Enabling Restorative Hawaiian Futurism via a Tabletop Role-Playing Game and Digital Haʻi Moʻolelo

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Figure 1: Kaona hybrid table-top/mobile gameplay concept (right) based on principles of the Lōkahi Wheel (left)

Abstract

Colonization has impacted Native Hawaiians for centuries, destroying culture, language, and community, and exacerbating disasters such as COVID-19. However, a renaissance of Hawaiian culture has emerged, marked by increased longevity, education, and social mobility among Native Hawaiians. In this restorative spirit, we present Kaona, a tabletop role-playing game (RPG) and digital storyteller, designed to foster youth wellbeing from a Native

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CHI PLAY Companion '24, October 14–17, 2024, Tampere, Finland

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ACM ISBN 979-8-4007-0692-9/24/10
https://doi.org/10.1145/3665463.3678822

Hawaiian perspective, by introducing the values of *lōkahi* (harmony). Kaona engages players in culturally revitalizing gameplay, integrating technologies to enrich immersion as players collaborate to restore balance to the realms they explore. Players problem-solve, self-reflect, and build community as they navigate complex quests inspired by local lived experiences and Hawaiian *moʻolelo* (stories and legends). This paper details Kaona's development, iterative playtesting, and our initial observations, presenting culturally restorative, community-informed RPGs as a promising avenue for empowering Native Hawaiian youth, fostering community wellbeing, and inspiring Indigenous futures.

CCS Concepts

• Software and its engineering → Interactive games; **• Human-centered computing → Interactive systems and tools**.

Keywords

Co-design, Digital Story-telling, Serious Games, Digital health and wellness

ACM Reference Format:

Rachel Baker-Ramos, Michael Parkin, Angelica Raza-Furtado, Alika Spahn Naihe, Jack Hobbs, Jeffrey Vierra, Aaron Ramirez, Chantel Rubin-Molina, Cheridean Kaaialii, Celeste Mason, Yaman Sangar, May Okihiro, and Josiah Hester. 2024. Enabling Restorative Hawaiian Futurism via a Tabletop Role-Playing Game and Digital Haʻi Moʻolelo. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '24), October 14–17, 2024, Tampere, Finland*. ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3665463.3678822

1 Introduction

Before the United States illegally annexed Hawaiʻi in 1898 [9], Native Hawaiians had established a balanced and sustainable relationship with the land, viewing it as *ʻāina*, "that which sustains us," rather than a resource to exploit. This interconnected dynamic extended to Hawaiian views of wellbeing, encapsulated in the notion of *lōkahi*, meaning balance, togetherness, and living in harmony with community, nature, and the world around us. The impacts of colonization have led to systemic injustices and persistent health disparities including poor health and wellbeing, higher rates of suicide, poor self-reported mental health, and lower engagement with mental health services [1, 23, 28]. Recently, however, Hawaiʻi is experiencing a resurgence of cultural empowerment, recognizing the importance of Indigenous knowledge in shaping the future.

Inspired by this cultural revival alongside Hawaiʻi's youth wellness crisis, our team crafted Kaona,[1] a role-playing game (RPG) designed to foster *lōkahi* values and youth wellbeing from a *Kānaka Maoli* (Native Hawaiian) perspective. Kaona is a four-player tabletop RPG and companion digital storyteller application, designed in collaboration with community members on Oʻahu's Waiʻanae Coast. The game takes place in six post-apocalyptic *moku* (realms) that have fallen out of harmony, fuelled by corrupted rulers that are distinctly unbalanced. The *moku* represent the six domains of the lōkahi wheel, with their landscapes, characters, and quests inspired by Hawaiian *haʻi moʻolelo* (storytelling), *moʻolelo* (stories and legends), Hawaiʻi's history, and life experiences relatable to youth in Waiʻanae. Players work together using RPG mechanics [4] to restore *lōkahi* in all six *moku* by completing quests and healing corrupted rulers. Kaona's digital storyteller application enhances gameplay immersion and provides guidance helpful for first-time RPG players. Kaona takes the youth on a journey while instilling Hawaiian cultural practices, increasing awareness of *lōkahi* values, and enhancing personal and community wellness through a Hawaiian lens. Collaborative gameplay empowers players to develop a sense of their identity in the context of community and explore how their interactions with each other are vital to health and wellbeing. Hawaiian *moʻolelo*, history, and place-based references throughout the game enable players to mirror situations within their lives, develop approaches to contend with relevant challenges, and connect with others. Additionally, this fantasy representation prompts students to reflect on their own lived experiences through Kaona's utopic and dystopic realms, stimulating critical reflection on contemporary issues and imagining a balanced and just future for Native Hawaiian communities.

In the following Work-in-Progress paper, we outline our (1) approach, (2) community-engaged development process, and (3) initial observations about playtesting, storytelling, and codesign sessions with high school students in Waiʻanae, Hawaiʻi. We present our strategy as a promising avenue for community-informed game design of culturally revitalizing and place-based educational experiences, centered on Indigenous perspectives and stories. Future work will evaluate the usability, motivation/engagement, and learning effectiveness of the various components of the game system (artifacts, narrative, structure, and game mechanics).

2 Context

2.1 The NHPI Youth Wellness Crisis

Kaona emerged as a response to the crisis in Native Hawaiians and other Pacific Islanders (NHPI) youth wellbeing brought on by structural inequities [7, 8] and the COVID-19 pandemic. During the pandemic, youth experienced dramatic disruptions to everyday life including lockdowns, school closures, family unemployment, and food insecurity. NHPIs experienced some of the highest rates of infection, morbidity, and mortality from the COVID-19 pandemic [19], especially in rural communities, such as our community of focus: Waiʻanae and the far Leeward coast of Oʻahu. Structural challenges in accessing healthcare and historically-founded mistrust of healthcare services contributed to these negative outcomes [13, 16]. As a result, many youth dealt with serious illness and deaths among family members and friends. It is not surprising that youth are confronting increased depression, anxiety, poor school performance, and generally feeling lost. For NHPI, these experiences build upon generations of health, social, and economic disparities rooted in generational trauma of colonialism [17].

2.2 The Kaona Team

The Kaona team is a collaboration between Theorycraftist Games, the Pacific Alliance Against COVID team at the Waianae Coast Comprehensive Health Center (WCCHC), and the Ka Moamoa Ubiquitous Computing Lab at the Georgia Institute of Technology. The team was formed in response to WCCHC's exchanges with

[1] Kaona can be defined as a hidden meaning, or double meanings that signify good or bad fortune. *Inoa*, or name, holds *mana* (spiritual power) and is important in identifying intention and purpose.

students and community members about the NHOPI youth health crisis, revealing a need for interactive ways to restore wellbeing and peer-to-peer reconnection. WCCHC is a healing, learning, and innovation center, serving the Waiʻanae community to address health disparities and inequities, with expertise in community-based participatory research. Theorycraftist Games comprises *Kānaka Maoli* and Hawaiʻi-born game developers with deep community roots; Jeffrey Vierra graduated from Waiʻanae High School, Jack Hobbs graduated from Nanakuli High, and Alika Spahn Naihe is a well-known and highly talented *Kānaka* artist and cultural practitioner. Theorycraftist Games specializes in games that promote youth and community empowerment through a Native Hawaiian lens. The Ka Moamoa Ubiquitous Computing Lab is a Native Hawaiian-led interactive computing research lab, with expertise in interaction design, codesign of community-based technology, game development, and culturally revitalizing educational technology. Together, the Kaona team holds a broad range of expertise and cultural backgrounds, while centering *Kānaka Maoli* perspectives, allowing the team to engage thoughtfully with the Waiʻanae community and ultimately cocreate an impactful and resonant learning experience for *Kānaka Maoli* youth. *[see Positionality Statement in Supplementary Materials]*

3 Approach

3.1 Game-Based & Narrative-Based Learning

As game-based learning and narrative-based learning has become increasingly relevant, its application to diverse areas and interests has flourished [18], with efforts to address health and wellness concerns [11, 12, 14, 15, 24, 26] continuing to be developed and evaluated. The minimal scholarship that explores the potential for narrative-based game-based learning with Indigenous communities of primary orality (communities that maintain oral traditions that predate the introduction of writing), highlights the opportunities this approach provides to draw on vital cultural narratives, fostering learning experiences that are simultaneously novel and timeless, echoing ancestral practices [5, 10, 26, 27]. For example, Fortier et al. [5] developed the Good Behavior Game for students in Swampy Cree Tribal Council communities in northwest central Manitoba, Canada, by mixing scientific and traditional methods (storytelling, community sharing circles) as part of "two-eyed seeing, a principle that recognizes both Indigenous and Western ways of knowing as equal contributors," resulting in health and wellbeing interventions that resonated with local First Nations youth.

Mindful of Hawaiʻi's context and the overrepresentation of Western knowledge systems, Kaona takes a decentering [22] approach to incorporating traditional practices into game-based learning, uplifting Hawaiian ways of knowing and fostering critical engagement with Western models of health. This approach is guided by the *ʻŌlelo Noʻeau* (Hawaiian Proverb) *"I ka wā ma mua, i ka wā ma hope"* ("we look to the past as a guide to the future") [20], which illustrates how looking into the past allows learning from ancestral knowledge and brings hope for the future. For *Kānaka Maoli* and *Kamaʻāina* (those who grew up in Hawaiʻi), this reflection comes through *moʻolelo*: the stories and legends crucial to Hawaiian culture, displaying how the community builds knowledge. Kaona's core pedagogy is rooted in the Hawaiian value of *lōkahi*. Kaona emulates the Lōkahi Wheel wellness model developed by Kamehameha Schools,[2] which depicts the six domains of health toward which a person should strive to achieve balance in their life: *Kuleana (Work/School)*: A place to grow and achieve goals; *Mana'o (Thinking/Mind)*: Being comfortable with our thoughts; *Naʻau (Feeling/Emotions)*: Understanding and feeling our emotions; *Kino (Physical/Body)*: Taking care of our body; *Pili ʻuhane (Spiritual/Soul)*: What we believe in; and *ʻOhana (Friends/Family)*: Our support system. Critically, the Lōkahi wheel promotes the balance of these domains, meaning that wellness is interconnected, both within oneself and one's broader community - making introspection and community-building key learning outcomes of Kaona.

3.2 Community-Engaged Game Development

Exploration of the game development process through engagement with end-user communities can provide a rich and rewarding experience for group participation and collective knowledge building, as well as a resulting game that is culturally rooted and well-attuned to the needs and expectations of those who would benefit from the game experience. This approach is especially relevant for the development of experiences targeted to specific Indigenous populations living under Western colonization, as hegemonic player-centered research and industry-standard user engagement often reinforce dominant narratives [2, 3, 6, 25]. Through their game-jam-based production process, Laiti et al. [10] used participatory ethnographic methods with Sámi participants (who were themselves game developers) to design and develop an array of diverse and narrative-focused culturally relevant gaming experiences. Through codesign with Dine youths in addition to Native American psychologists, community health workers, and educators, Vigil et al. [26, 27] built health intervention systems, such as a geosocial AR mobile game, to create didactic health experiences with the behavioral/cultural elements that hold particular importance within their communities. Community-engaged game development is critical to ensure Kaona is authentic to the community, does not perpetuate harmful stereotypes or extractive research practices, and ultimately functions as a positive and valuable experience for *Kānaka Maoli* and *Kamaʻāina* youth.

4 Implementation

4.1 Community Engagement Sessions

Throughout Kaona's development, we have hosted over 9 community engagement sessions with 10 to 20 participants each, at Waiʻanae High School and Nānākuli Intermediate and High School on the Leeward coast of Oʻahu, as well as public sessions at Waiʻanae Coast Comprehensive Health Center (WCCHC) and Hamakua-Kohala Health Center. We selected after school health or gaming clubs already connected to the WCCHC team. Engagement sessions gathered community and student insights through (1) playtesting sessions of one to three *moku*, (2) storytelling sessions on narrations, quests, and quest options, and (3) codesign sessions of quest items and worldbuilding. Frequent engagement sessions allowed us to rapidly iterate on Kaona, addressing issues as soon as they emerged and proactively integrating community perspectives. Gathering

[2]Kamehameha Schools are a private school system in Hawaiʻi, that offer Hawaiian culture-based education, giving preference to students of Hawaiian ancestry[21]

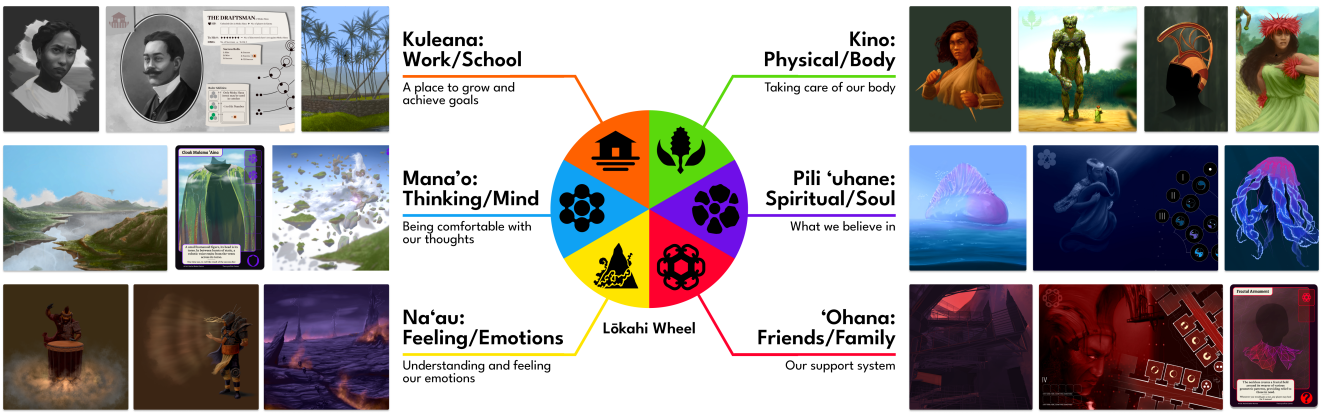


Figure 2: Lōkahi Wheel (center) with art from each corresponding *moku*: Work/School (top left); Thinking/Mind (middle left); Feeling/Emotions (bottom left); Physical/Body (top right); Spiritual/Soul (middle right); Friends/Family (bottom right)

insights from students and community members, ranging in age from 7 to 60, continues to be a vital aspect of our development.

4.2 Worldbuilding, Storytelling, & Quests

Kaona's development began with worldbuilding, guided through conversations on the state of youth wellness in Hawai'i and how game-based learning can promote youth wellbeing using the framework of the Lōkahi wheel. As a result, each Lōhaki wheel domain manifests as a *moku*, with an unhealed version representing what imbalance looks like in its corresponding Lōkahi domain, and a balanced alternative for its healed state (see Fig. 2). These dystopian and utopian worlds, along with their environment, inhabitants, rulers, and quests, are inspired by Hawaiian *mo'olelo*, Hawai'i's history, and life experiences relatable to youth in Wai'anae. For example, the Work & School domain becomes Moku Hana, a simulation that traps the players in the Wai'anae coast in the 1880s, when Western business interests dominated the communities. Each *moku* contains 9 quests and 1 recurring ruler quest that the players must work together to complete *[see Kaona Walk-Through in Supplementary Materials]*. To access quest mechanics, as well as students' understanding of concepts and affinity with cultural elements, we conducted playtesting and storytelling sessions with quest materials. Storytellers on our team narrated the quests and options to participating students, taking in students' questions about the narrative, feedback on the presented options, and freeform versions of desired options. We wove feedback and ideas into Kaona's quests and we included the option for free responses - quest options dictated by the player - in select quests.

4.3 Game Art, Design System, & Codesign

To make the distinctions between *moku* evident to users and provide a more immersive experience, the game's art and aesthetic is *moku*-specific, reflecting the cultures of the fictional people inhabiting these realms while maintaining a cohesive overall gaming experience. Kaona's game art, used throughout tabletop game pieces, the rulebook, and the digital storyteller application, is the first aspect of Kaona that players focus on, making them critical to the degree students connect with the game. The environmental and character art convey the six *moku* to the players, often displaying familiar landscapes, legendary figures, and historical references. Alika, the primary game artist, is of *Kānaka Maoli* descent and brings deep experience incorporating such themes into his art. As the item and rulebook art are the most prolific elements of the game, we determined they would be suited for the focus of codesign sessions. Students were given descriptions of Moku Mana'o paired with descriptions of items' abilities. With this prompt, students drew and wrote about what the item might look like, how it works, what it feels like, and what significance it holds in the *moku*. We included generated ideas (Fig.3, left) either as inspiration for art (Fig.3, right) or sketches used as art in the rulebook.

4.4 Application Design

The goal of the companion application is to curate immersion through digital *ha'i mo'olelo* (storytelling) and provide support to players unfamiliar with role-playing games. Given Kaona's classroom use case and our teenage/young adult user base, we felt mitigating distraction and using readily available technology was paramount. To achieve this, we designed the application for mobile phone and tabletop use, requiring only a single device per team, indirectly encouraging the phone owner to mute notifications, and treating the device as another artifact of the analog game. We pursued additional ways to integrate the companion app into the analog game, encouraging further player immersion and collaboration. For quest narration screens (Fig.4, left), we used minimal UI, giving users the option to read scrolling text or simply listen to the *mo'olelo*. Screens that require user input also encourage or require group discussion and tabletop interaction. For example, when beginning a quest, players must use the dice value, the tile number, and a chart on the ruler board to determine what symbol to select on the quest selection screen (Fig.4, right). This application features narration by Hawaiian storytellers, enriching the game with authentic *mo'olelo* and cultural immersion as it guides players through Kaona's *moku* and quests.

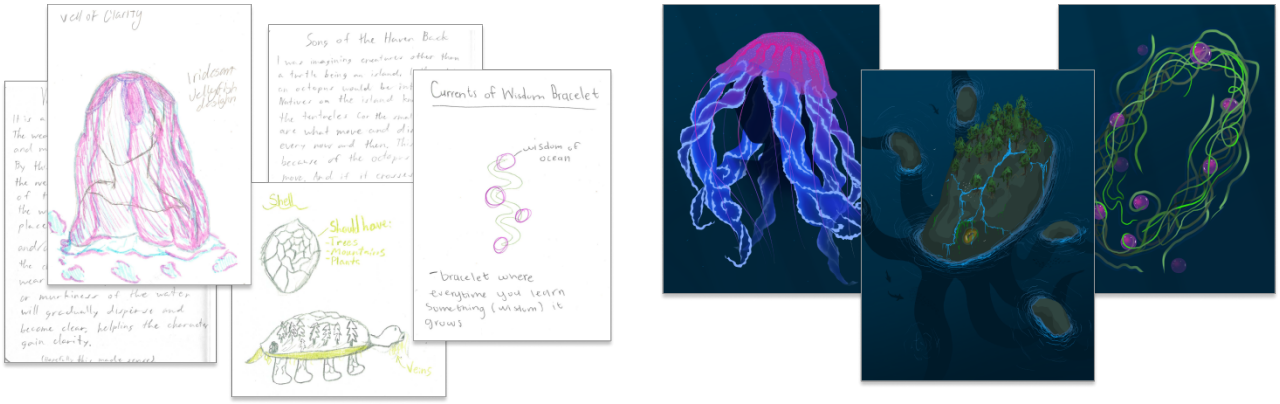


Figure 3: Student sketches and writing from codesign sessions (left) and Item art inspired by student codesign artifacts (right)

5 Observations & Discussion

The Ka Moamoa Lab team conducted semi-formal interviews of WCCHC and Theorycraftest Games team members to collect the following observations about playtesting, storytelling, and codesign sessions. Our initial observations point towards the potential for meaningful student engagement through culturally-rooted and place-based game-based learning and the pedagogical impact of collaborative gameplay in modifying student behavior towards peer-to-peer communication and group problem-solving.

Playtesting and storytelling sessions allowed us to understand which culturally revitalizing and place-based aspects of Kaona resonate with students, and improved the pedagogical function of Kaona. Early sessions were characterized by "excitement, confusion, curiosity, and reservation," P1 (Game Developer) noted, as participants responded with interest and energy to the concept, but had a difficult time grasping the game concepts and mechanics due to long narratives and confusing words. P1 also noted how players in after-school sessions arrived exhausted, so the narrative, while culturally representative, overwhelmed them. These initial observations guided our team to modify the game narrative, vocabulary, and rule set, making them, as P3 (Research Assistant) reflected, "easier for the community to be able to digest." Codesign sessions furthered this effort. P4 (Research Assistant) reflected on these sessions as "one of the better sessions that I had with the students. Not only was I able to see their creative minds thinking, they honestly thought of things that most adults wouldn't think of." Codesign allowed us to directly include students' ideas, while genuinely improving the game with novel ideas. Students responded well to these updated narratives. For example, when students interacted with a quest in Moku Hana, the *moku* set in the 1880s, students immediately recognized the fictional place as parallel to their own home, became very excited, and indicated that they would like a construction worker character (a predominant occupation for men on the Leeward Coast) to be included, referencing that key aspect of community identity. We also observed that game art was particularly important for students' connection with the game, as they could easily recognize aspects of their lived experiences mirrored in the game world. Students also showed excitement over the characters, especially how the characters reflected Hawaiian gender identities. P2 (Game Artist) noted that this resonating quality, in combination with fantasy representation, seemed to be what drew students in the most, explaining how Kaona is "an interesting and innovative approach to Hawaiian culture. Typically Hawaiian culture is taught in a historical aspect and not in a fantasy aspect - in a way that you can engage with imagination."



Figure 4: Quest narration screen with minimal UI (left); diagram of linked physical game and digital companion app elements (right)

Another important aspect that we observed during playtesting was the players' interaction with each other and how well they understood the importance of collaboration for achieving the game's goal: healing the land and understanding *lōkahi* and the meaning of Kaona. In most playtesting sessions, we observed that players began with very competitive attitudes; both P4 and P3 emphasized how students "did not want to work together," instead trying to complete quests on their own. P2 (Game Artist) hypothesized that this behavior partially stems from the competitive game dynamics students are used to: "There's not too many collaborative games that are widespread where kids would initially walk into a game and think about collaborating with everyone. It's usually a competitive one-vs-everybody or one-vs-one context. So that led to a lot of their interactions with each other - to be a little bit more competitive." However, player behavior changed as they realized the game's penalty for not working together - the game is designed

so that if one person "dies," then everyone does, restarting the game. P1 (Game Developer) explained how he observed Kaona's "self regulating" nature in how it reinforced player collaboration in both public and after-school settings, even modifying behavior of highly competitive "alpha gamers," as there was social pressure not to ruin the game for the group. While we needed to remind the players to work together to reach the end goal, players eventually understood this when they experienced how collaboration was key to gaining the items/stats needed to heal a *moku* or defeat the ruler. Team members recounted how students' behavior shifted during gameplay from individual competition to collaboration. P3 (Research Assistant) noted that students' "strategies changed when they realized that they needed other people, rather than just being by themselves." P2 (Game Artist) emphasized the game's impact on altering students' perspectives of their individual role within the team: "Just from playing the game, they start to view the world in a more collaborative perspective."

6 CONCLUSION & Future Work

Future steps include finalizing the development of the analog game (art assets, quest design, and supplementary documents); playtesting to gather feedback on the game's mechanics and themes; evaluating player experiences through interviews, focus groups, pre- and post-gameplay surveys regarding experience and effectiveness in the health awareness domains presented through Kaona; parallel development of the digital storyteller application in Unity Game Engine. To ensure a seamless and engaging digital experience, we will continuously iterate finalizing user flows and screens, voice acting for quests, and user tests.

Kaona demonstrates significant potential to serve as a culturally revitalizing and community-engaged educational tool that encourages introspection and shifts behavior toward collaboration. By grounding the game's design and development in Hawaiian values and *mo'olelo*, as well as continual community-driven design, Kaona engages students in a meaningful learning journey, where they can discover more about themselves, their community, their culture, and what Kaona means for them.

Acknowledgments

We want to acknowledge the community members and students whose insights have been invaluable in shaping Kaona. To our Kānaka teammates and partners, we thank you for the trust and vulnerability in sharing your culture with us. Thank you to our funding organizations, including the National Institute of Child Health and Human Development under Grant No. OT2HD108105-01. Lastly, we want to specifically acknowledge Cheridean Kaaialii, whose bright ideas started this entire endeavor.

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