AI4Hawai‘i: Culturally-Grounded AI Literacy Training for K-12 Hawaiian Education Teachers

Rachel Baker-Ramos
rachelbaker@gatech.edu
Georgia Institute of Technology
Atlanta, GA, USA

Evyn-Bree Helekahi-Kaiwi
evyn-bree.hele-kaiwi@ululahui.org
Ulu Lāhui Foundation
Honolulu, HI, USA

Alaka‘i Iaea-Russell
alakaii@hawaii.edu
Ulu Lāhui Foundation
Honolulu, HI, USA

Chanelle Lokelani Chin Tolentino
lokelani@hawaiistemlabs.com
Hawaii STEM Labs
Waipahu, HI, USA

Rebecca Diego
rebecca.diego@ululahui.org
Ulu Lāhui Foundation
Honolulu, HI, USA

Josiah Hester
josiah@gatech.edu
Georgia Institute of Technology
Atlanta, GA, USA

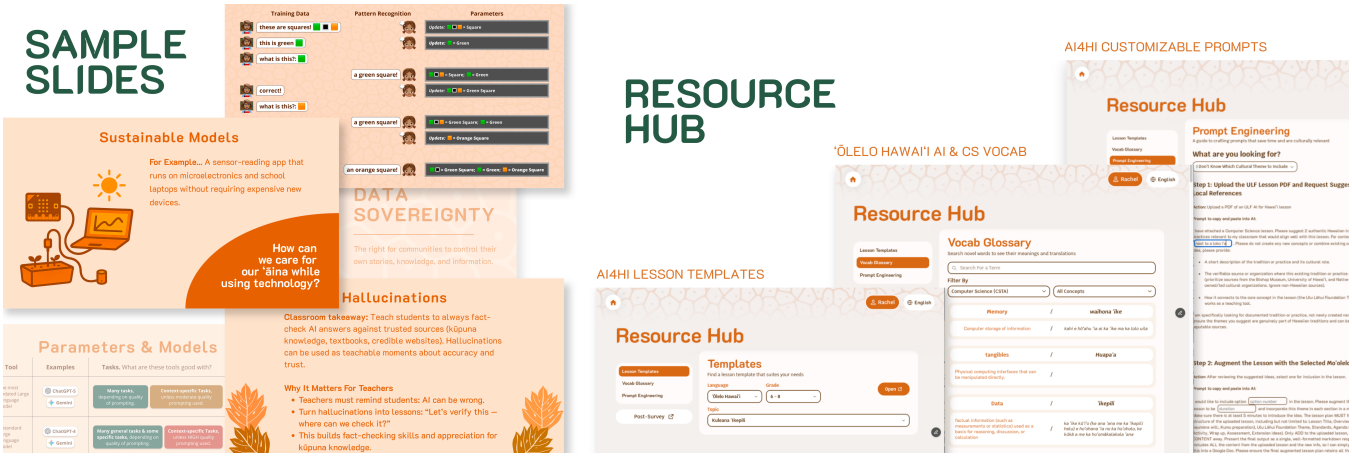


Figure 1: Left: sample AI4HI workshop slides, including theme slides on Sustainable Models, Data Sovereignty, and Hallucinations, and a Training Data / Pattern Recognition activity. Right: the AI4HI Resource Hub, showing lesson templates, the ‘Ōlelo Hawai‘i AI & CS vocabulary glossary, and customizable prompts

Abstract

Artificial intelligence tools are increasingly present in K-12 classrooms, yet most professional development resources treat AI as culturally neutral, leaving educators in Indigenous, bilingual, and place-based contexts without meaningful guidance. This experience report describes the design, delivery, and evaluation of *AI4Hawai‘i* (AI4HI), a series of AI literacy workshops for educators offered in both *‘Ōlelo Hawai‘i* (the Hawaiian language) and English, alongside a resource hub providing lesson templates, culturally calibrated prompt libraries, and an *‘Ōlelo Hawai‘i* AI vocabulary glossary. We present six thematic pillars structuring the curriculum—cultural alignment, data sovereignty, low-resource language considerations, sustainable models, low-connectivity AI, and creative expression—as an adoptable framework for AI education in Indigenous and underrepresented-language contexts. Drawing on pre/post survey data (20 matched pairs) and facilitator observations across six sessions, we document gains in AI literacy self-efficacy (+1.20 to +1.65 points on a 5-point scale), high resource ratings (4.48–4.67/5.0), and 84% lesson readiness. We highlight challenges and lessons learned that could guide Indigenous representation in AI and education.

CCS Concepts

• **Human-centered computing** → *Collaborative and social computing*; • **Social and professional topics** → **Cultural characteristics**; **Computing literacy**; *Adult education*; **Race and ethnicity**; • **Computing methodologies** → **Artificial intelligence**.

Keywords

AI literacy, educator professional development, Indigenous education, workshop design, place-based AI

ACM Reference Format:
Rachel Baker-Ramos, Evyn-Bree Helekahi-Kaiwi, Alaka‘i Iaea-Russell, Chanelle Lokelani Chin Tolentino, Rebecca Diego, and Josiah Hester. 2027. AI4Hawai‘i: Culturally-Grounded AI Literacy Training for K-12 Hawaiian Education

This work is licensed under a Creative Commons Attribution 4.0 International License.

SIGCSE TS 2027, Sacramento, CA, USA

© 2027 Copyright held by the owner/author(s).

ACM ISBN 979-8-4007-3075-7/2027/02
https://doi.org/10.1145/3857222.3860234

Teachers. In *Proceedings of the 58th ACM Technical Symposium on Computer Science Education V.1 (SIGCSE TS 2027), February 17–20, 2027, Sacramento, CA, USA.* ACM, New York, NY, USA, 7 pages. https://doi.org/10.1145/3857222.3860234

1 Introduction

The Hawaiian term for artificial intelligence, *ʻIke Kāpilipili,* joins *ʻike*, knowledge, with *kāpilipili*, a term that means both building and repetition. Like so many terms in *ʻŌlelo Hawaiʻi*, the Hawaiian language, this version emerged through meetings, discussion, and revision among expert speakers and practitioners of a language that colonial schooling once sought to eliminate and that communities have spent generations revitalizing [14]. Language experts involved in developing the term *ʻIke Kāpilipili* explained their reasoning in conversation with the authors: what contemporary AI performs is an imitation of intelligence, a copycat performance of human language and thought. The repetition within the term *kāpilipili* carries this sense of mimicry, explicitly encoding a critique left implicit by many AI literacy curricula: generative AI does not think, know, or understand. It predicts plausible continuations from patterns in human-generated data. In Hawaiian language and bilingual classrooms, that technical detail raises fundamental questions about whose knowledge is being imitated, whose language is visible in training data, whose histories are flattened into statistical association, and who has the authority to decide whether an AI-generated response is culturally or epistemologically sound [5].

For Kanaka Maoli (Native Hawaiian) educators, *ʻŌlelo Hawaiʻi* practitioners, and Indigenous technology scholars, these are not new questions. Before U.S. annexation, the Hawaiian Kingdom supported a rich intellectual and print culture, with high rates of literacy in Hawaiian and extensive Hawaiian-language newspapers, schools, legal records, and public debate [14]. Following the 1893 overthrow and the 1896 English-only schooling law, Hawaiian-medium education was suppressed for nearly a century. Community-led revitalization efforts beginning in the 1970s rebuilt pathways for children to learn through *ʻŌlelo Hawaiʻi.*

AI arrives in a language community still recovering from this history, building the educational infrastructure required for Indigenous language survival, and working to achieve curricular parity with English-medium classrooms. The existing inequities are visible even in seemingly minor curricular details: mainstream computing lessons that reference attics, skiing, and squirrels assume everyday experiences that many Hawaiʻi students do not share, positioning mainland geographies as the default world of computing. The issue becomes sharper in with AI in education. For curricula generation, educators have shared how the Western bias in general-purpose LLMs makes these tools useless-to-harmful for Hawaiian education [11]. For AI activities, educators have anecdotally reported that tools such as Teachable Machine [4] can struggle to reliably recognize Hawaiian faces during classroom exercises. (These anecdotes are supported by research on AI models not recognizing darker skin tones [6].) These moments reinforce the message that these technologies were not designed with Hawaiian teachers and students, or their communities, in mind.

AI4Hawaiʻi (AI4HI) addresses this context. Built on prior CS curriculum and professional development work with Kaiapuni and Hawaiʻi-based educators [13], AI4HI extends that work into AI literacy through six culturally grounded thematic pillars: cultural alignment, data sovereignty, low-resource language considerations, sustainable models, low-connectivity AI, and creative expression. The workshops treat AI as a technical system *and* a sociocultural force: something teachers can experiment with, critique, adapt, refuse, and govern in relation to their own students and communities. Alongside the conceptual framework, workshops provided practical tools including an online resource hub with *ʻŌlelo Hawaiʻi* vocabulary for AI and CS concepts, place-based prompting templates, and example lesson plans.

This experience report presents the design, delivery, and evaluation of the AI4HI workshops. Across six sessions, the workshops reached educators from 33 schools. Drawing on pre/post survey data and facilitator observations, we examine how educators understood AI before and after the workshops, what classroom uses and concerns surfaced, and how culturally grounded framing shaped teacher engagement. We document limitations including the challenge of supporting educators across varied language contexts, technical backgrounds, and institutional constraints. This paper makes three contributions. First, it documents an AI professional development effort designed explicitly for Hawaiʻi educators and grounded in Kanaka Maoli language, history, and educational priorities. Second, it offers a workshop model for teaching AI literacy through Indigenous critique and cultural grounding. Third, it presents findings for three audiences: CS educators in bilingual and place-based contexts, administrators and policymakers navigating AI in Indigenous education, and facilitators and researchers designing professional development in these settings.

2 Related Work

Existing K–12 AI literacy work, including the AI4K12 Five Big Ideas [19], Day of AI [1], Machine Learning for Kids [2], and AI4GA [20], has made substantial contributions to broad AI literacy, defining core AI competencies and developing robust classroom curricula and teacher-facing resources. However, much of this work was not designed for Indigenous education or language immersion classrooms, where the language of instruction carries the weight of revitalization and data sovereignty. As a result, educators in Hawaiʻi's public schools and Kaiapuni (Hawaiian language immersion) programs have entered the generative AI moment with few professional development models connecting AI literacy to Hawaiian language, place, history, and community governance.

Prior computing education research has established the importance of curricula that center local histories, land relations, and community expertise [8, 12, 13, 16–18]. Recent computing education work has called for decolonizing and Indigenizing computing education more broadly, emphasizing that computing curricula are never culturally neutral [10, 16]. Day of AI's 2025 evaluation of the program [7] spoke to this, sharing that teachers asked for translated resources, low-connectivity activities, and AI ethics incorporation.

3 Program Design

AI4HI was developed in direct response to requests from Kaiapuni *kumu* (teachers) and their colleagues across Hawaiʻi State Department of Education (HIDOE) complex areas for professional development that would help them navigate AI tools in alignment with

Hawaiian cultural values and the specific instructional demands of immersion classrooms. The AI4HI team included curriculum designers with extensive Kaiapuni and STEM education experience, cultural transposition leads responsible for Hawaiian-language and cultural accuracy, and HCI researchers who shaped the resource hub and workshop experience.

3.1 Structure

This effort comprised six workshops: one launch workshop co-hosted at a statewide AI education convening, two online workshops conducted in *ʻŌlelo Hawaiʻi*, two online workshops in English, and one in-person *ʻŌlelo Hawaiʻi* workshop with an extended *talk story*[1] session in Hilo. Each workshop followed a structured two-hour arc: an AI Training Foundations segment; the AI4HI themes segment; a prompting and curricula generation segment in which educators co-created a classroom lesson or activity; and a debrief for reflection and community sharing.

3.2 Team Positionality

Helekahi-Kaiwi, Iaea-Russell, Tolentino, and Hester are Kanaka Maoli (Native Hawaiian); Diego is *kamaʻāina* (local) with Kanaka Maoli family; and Baker-Ramos is a cultural outsider with sustained prior partnership experience in Hawaiian education contexts. Cultural authority over what constitutes appropriate, accurate, and meaningful AI education in Hawaiian contexts belongs to the Kanaka Maoli members of this team, with iterative feedback from the educators and communities we work alongside.

3.3 Workshop Content

3.3.1 Foundations. The AI Foundations segment introduced AI concepts through a lens immediately legible to Hawaiʻi educators before expanding to technical framing. Below, we describe example conceptual areas alongside the framing we used.

AI & Generative AI. Facilitators opened with a grounding observation: AI is already present in students' lives through search suggestions, photo filters, voice assistants, and translation apps. From that shared ground, we introduced AI as a computer system that identifies patterns in data to make predictions or generate outputs (text, images, sounds) with an immediate counterframe: AI does not think like a human brain, is not always accurate, and does not replace teacher expertise or *kūpuna* (elder) knowledge. We specifically offered a working reframe: think of AI as a very fast, sometimes helpful student who can summarize or generate ideas but who frequently gets things wrong unless someone checks the work. This positions the teacher as the authority and invites them into a critical relationship with AI from the start.

Training Data. We introduced AI training as a process of ingesting massive collections of text, images, and sound from the internet, books, and media, where biased or incomplete data produces biased or inaccurate outputs. The example was chosen deliberately: ask about "farming" and an AI trained predominantly on Western data will likely describe tractors and wheat fields before ever mentioning *kalo* (taro) cultivation. Kaiapuni educators recognized that dynamic immediately from their own attempts to use AI tools for Hawaiian content. We introduced two classroom-ready framing questions: whose voices are represented in this data, and what cultural knowledge is missing? Those questions recast AI bias and hallucination as learning moments in themselves, encouraging teachers to have students examine these outputs as evidence of whose knowledge AI systems encode and whose they do not.

Parameters and Model Size. We introduced parameters as the rules AI learns from training data that govern how inputs become outputs, using a concrete example (how a spam filter assigns higher weight to the word "FREE") before moving to the pedagogical point. We distinguished large models as powerful but computationally heavy and environmentally costly with small models being lighter, faster, and often better suited to low-connectivity contexts. The framing: a large, heavily loaded backpack versus a smaller, curated one. Both carry knowledge, but one is far more portable in the field. For rural Hawaiʻi schools where reliable Wi-Fi is not guaranteed, this distinction carries direct practical consequences.

3.3.2 The AI4HI Themes. The AI4HI themes reflect the dimensions of AI most consequential for Hawaiʻi educators and their communities. Each was introduced as a domain where teachers' existing cultural knowledge and community relationships give them authority to make informed decisions. We presented each theme with a conceptual framing, a concrete classroom-relevant example, and a *talk story* discussion question.

Cultural Alignment. We introduced cultural alignment as the degree to which AI tools support or conflict with Hawaiian values, such as *aloha ʻāina* (love of the land), *kuleana* (responsibility), and *pono* (righteousness and balance). As an example of positive cultural alignment, we described an AI-powered search tool that organizes knowledge by *ahupuaʻa* (land division), *moʻolelo* (story), and family lineage, and invited teachers to compare that to how existing AI tools respond when queried about Hawaiian-relevant content.

Data Sovereignty. We defined data sovereignty as the right of communities to govern their stories, knowledge, and information. For educators, it means being deliberate about where student work is stored, which AI tools have access to community knowledge, and what happens to that knowledge once it enters a commercial AI system. We walked through a specific example: a school that chooses to store *moʻolelo* in a community-governed local archive.

Low-Resource Language Considerations. We shared how AI systems learn from text, and because English dominates the digital landscape, *ʻŌlelo Hawaiʻi* is dramatically underrepresented in the training data of most large language models. The result is that AI tools perform poorly in Hawaiian, generating grammatically incorrect, culturally inappropriate, or fabricated content [11]. As a classroom example, we described a lesson-plan AI generator trained on a curated dataset of Hawaiian-medium educational resources and contrasted its potential outputs to what a general-purpose large language model produces when queried in Hawaiian. That contrast introduced the concept of fine-tuning and the idea that Kaiapuni educators are positioned to contribute to exactly the kind of dataset that would improve Hawaiian-language AI performance.

Sustainable Models. We explained how large AI models consume energy and water through computational demands. In Hawaiʻi, choosing tools that run on existing devices, minimize energy use, and avoid unnecessary cloud processing is a form of *mālama ʻāina*

[1] *Talk story* is a local term for informal, relational conversation. As a facilitation method, it creates space for participants to speak from their own knowledge and positionality.

(care for the land) teachers can model for students. As an example, we described a sensor-reading application that monitors reef health data using microelectronics and school laptops, without requiring cloud connectivity or new devices.

Low-Connectivity AI. We introduced low-connectivity AI tools, including on-device models that run fully or partially offline, that allow learning to continue regardless of internet access. This theme was especially relevant for *kumu* from rural Hawai'i schools, which often face connectivity inequities. We gave the example of an on-device AI math coach that provides scaffolding without Wi-Fi and syncs progress when connectivity is restored, then discussed what it would mean to design curricula around connectivity constraints.

Creative Expression. We proposed that AI can serve as an assistant in creative work, positioning AI as a collaborator to be guided, critiqued, and refined. We described an example in which AI assists a *kumu* teaching students to generate and then adapt traditional Hawaiian stamp patterns, with AI handling iterative variation while students make the cultural and aesthetic judgments about which outputs to keep, modify, or discard. That division of labor preserves the teacher's and students' cultural authority while putting AI to work on the generative tasks it handles well.

3.3.3 Prompting & Curricula Generation. In the final segment, we introduced prompting strategies framed through the metaphor of navigating a *wa'a* (canoe): knowing where you want to go, and communicating clearly with your crew. In this final part, we had teachers use the resource hub, the sample lessons, and the prompts to create lessons for their classroom's specific cultural context.

3.4 The AI4HI Resource Hub

The AI4HI resource hub was developed as an educator-facing platform that extends workshop learning beyond the sessions. The hub provides several resources: lesson skeleton templates, organized by grade band and AI4HI thematic area, designed as starting points for cultural and curricular adaptation; curated, customizable prompts calibrated for Hawaiian classroom contexts, with a copy-paste interface that allows educators to deploy prompts directly within AI tools without reformatting; *'Ōlelo Hawai'i* AI vocabulary glossary, addresses terminology gaps and designed for ongoing expansion through educator feedback and expert consultation. Additionally, workshop participants' co-created lessons are published to the hub (with permission), creating an expanding collection of peer-developed, Hawai'i-specific AI curricula that grows with each cohort. All hub content underwent a cultural transposition process led by team members with deep Kaiapuni and Hawaiian-language expertise. That process evaluated whether conceptual framings, metaphors, and examples were culturally aligned.

4 Outcomes & Findings

4.1 Reach

AI4HI workshops reached 45 educators (15 online, 30 in-person). 29 educators completed the pre-survey, 21 completed the post-survey, and 20 completed both. Respondents represented 33 schools across multiple HIDOE complex areas. The school count exceeds the respondent count because district specialists and curriculum designers serve multiple schools. Participants included Kaiapuni *kumu*, general education teachers, district educational specialists, curriculum designers at Hawaiian-language institutions, CS and STEM coordinators, and university-based teacher educators.

4.2 Talk Story Outcomes

Conversation prompts, aligned with the six AI4HI themes, structured the *talk story* portion of each session, each surfacing values, concerns, and priorities that shaped how participants engaged with the rest of the workshop. Following the *talk story* protocol from our prior work [3], facilitators set intention beforehand, took minimal notes during the conversation, and debriefed immediately afterwards to compare notes and document relevant themes.

The opening *talk story* question, *"what values should Hawaiian AI embody?"* prompted discussion about the appropriate boundaries of AI's role in Hawaiian cultural production. Educators in Hilo debated whether AI should generate Hawaiian cultural content at all, or whether its role should be limited to supporting educators in creating that content themselves, raising questions about authorship, authority, and what it means for a story to be Hawaiian. Similarly, the question *"how could AI help us tell stories in a Hawaiian way?"* led *kumu* to explore the distinction between AI as a scaffold for student storytelling in *'Ōlelo Hawai'i* and AI as a substitute for the community knowledge and relational context that gives those stories meaning. Most participants settled on scaffolding as the appropriate role, where AI tools handle iterative generation while students and teachers make the cultural and aesthetic judgments about what to keep, modify, or discard. AI-led generation of *mo'olelo*, educators argued, would transfer authorship and cultural authority away from the community in ways that could not be undone once that content entered students' learning.

The questions *"who should decide how our data is used?"* and *"what aspects of 'Ōlelo Hawai'i are most important for AI to know?"* prompted conversations about community sovereignty and how data protection might align with cultural practices. This conversation included what a community-controlled Hawaiian-language AI corpus might look like, who would hold authority over its contents, and how cultural context would be preserved. Educators with connections to historical documentation projects drew on how they had navigated similar questions with historical archives and discussed how those approaches might apply to AI.

The question *"what do you currently do in class when Wi-Fi is slow or down, and where could AI help?"* surfaced practical strategies teachers from different islands had developed for maintaining instruction under low-connectivity conditions, and opened conversation about where offline or lightweight AI tools could address specific recurring gaps.

Lastly, the question *"how can we care for our 'āina while using technology?"* challenged facilitators and participants to consider how AI tool choices could reflect environmental values (which are inherently cultural).Educators discussed the energy footprint of large models relative to smaller, task-specific ones, and how to recognize the weight of the impacts of large language models, without overvaluing their role in education and culture.

4.3 Evaluation

Surveys were linked by participant ID; 20 participants completed both, and we report paired results. AI tool use at baseline was uneven. ChatGPT accounted for 36.1% of reported tool usage, followed by Gemini (20.8%) and MagicSchool (15.3%), with Microsoft Copilot (5.6%), Midjourney (4.2%), Khanmigo (4.2%), Claude (2.8%), Adobe Firefly (1.4%), and Stitch (1.4%). Virtually none of those tools had been used for Hawaiian-language or culturally grounded content.

Across all measured competencies (explain AI in simple terms, describe training data, write a clear prompt, and recognize hallucinations), participants self-reported gains in AI literacy (Table 1), most notably in describing training data (+1.65). Participants with low baseline confidence gained the most: on describing training data, those starting at 1–3 (n=17) rose from 1.65 to 3.71, suggesting the workshops were especially useful for educators newer to AI. Multiple-choice items offered a check on these self-reports. Correct identification of how generative AI produces responses rose from 14 to 17 of 20, and correct identification of how to protect student data when using AI for grading was unchanged at 17 of 20. All workshop components received high helpfulness ratings (Table 2), with the resource hub rated highest at 4.67/5.0. Most respondents (84%) reported they could deliver their co-created lesson as-is or with only minor modifications.

Table 1: AI Literacy, Matched Pairs ($n = 20$, 1–5 scale)

Competency	Pre M (SD)	Post M (SD)	Change [95% CI]
Explain AI simply	2.90 (1.12)	4.20 (0.83)	+1.30 [0.82, 1.78]
Training data	2.15 (1.39)	3.80 (1.01)	+1.65 [0.95, 2.35]
Writing prompts	2.50 (1.19)	3.70 (0.80)	+1.20 [0.73, 1.67]
Hallucination	2.55 (1.47)	3.90 (0.91)	+1.35 [0.84, 1.86]

Table 2: Resource Helpfulness Ratings ($n = 21$, 1–5 scale)

Component	M	SD
Overall workshop helpfulness	4.57	0.75
Resource hub	4.67	0.58
Prompt examples/templates	4.57	0.75
Lesson skeletons/outlines	4.52	0.60
Lecture/demo portion	4.48	0.68
Vocabulary glossary	4.48	0.98

5 Lessons Learned

The workshops surfaced patterns that carry implications beyond this program. We organize them here for three audiences whose work intersects with AI professional development in Indigenous educational settings. These lessons draw on both the survey and *talk story* results and facilitator observations.

5.1 For CS Educators in Bilingual and Place-Based Contexts

CS educators in Hawaiian immersion and place-based settings are increasingly expected to navigate AI tools alongside their students, often without professional development that reflects their instructional context. When facilitators introduced the *talk story* questions, educators saw how they could bring critical AI discussions directly into their classrooms. Asking students to query an AI tool about a cultural practice, examine what it produces, and evaluate it against what their teachers have taught them functioned as a culturally grounded CS activity in its own right. It positioned students as the cultural authorities in the room, which participants noted aligned naturally with the collaborative, student-led learning environment that place-based pedagogy calls for. **We recommend treating AI bias and hallucination as entry points for student-led cultural inquiry, positioning students and teachers as co-investigators of AI.** Educators who engaged with this framing left with a concrete classroom practice: how to investigate AI alongside their students using their own cultural knowledge as the evaluative standard.

5.2 For Administrators and Policymakers Navigating AI in Place-Based Education

Kaiapuni and place-based schools operate with structural constraints that make standard professional development models a poor fit, and AI4HI's design did not fully account for all of them. Offering workshops across multiple formats – online in both *ʻŌlelo Hawaiʻi* and English, and in-person in Hilo in *ʻŌlelo Hawaiʻi* – expanded reach in ways a single-format offering would not have. The resource hub continued to be used after workshops concluded and received high helpfulness ratings (4.48–4.67 out of 5), suggesting that infrastructure investment pays off in ways attendance numbers alone do not capture. **We recommend multi-format delivery and persistent educator-governed resources in order to reach the range of educators who need this kind of support.** However, scheduling conflicts prevented a number of interested educators from attending, and several participants at the in-person Hilo session arrived without computers. **Therefore, we recommend integrating AI professional development into existing structures and providing loaner devices for in-person sessions to support equitable participation.**

Across sessions, the sustainable models and cultural alignment themes sparked educator interest in AI tools beyond the large commercial platforms most schools have agreements with: smaller, task-specific, offline-capable, and open-source models that better align with low-connectivity realities, environmental values, and data sovereignty concerns. HIDOE's AI adoption has centered on agreements with large commercial platforms such as Google's Gemini [9], while locally grounded alternatives receive comparatively little institutional support. In facilitators' observation, that interest frequently ran into a practical wall: without institutional data agreements, IT support, funding, and procurement backing, educators cannot adopt tools their school has not sanctioned, regardless of how well those tools fit their context. Meanwhile, well-resourced private schools are integrating AI into their curricula quickly , so students' access to thoughtful AI education increasingly depends

on which school they can attend. Administrators and policymakers play a consequential role in determining the ceiling of culturally aligned AI use in their schools. **We recommend that administrators and policymakers support a broader ecology of AI tools, including community-developed and offline-capable options, through data agreements, technical infrastructure, and dedicated funding, to enable educators to make tool choices that reflect their community's values.**

5.3 For Facilitators and Researchers Designing Culturally Grounded AI PD

AI4HI's cultural grounding and direction meaningfully connected with participants. In particular, framing the program around culturally grounded themes gave educators entry points through knowledge they already held. Teachers who arrived treating AI as a question-and-answer machine left approaching prompting as a deliberate compositional practice, in which their cultural knowledge and instructional expertise actively shaped what AI could and could not produce. **We recommend grounding AI professional development in culturally specific conceptual frames and centering cultural insiders in program development.**

Delivering workshops in *ʻŌlelo Hawaiʻi* was operationally demanding and pedagogically necessary. Those sessions provided educators space to engage with emerging technology in the same language in which they teach and hold cultural authority, without the code-switching that most technology professional development requires of Kaiapuni *kumu*. **We recommend offering professional development in the community's language of instruction.** In a similar vein, the *ʻŌlelo Hawaiʻi* AI vocabulary glossary was consistently named as valuable but also as incomplete (it also received the most varied helpfulness ratings, SD = 0.98). Hawaiian-language terminology for AI concepts is genuinely unsettled, and the glossary required structured review sessions with Kaiapuni educators and Hawaiian-language experts before it could serve as a reliable classroom reference — a step we had underestimated at the outset. **We recommend that programs plan for ongoing community-led vocabulary development from the start.**

Who attended each workshop also differed by place. The launch workshop on Oʻahu drew primarily CS educators, technology coordinators, and administrators, while the Hilo workshop drew Hawaiian-language educators and practitioners. Conversations about language and culture were richest where communities already organized around them. **We recommend that programs bridge these communities, bringing language and culture practitioners into technology-focused spaces and technical expertise into immersion spaces.**

Sustaining this work also surfaced a tension in how AI education is funded. Funding opportunities for AI education resources often require open licensing, terms that conflict with community protocols for protected cultural knowledge [5]. **We recommend that programs distinguish openly shareable materials, such as templates, prompts, and workshop structures, from community-governed knowledge, and that funders allow communities to retain authority over the latter.**

While the *talk story* prompts led to fruitful conversations, these discussions only truly manifested at the in-person Hilo workshop, where participants had time and space to stay for, in some cases, over an hour past the 2-hour workshop. The structure of the workshops also left insufficient time for educators to examine AI outputs critically in real time, rather than be walked through an example critique by facilitators. **We recommend dedicated segments for critical examination of AI outputs using community-specific content and informal discussion on the larger themes of the workshops. We also recommend in-person delivery when possible, to create a comfortable, familiar atmosphere for engaged conversation.**

6 Conclusion

AI4HI took place at an exceptionally challenging moment. AI tools are already present in Hawaiʻi's classrooms, often arriving through institutional agreements before educators have had the chance to evaluate them. Whether these tools serve Hawaiian education well remains an open question. Educators face this moment with very few dedicated resources and growing pressure on the sovereignty of Hawaiian language and knowledge as it moves into commercial systems.

Within that context, the workshops brought educators, Hawaiian language experts, and cultural practitioners together to engage seriously with AI in the classroom, exploring its possibilities and naming its risks. Participants were deeply engaged, experimenting with models and applications ranging from curricula generation to translation support. Across sessions, concern about data storage, sovereignty, and the potential corruption of Hawaiian words, stories, and cultural knowledge was consistent and considered. From these workshops emerged a community of Kanaka Maoli and Hawaiʻi-based educators, eager to make informed decisions about AI in their classrooms, who now have language, frameworks, and peer relationships for thinking critically about a technology already reshaping the environments where their students learn.

The community connections this work catalyzed, with Hawaiian-language revitalization practitioners, with archival partners holding access to undigitized Hawaiian-language materials, and with educators now contributing to a growing open resource hub, suggest that the most durable outcome of AI4HI is the infrastructure it has begun to build. That infrastructure is what will allow Kanaka Maoli educators to shape how AI develops in Hawaiian contexts on their own terms.

E lawe i ke aʻo a mālama, a e ʻoi mau ka naʻauao: One who takes their teachings and applies them increases their knowledge [15]. AI4HI is one effort to ensure that for Hawaiʻi's educators and their students, that process is carried out in Hawaiian values, Hawaiian language, and Hawaiian hands.

Acknowledgments

Mahalo to our kumu, kūpuna, and other community partners for sharing their ʻike (knowledge), time, and space with us in the creation and delivery of this workshop series. This research is supported by the National Science Foundation under award number CNS-2531574 and aiEDU. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation or other supporters.

References

[1] [n. d.]. Day of AI. https://dayofai.org/

[2] [n. d.]. Machine Learning for Kids. https://machinelearningforkids.co.uk/

[3] Rachel Baker-Ramos, Manas Mhasakar, Viswak Raja, Evyn-Bree Helekahi-Kaiwi, William Gelder, Benjamin Carter, Rebecca Diego, Alex Cabral, and Josiah Hester. 2026. Kumu Connect: Culturally-Authentic AI Tools to Enable Educator Agency and Data Sovereignty for Hawaiian K-12 CS Education. In *Proceedings of the 25th Annual ACM Interaction Design and Children Conference*. ACM, Brighton United Kingdom, 49–67. doi:10.1145/3773077.3806104

[4] Michelle Carney, Barron Webster, Irene Alvarado, Kyle Phillips, Noura Howell, Jordan Griffith, Jonas Jongejan, Amit Pitaru, and Alexander Chen. 2020. Teachable Machine: Approachable Web-Based Tool for Exploring Machine Learning Classification. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. ACM, Honolulu HI USA, 1–8. doi:10.1145/3334480.3382839

[5] Stephanie Russo Carroll, Edit Herczog, Maui Hudson, Keith Russell, and Shelley Stall. 2021. Operationalizing the CARE and FAIR Principles for Indigenous data futures. *Scientific Data* 8, 1 (April 2021), 108. doi:10.1038/s41597-021-00892-0

[6] James E. Dobson. 2024. Unmasking AI: My Mission to Protect What Is Human in a World of Machines. *Critical AI* 2, 2 (Oct. 2024). doi:10.1215/2834703X-11556092

[7] Siyuan Du and Randi Williams. 2025. *Evaluation of Day of AI 2025: K-12 Education in the Age of AI.* Technical Report. Day of AI. https://dayofai.org/news/2025-evaluation-report

[8] Ron Eglash, Audrey Bennett, Casey O'Donnell, Sybillyn Jennings, and Margaret Cintorino. 2006. Culturally Situated Design Tools: Ethnocomputing from Field Site to Classroom. *American Anthropologist* 108, 2 (2006), 347–362. doi:10.1525/aa.2006.108.2.347

[9] Google. 2025. Gemini. https://gemini.google.com/

[10] Mawera Karetai, Samuel Mann, Dhammika Dave Guruge, Sherlock Licorish, and Alison Clear. 2023. Decolonising Computer Science Education - A Global Perspective. In *Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1* (Toronto ON, Canada) *(SIGCSE 2023)*. Association for Computing Machinery, New York, NY, USA, 1097–1102. doi:10.1145/3545945.3569870

[11] Manas Mhasakar, Rachel Baker-Ramos, Benjamin Carter, Evyn-Bree Helekahi-Kaiwi, and Josiah Hester. 2025. "I Would Never Trust Anything Western": Kumu (Educator) Perspectives on Use of LLMs for Culturally Revitalizing CS Education in Hawaiian Schools. In *Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems*. ACM, Yokohama Japan, 1–10. doi:10.1145/3706599.3720282

[12] Laura Morrison, Phaedra Robinson, and Rosanna Nusseiri. 2025. Advancing Culture-Based and Inclusive STEAM Learning. Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/p/225802/

[13] Amanda Nelson, Amy Guo, Marcelo Worsley, Derek Esibill, and Josiah Hester. 2023. Mālama ʻĀina through Micro:bits in Kāneʻohe: A Place-Based Approach to Teaching CS in a Kaiapuni (Hawaiian Immersion) Bilingual School Setting. In *2023 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT)*. IEEE Computer Society, Atlanta, GA, USA, 124–132. doi:10.1109/RESPECT60069.2023.00031

[14] Jacqueline Ng-osorio and Brandon C. Ledward. 2011. *Aia ke ola i ka ʻŌlelo Hawaiʻi: revival of the Hawaiian language.* Technical Report. Kamehameha Schools Research and Evaluation. https://www.ksbe.edu/assets/research/collection/11_0108_ngosorio.pdf

[15] Mary Kawena Pukui (Ed.). 1993. *ʻŌlelo Noʻeau: Hawaiian Proverbs & Poetical Sayings.* Bishop Museum Press.

[16] Kathryn M. Rich, Marissa Spang, Jill Bowdon, Joseph P. Wilson, Heather Cunningham, and McKay Perkins. 2024. Developing Culturally Sustaining Elementary Computer Science Education with Indigenous Communities: Lessons Learned through a Research-Practice Partnership. In *Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 1*. ACM, Portland OR USA, 1126–1132. doi:10.1145/3626252.3630827

[17] Kimberly A. Scott, Kimberly M. Sheridan, and Kevin Clark. 2015. Culturally responsive computing: a theory revisited. *Learning, Media and Technology* 40, 4 (Oct. 2015), 412–436. doi:10.1080/17439884.2014.924966

[18] Kristin A. Searle and Yasmin B. Kafai. 2015. Culturally Responsive Making with American Indian Girls: Bridging the Identity Gap in Crafting and Computing with Electronic Textiles. In *Proceedings of the Third Conference on GenderIT (GenderIT '15)*. Association for Computing Machinery, 9–16. doi:10.1145/2807565.2807707

[19] David S. Touretzky, Christina Gardner-McCune, Fred Martin, and Deborah Seehorn. 2019. AI4K12 Initiative: Five Big Ideas in AI. https://ai4k12.org Accessed 2025.

[20] David S. Touretzky, Christina Gardner-McCune, Bryan Cox, Judith Uchidiuno, Xueru Yu, William Gelder, Tom McKlin, Taneisha Lee Brown, Bejanae Kareem, Woojin Chung, Amber Jones, and Janet Kolodner. 2025. Artificial intelligence education in Georgia middle schools. *AI Magazine* 46, 2 (June 2025), e70013. doi:10.1002/aaai.70013