Iha Gupta

Bachelor of Design Student, Sustainability and Social Innovation Lab, Department of Design, Indian Institute of Technology Guwahati.

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As a third-year design student at IIT Guwahati, I am deeply passionate about the art of animation, the creativity of board games, and the immersive worlds of video games. These interests fuel my creativity and inspire me to design experiences that combine storytelling, interactivity, and visual appeal. I love exploring how design can inspire, connect people, and create unforgettable memories.

I keep these ideas in mind while working on all projects. In the game Sahakarya, I wanted the game to not only be fun but also inspire others to make games themselves and to consider games as a tool rather than an object for entertainment.

For me, design is more than a skill—it's a way of thinking, creating, and bringing dreams to life. With optimism and passion, I look forward to shaping a brighter, more creative future.

Farhan Shaikh

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I'm a 3rd year student currently pursuing my bachelor's in design at the Indian Institute of technology, Guwahati. I've lived in Mumbai since my childhood, although much of of my family is from Goa.

Professionally, I'm interested video game design and development, 3D art, Programming , CGI and VFX. My curious and creative nature helped me acquire these skills that allowed me to express my ideas in a much more expressive way. I've been teaching myself all these skills over the course of about 7 years now.

One of the projects that I'm proud of, Vox Cleaner, is an instant, single click 3D model optimising tool for video game pipelines. It's been used by more than 7,500+ individuals and studios worldwide!

Other than that, some of my hobbies include 3d printing, papercraft and origami. I'm also currently learning gardening and I'm loving learning about plants and succulents!

Anushka Mittal, *Pre-Final Year*

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Hello, I am Anushka, a UX/UI designer passionate about curating thoughtful and user-friendly narratives through an empathic approach. My design philosophy focuses on addressing real-life problems by blending functionality with engaging visuals to create intuitive interfaces.

Recently, I worked on a board game designed to raise awareness in rural communities where disaster preparedness isn't typically taught. By combining education with engaging gameplay, I aimed to tackle this important issue in an accessible and meaningful way. I am constantly striving to address challenges with an empathetic and innovative approach, using design as a tool for positive change. I'd be happy to hear from you!

Lahar Mahesh

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Hi, I'm Lahar, a third-year design student at IIT Guwahati. I am passionate about crafting intuitive and impactful designs. I enjoy simplifying complex problems and creating solutions that are not only functional but also meaningful and user-friendly.

My interests lie in UI/UX design and physical game design, where I focus on blending creativity with purpose. Whether designing seamless interfaces or engaging hands-on experiences, I always think about how to make things enjoyable and easy for people. In the game Sahakarya, I aim to create experiences that engage users and encourage them to view games as a powerful tool for exploring real-world challenges and inspiring action.

For me, design is about building connections and creating a positive impact. I'm always eager to explore new ideas, collaborate with others, and develop designs that truly make a difference. It would be great to hear from you!

Gosetty Sri Ramya, *Psychology Postgraduate*

Pre-doctoral fellow, Sustainability and Social Innovation Lab, Department of Design, Indian Institute of Technology Guwahati.

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Hi, I'm Gosetty Sri Ramya, a pre-doctoral research fellow at IIT Guwahati. I am on a journey to blend academic rigor with meaningful real-world applications in psychology. With an integrated master's in psychology (specializing in Clinical and Counseling Psychology) from the Central University of Karnataka, my academic foundation is both deep and diverse from research to clinical practice.

I thrive on the challenge of exploring new dimensions in psychology—whether it's through research, counseling, or education. My work has already gained recognition, including a systematic review on telehealth "Applications, benefits and challenges of Telehealth in India during COVID-19 Pandemic and beyond" published in Springer Nature. These experiences have fueled my desire to bridge psychological theory with impactful solutions. These experiences have shaped my focus on integrating psychology into projects like disaster risk management and sustainable design, where understanding human behavior drives systemic change.

Disaster Preparedness: Balancing Femininity and Masculinity

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1.12. Introduction

Games are powerful tools for education and social change, yet many fail to strike a balance between traditionally feminine and masculine traits, especially when fostering collaboration and resilience. Femininity in games is shaped by cultural processes, affecting visuals, narratives, and sociability (Fontoura & Amaral, 2019). This article explores the design philosophy behind Sahakarya, a board and card-based game aimed at training communities in flood preparedness. By integrating elements that reward kindness, collaboration, and diverse skills, the game challenges conventional win conditions and encourages players to adopt cooperative strategies. The focus on balancing feminine and masculine traits fosters inclusivity and builds a narrative of collective survival. We discuss key mechanics, such as resource sharing, diverse win conditions, and character representation, and how they promote community resilience while deconstructing traditional notions of individualistic success.

In real-world disaster scenarios, survival often depends on collaboration, empathy, and resourcefulness. However, many games tend to emphasize competition, resource hoarding, and

individual triumph, reflecting traditionally masculine traits that dominate game design. Sahakarya aims to break this mould by incorporating both feminine and masculine aspects, emphasizing teamwork, altruism, and resilience over individualistic achievement. By rewarding kindness, acknowledging diverse skills, and fostering collaborative strategies, the game teaches players the importance of community resilience, making it a valuable tool for disaster preparedness training.

Figure 2 Sahakarya's Game Board, Pawns, Cards and Currency

1.13.   Collaboration Over Competition

In disaster scenarios, survival in a team is often easier than going solo. Collaborative skills like sharing resources and helping others can make the difference between survival and failure. To reflect this reality, Sahakarya discourages resource hoarding and instead rewards players for cooperative behavior. For instance, players can trade safety consumables such as floatation devices, safety kits, or medical supplies, fostering friendly dynamics at the table. This design choice encourages players to think beyond individual gain and prioritize community welfare. These skills also aid in the development of problem-solving, communication, and critical

thinking abilities, which may be employed in real-world circumstances. The game also features community upgrades, which allow players to pool resources to build structures that protect the entire village. This mechanic underscores the importance of collective effort over individual advancement, teaching players that resilience is a shared responsibility. The occurrence of learning through collaboration or competition can be supported by the Social constructivist theory, which states that Learning is a social process, and shared goals and social settings enhance learning (Vygotsky, 1978).

1.14.   Acknowledging Diverse Skills

"In diversity, there is strength." This principle is central to Sahakarya's design. Players assume roles with unique strengths, such as being caring, intuitive, or knowledgeable. This makes the game more inclusive of feminine traits, providing insights into new perspectives. For example, one character might excel at collecting resources, while another specializes in upgrading community structures. This diversity ensures that every player can contribute meaningfully to the game, regardless of their individual skill set. The winner is determined not by who hoards the most resources but by who helps the most, using their unique abilities. This approach celebrates different forms of intelligence and skill, challenging traditional notions of success in games.

1.15.   Rewarding Kindness

In real life, acts of kindness often go unnoticed or unrewarded. Sahakarya flips this script by making kindness a central game mechanic. According to Skinner's operant conditioning, rewarding desirable actions can enhance (Skinner, 1937; Staddon & Cerutti, 2003) the internalizing of the behavior and thus the repetition of behavior, which in the current game is to show kindness and play

collaboratively for social well-being. Players earn points for helping others, whether by trading resources, providing safety consumables, or rescuing NPCs (non-player characters) representing diverse backgrounds. The game includes representation of differently abled individuals, people of varying ages, and even animals, encouraging players to extend their empathy to all. According to the empathy altruism hypothesis, fostering such empathy leads to altruistic behavior (Batson et al., 1981). The focus on kindness in the game serves a dual purpose: it instills helpful behavior in players while highlighting the value of inclusivity. By rewarding altruism, the game reinforces the idea that kindness is not just a moral virtue but a practical survival and community-building strategy.

Figure 3 Sahakarya's game Board with pieces and the flood

1.16. Knowledge Sharing Mechanisms

To ensure that every player benefits from the game's educational content, Sahakarya incorporates knowledge-sharing mechanics. Players must read cards aloud, disseminating information to the

entire group. This causes vicarious learning among the players, where observing one player learn can imbibe similar learning among the other players (Fryling et al., 2011). Even if a card directly benefits one player, its knowledge becomes a shared resource. Additionally, trading mechanisms allow players to share not just physical items but also information, fostering a culture of collaboration. These features ensure that all players, regardless of their role, leave the game with practical tips for disaster preparedness.

1.17.   Community Resilience Through Upgrades

One of the game's most innovative features is the ability to upgrade both individual houses and community structures during the mitigation stage. The broaden-and-build theory of positive emotions (Fredrickson, 2004) suggests that recognizing and utilizing diverse strengths (positivity from upgradation) fosters resilience and problem-solving capacity. Players can choose to fortify their homes or invest in community upgrades like flood barriers or evacuation centers. While individual upgrades offer immediate protection, community upgrades benefit everyone, teaching players the value of collective resilience. By presenting players with these choices, Sahakarya emphasizes that survival is not a zero-sum game. The success of the community often depends on individual sacrifices, a lesson that mirrors real-world disaster scenarios.

1.18.   Strategic Flexibility

Unlike many games that follow a linear path to victory, Sahakarya offers multiple win conditions. Players can focus on knowledge collection, kindness, or a balanced approach. This flexibility allows players to adapt their strategies mid-game, ensuring that no single approach is inherently superior. For example, a player struggling to

collect resources might shift their focus to helping others, earning kindness points instead. This dynamic gameplay keeps players engaged and reinforces the idea that there are multiple paths to success, both in the game and in real life.

1.19. Gameplay Mechanics: Preparation and Survival

The game begins with a preparation phase, where players have time to adopt various strategies. They can focus on upgrading their homes, collecting resources, or gathering special items. No single strategy guarantees victory; success depends on how effectively players plan and use their resources. As the game provides space and time to prepare oneself, it also allows one to modify one's strategies according to the gameplay of others. This flexibility fosters creative and critical thinking and allows one to learn through observing. One's mistakes are learning to the other in this game as well as how to apply them in real-life scenarios. The knowledge provided and social and observational learning together make the game a multifaceted opportunity for the players rather than just being a game.

As the game progresses, the flood—represented by a linear movement mechanic—forces players to move toward the evacuation site. This creates a sense of urgency and ensures that players remain focused on the end goal: survival. To add depth to the gameplay, each character has unique powers that influence their strategy. These powers allow players to be self-reliant while contributing to the group, striking a balance between individual and collective success.
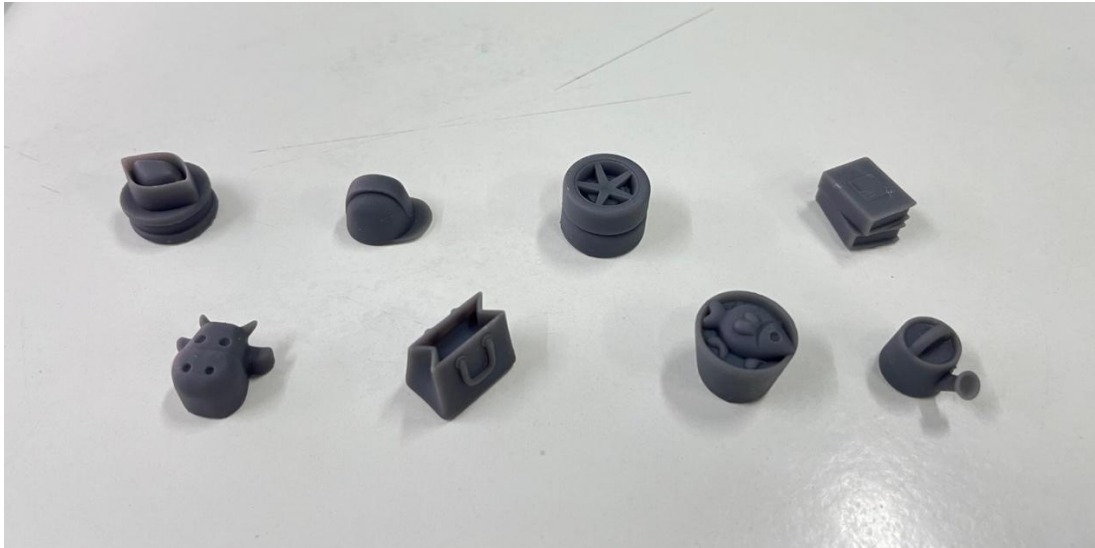
Figure **1***. Pieces for all the characters one can play as in Sahakarya*

1.20. Educational Value

At its core, Sahakarya is an educational tool. It teaches players real-life disaster preparedness tips, such as maintaining a safe distance from floodwaters and collecting essential items like medical kits and floatation devices. The game also emphasizes the importance of community support, showing how collective action can mitigate the impact of disasters. The inclusion of diverse NPCs further enhances the game's educational value. By representing people from all walks of life, including differently abled individuals and animals, the game fosters empathy and encourages players to think about the needs of others in their community. By representing characters from various walks of life, *Sahakarya* challenges players to broaden their social identities, extending empathy to groups that may differ from their own lived experiences. This inclusive representation encourages perspective-taking, a key component of empathy. When gamers assist NPCs who vary from them, they participate in cognitive and emotional processes. This is consistent with research demonstrating that exposure to diversity in controlled situations, such as games, lowers prejudices and promotes prosocial attitudes (Pettigrew & Tropp, 2006).

1.21.   Balancing Fun and Realism

While Sahakarya aims to educate, it also prioritizes player enjoyment. The game's mechanics are designed to be engaging, with elements like trading, role-specific powers, and multiple win conditions keeping players invested. By balancing fun and realism, the game ensures that players remain motivated to learn and collaborate.

Sahakarya exemplifies how game design can balance traditionally feminine and masculine traits to create an inclusive, educational, and engaging experience. By emphasizing collaboration, kindness, and diverse skills, the game challenges players to rethink conventional notions of success and adopt strategies that prioritize community resilience. In a world increasingly threatened by climate change and natural disasters, tools like Sahakarya are more important than ever. By teaching players the value of empathy, collaboration, and preparedness, the game equips communities with the skills they need to face real-world challenges. Through its innovative design, Sahakarya not only entertains but also empowers, making it a model for future educational games.

1.22. About the team

Sahakarya Design Team: Pallavi Sarkar, Farhan Shaikh, Iha Gupta, Lahar Mahesh, Anushka Mittal

The team consists of students in their 3rd year of college and a 4th year intern learning design from IIT Guwahati. They are students at the Sustainability and Social Innovation Lab in the Design Department.

1.23.   References

Batson, C. D., Duncan, B. D., Ackerman, P., Buckley, T., & Birch, K. (1981). Is empathic emotion a source of altruistic motivation? Journal of Personality and Social Psychology, 40(2), 290-302. https://doi.org/10.1037/0022-3514.40.2.290

Fontoura, M. M., & Amaral, M. A. (2019). Femininity in video games: an analysis of gender in terms of visual aspects, narrative and sociability. Proceedings of international conferences interfaces and human computer interaction 2019; game and entertainment technologies 2019; and computer graphics, visualization, computer vision and image processing 2019,

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. Philos Trans R Soc Lond B Biol Sci, 359(1449), 1367-1378. https://doi.org/10.1098/rstb.2004.1512

Fryling, M. J., Johnston, C., & Hayes, L. J. (2011). Understanding observational learning: an interbehavioral approach. Anal Verbal Behav, 27(1), 191-203. https://doi.org/10.1007/BF03393102

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. J Pers Soc Psychol, 90(5), 751-783. https://doi.org/10.1037/0022-3514.90.5.751

Skinner, B. F. (1937). Two types of conditioned reflex: A reply to Konorski and Miller. The Journal of General Psychology, 16(1), 272-279.

Staddon, J. E., & Cerutti, D. T. (2003). Operant conditioning. Annual review of psychology, 54(1), 115-144.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes (Vol. 86). Harvard university press.