

Games for Climate Activism - Evidence Base Summary

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Introduction

Beginning in 2019 with the emergence of the [Playing for the Planet Alliance](#) and the [International Game Developers Association Climate Special Interest Group](#), the idea that games can be an effective medium for climate activism has captured the attention of game development professionals and academics around the world. This new affinity space stems from a broader movement that has focused on games for social impact in general, with a much longer history.

This document summarizes the concepts that have acted as scaffolding for this new idea alongside supporting evidence. The body of evidence supporting games and play as an effective avenue for climate activism comes from a number of different fields, including cognitive science, psychology, anthropology, sociology, organizational change, and game design theory. It is our perspective that this multidisciplinary evidence base suggests that digital games represent an underleveraged opportunity to enable climate action on a global scale.

1. Moving beyond awareness-building

Environmental psychology emphasizes the need for communicators to move beyond building awareness of environmental issues, and focus instead on systems and solutions. The [Environmental Game Design Playbook](#) from Clayton Whittle et. al. synthesizes two environmental psychology frameworks into a list of indicators of pro-environmental behavior game developers can target to move beyond building awareness. The EGDP also includes a list

of concrete game design tactics for social impact that leverage games' unique strengths as interactive media. These design tactics are largely derived from the broader field of serious games, where they have been successfully applied in other contexts (ranging from financial literacy to the U.S. war on terror) to change how people perceive and engage with social issues (Whittle et. al. 2022).

The EGDP describes a few critical considerations in environmental psychology which we believe games are particularly apt at navigating:

- **Building systems thinking:** At their core, games are simulated systems, and players achieve the outcomes they desire by learning how different game systems interact. Games have built-in rhetoric through how they represent systems, coined by games scholar Ian Bogost as “procedural rhetoric” (Bogost 2007). Bogost explains that games “represent how real and imagined systems work, and they invite players to interact with those systems and form judgments about them...Not only can videogames support existing social and cultural positions, but they can also disrupt and change those positions, leading to potentially significant long-term social change” (Bogost 2007). Through interaction and experimentation, games can illustrate the interconnectedness of disparate systems, including our own dependence on natural systems to maintain thriving communities.
- **Supporting player self-efficacy:** Climate scientist Michael Mann describes how years of emphasis on individual responsibility has stymied action, leading many to disengage due to the scope of the problem relative to the actions they can take. Mann argues for a messaging framework emphasizing the urgency of the climate crisis but also the agency we have to address it. Mann elaborates that “one way to get past that feeling of being overwhelmed by the scale of the problem is the agency that we feel when we actually start acting. If you lead people down a path of engagement, there’s a snowball effect that can lead to greater and greater engagement” (Barnett 2021). Games offer players agency, allowing them to shape the trajectory of a narrative through the actions they take. Game developers are already experts in helping players build self-confidence in taking action, and we believe this expertise is highly applicable to building skills for climate advocacy and resilience.
- **Reshaping perceived social norms:** A recent study in Nature Climate Change describes that while 69% of the global population expresses a willingness to contribute 1% of their personal income to fight global warming, “individuals around the globe systematically underestimate the willingness of their fellow citizens to act” (Andre et. al. 2024) by 26 percentage points (Andre et. al. 2024). Cognitive scientist Dr. Pooja Paul argues that “the perception gap is a big problem because as humans, our behavior is finely calibrated to our perceptions of how others typically behave. And so, when we underestimate others’

willingness to act on climate, it actually dampens our own motivation to act” (Paul 2024). The EGDG outlines how game developers and community managers can foster micro-cultures - small communities or affinity spaces built around specific games - that can shift these perceptions and build the normative foundations for action (Whittle et. al. 2022).

2. Cultivating support for the energy transition through sociotechnical imaginaries

Sociotechnical imaginaries research examines how “collectively held, institutionally stabilized, and publicly performed visions of desirable futures” (Jasanoff 2015) that are deemed technologically attainable shape action on the ground. Researchers from Arizona State University (ASU) have attributed the rapid buildout of renewable energy systems in Puerto Rico to such an imaginary, concluding that “new imaginaries have the potential both to create powerful public support for renewable energy technologies that can accelerate energy systems change and, at the same time, help illuminate strategies for deploying energy technologies in ways that create meaningful impact and value in people’s lives in diverse communities and thus contribute to making energy transitions more just and inclusive” (Echevarria et. al. 2023). More can be read about this case study in Trevin York et. al.’s [Gaming for Climate Action](#) report. In simple terms, people can’t transition toward a future they can’t imagine, and games offer an innovative pathway to help players imagine what a desirable climate future might look like for them and their community.

In parallel, the Intergovernmental Panel on Climate Change (IPCC) has recognized that “social and cultural processes play an important role in shaping what actions people take on climate mitigation” (Creutzig et. al. 2022). The authors argue with high confidence that social and cultural processes “offer potential levers to change normative ideas and social practices in order to achieve extensive emissions cuts” (Creutzig et. al. 2022). As previously discussed, we are strongly influenced by those around us, and cultural mediums play a critical role in how we have learned to interact with each other and our environment. Cultural mediums also offer an opportunity to normalize new ways of being that support mitigation efforts. For example, games can normalize the kinds of civic engagement and advocacy skills that are needed to support critical grassroots organizing. More can be read about the intersection of games, climate, and community-building in our recent [Sustainable Futures MicroJam - Create Community](#) resource.

Digital games take up an increasingly large share of the cultural zeitgeist of the 21st century. Over 3.2 billion people played digital games in 2022, with the vast majority playing on mobile devices (Newzoo 2022). In a recent literature review on the cultural influence of games, researchers from the University of Extremadura conclude that “video games ultimately emerge as powerful cultural tools that influence various aspects of contemporary life and perceptions of reality” (Cerezo-Pizarro et. al. 2023) with the caveats that transmission of culture is bidirectional

(that is, game developers are often strongly influenced by game consumers) and context-dependent (that is, a player's cultural background informs their interpretation) (Cerezo-Pizarro et. al. 2023). The cultural relevance of games is also highlighted by the recent pervasiveness of their intellectual property in other mediums. For example, the Super Mario Bros. Movie is the 17th-highest-grossing film of all time (IMDb.com 2023). Despite the immense influence games wield over popular culture and the role culture plays in enabling transformation, games remain relatively untapped as an avenue for strategic climate communications. Now informed by advances in sociotechnical imaginaries research, we consider this a missed opportunity for institutions dedicated to climate mitigation.

3. Play as an evolutionary construct for building capacity

Insights from evolutionary biology and anthropology suggest that games are an innately human way to engage with topics that are physically or psychologically threatening. Research on the evolutionary origins of play dates back as early as the late 19th century, before scientific consensus had even been reached on Darwin's theory of evolution. Today, it is widely understood that play serves a fundamental adaptive function for the survival of individuals and our species. In *The Cambridge Handbook of Play: Developmental and Disciplinary Perspectives*, psychology researcher Peter Gray describes four evolutionary functions of play that he considers well-supported by over a century of debate and research:

- Practicing skills that are essential to an individual's survival and reproduction.
- Learning to cope physically and emotionally with unexpected, potentially harmful events.
- Generating new, sometimes useful creations.
- Reducing hostility and enabling cooperation.

In other words, play is an important evolutionary mechanism for individuals to practice responding to novel (and often unsafe) situations in a safe environment. Subsequently, this growth in individual capacity enables them to tend to the needs of their community should disaster strike (Gray 2019). Play is how we've evolved to build individual and communal capacity to face both imminent and existential danger.

The evolutionary functions of play parallel gaps within the broader climate movement. The United Nations Framework Convention on Climate Change (UNFCCC) characterizes capacity-building on individual, institutional, and systemic levels as “fundamental to achieving the goals of [the UNFCCC] and the Paris Agreement” (UNFCCC n.d.-b). For individuals, games and play can offer a seamless way to train in life-saving skills, as is perhaps best exemplified by the [gaming work of the Atlantic Council's Climate Resilience Center](#).

Play is also deeply relevant to institutional resilience. Andrew Hoffman, a scholar of sustainable business at the University of Michigan, describes how successfully mitigating and adapting to the impacts of climate change “requires a careful process of organizational change management”

(Hoffman 2019). Governments, businesses, nonprofits, and communities alike will need to adapt to rapidly changing conditions wherein resistance to change can render them ineffective. Hoffman argues that “companies must engage workers as partners in identifying and enacting new and innovative strategies...[and] focus on diffusing responsibilities for climate action throughout the organization” (Hoffman 2019) in order for organizational change to be effective. In other words, building individual resilience to unexpected changes and capacity to take on new responsibilities are key considerations for bolstering the adaptive capacity of institutions. Given the implications of these studies, we believe that games, as an inherently playful medium, are a critically overlooked solution for capacity building for the climate crisis.

4. Easing climate anxiety to enable climate conversations

Climate change is a charged and polarizing topic that can trigger severe anxiety (Pickering 2023) and the “fight, flight, freeze, fawn” response in individuals (as outlined by Charlie Wood in his excellent article on [addressing trauma in the climate movement](#)). Not only is climate change a complex topic involving existential risk, but acknowledging its very existence can threaten some peoples’ group identity (Barnett et. al. 2021), leading many to avoid the topic in conversation. According to the Yale Program on Climate Change Communication, two-thirds of Americans say they “rarely” or “never” discuss global warming with family and friends, even though a majority of Americans (64%) say they are at least “somewhat worried” about global warming (Yale Program on Climate Change Communication 2024). This “conversation gap” is a problem when we need increased civic participation from everyday citizens to shape local and national policies on climate change. Social anxiety around climate conversations is holding back grassroots action. Easing this anxiety and facilitating conversation is thus an important step toward engaging with the “movable middle” - those who are on the fence, ambivalent, or not yet engaged on a specific public policy issue.

Though not yet mainstream, games are finding a unique niche in psychotherapy. A scoping review from Dewhirst et. al. evaluates the quality and takeaways of a series of randomized controlled trials (RCTs), concluding that “the available evidence suggests that serious games could be an effective format for an intervention to reduce mental health symptoms and improve outcomes of individuals” (Dewhirst et. al. 2022). Some professional counselors are already utilizing games in their practices in line with social-emotional learning (SEL) principles, believing games to be safe spaces to experiment with social interactions, especially for those with social anxiety (Fishman n.d.-a).

This emerging area of research supports long-held theories that have shaped best practices in game design and development. Johan Huizinga, author of *Homo Ludens*, famously described games as “temporary worlds within the ordinary world, dedicated to the performance of an act apart” (Huizinga 1949) in which players enter a special social and psychological state. This

psychological state is what modern game scholars refer to as “the magic circle,” which video game theorist Jesper Juul best characterizes as “a description of the salient differences between a game and its surrounding context...that players negotiate and uphold” (Juul 2008). A simple example of the “magic circle” can be found in play-fighting, which is distinctly different from actual fighting in that players negotiate and uphold a social agreement not to hurt each other. Another example can be found in the game “Among Us,” in which a core part of the game is lying to your friends, something that would be socially unacceptable outside the confines of the “magic circle”. Most relevant to climate activism is the idea that games can create a “magic circle” around climate conversations by integrating climate science into game narratives, worldbuilding, or mechanics. Players can approach these conversations from a frame of mind in which they are already actively negotiating physical and psychological boundaries with other players. In the same way games offer a safe space for those with social anxiety, we hypothesize that games offer a safe space to talk about climate anxiety, building trust and closing the “conversation gap.”

Concluding Thoughts

A common thread that runs throughout each of these core concepts is reframing how we think about games and play. We often think of play as the linear opposite of seriousness: as frivolous, fantastical, and unimportant. Dr. Joost Vervoort, Associate Professor of Transformative Imagination at the Copernicus Institute of Sustainable Development, has offered an alternative model which he believes to be more accurate: [that deep seriousness and playfulness are actually closely related](#), and the opposite of ‘sleepwalking through life’ (Vervoort 2022). Our perspective is that common stigmas have held games back from being widely utilized for social impact. We hope to take this next step with you to realize games’ full potential to tackle some of the most critical issues of our time.

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