects. At the end of the year, they calculate their points. Sun Wukong publishes a Moderate Impact Publication with 18 points, while Daji also publishes a Moderate Impact Publication with 20 points. The game progresses through three years, with Daji ultimately winning by a narrow margin of 68 to 65 points.

The game showcases the impact of different strategies and character abilities on academic success, with Sun Wukong focusing on mitigating challenges and expanding research, while Daji strategically maximizes publishing opportunities through collaboration and funding.

4. Conclusion

This paper summarizes the design and application of the game Publish or Perish, which simulates the academic research environment through role-playing, resource management, and strategic decision-making. The game successfully recreates the challenges of academic research, such as competitive resource acquisition, project collaboration, and the pressure to publish papers. The primary objective of this game is to enhance players' understanding of academic research, develop problem-solving skills, foster teamwork, and raise awareness of academic ethics through a gamified learning approach. Overall, the game strikes a good balance between education and entertainment, offering significant educational value and potential applications. However, there are some limitations in the current study. First, the game's design may rely too heavily on specific academic contexts, potentially limiting its applicability across a broader range of academic fields. Additionally, the game's rules and mechanics may be too complex for novice players, suggesting the need for further simplification and optimization. Moreover, the supporting literature and theoretical foundations could be more robust to enhance the scientific credibility and persuasive power of the game design. Future research could focus on several areas. First, empirical studies could be conducted to evaluate the educational effectiveness of the game across different disciplines and among players from various backgrounds. Second, the game's mechanics could be further optimized to simplify the gameplay and make it more universally accessible. Lastly, future research could explore ways to integrate more ethical decision-making and academic collaboration scenarios into the game to better prepare players for the complex issues they may encounter in real academic environments.

In conclusion, while Publish or Perish successfully achieves its educational objectives as an academic simulation game, there is room for improvement and expansion. Future research should aim to enhance its educational impact and broaden its scope of application.

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