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AI Literacy for Multilingual Learners: Storytelling, Role-playing, and Programming

Artificial Intelligence technologies are becoming ubiquitous, transforming the workforce by altering or creating jobs and influencing decisions that affect minority communities. The necessity of AI literacy, comprising knowledge and skills for critical interaction with AI, is increasingly important. Multilingual learners, engaging with both every day and domain-specific vocabulary and syntax, must acquire AI literacy, necessitating tailored pedagogical practices. This article outlines three strategies implemented for multilingual middle school students during a summer camp in Southern California. We argue for a mutually beneficial relationship between acquiring second language proficiency and AI literacy. Supporting these processes, we present three pedagogical strategies: (1) storytelling to model AI decision-making, (2) role-playing as an AI to demonstrate programmability and learning from data, and (3) programming text-to-speech-to-text AI to illustrate sensor functionality and action-reaction concepts. Additionally, we discuss their alignment with AI competencies. These strategies potentially foster linguistic scaffolding and translanguaging, aiding multilingual learners in acquiring new literacies.

Keywords: AI Literacy, Multilingual learners, Storytelling, Learning and teaching AI, Artificial Intelligence Education

Introduction

Artificial intelligence (AI), defined as machines that act or think intelligently (Russell & Norvig, 2015), has increased its presence in many facets of human life. As such, AI literacy has emerged as an essential skill set, encompassing the ability to utilize and critically analyze AI systems (Long & Magerko, 2020). In the future, a basic understanding of the functioning and use of AI technologies in society will be crucial. Lack of this knowledge could result in a loss of job opportunities and diminished agency in a world where AI is embedded in media and social relationships (Chan-Olmsted, 2019). This is particularly true for minoritized students, who already face challenges in accessing and participating in technology. They may be susceptible to misinformation about technology (Dubois et al., 2021), and could be affected by unfair decisions made by AI (Rospigliosi, 2021). Despite the introduction of various AI literacy interventions like curricula, digital tools, and teaching guides by researchers and designers, minoritized youth may still struggle to engage with AI technologies. This disconnect can lead to a diminished trust in AI and hinder their progress in becoming AI literate (Druga et al., 2019).

AI literacy is viewed as part of the broader spectrum of computational literacies (Kafai & Proctor, 2022; Morales-Navarro et al., 2023), which encompasses not only learning computational skills and concepts but also integrating students' identities, communities, and the political and ethical implications of computing education. Computational literacies are interwoven with students' other literacies (Vogel et al., 2019). This interconnection is particularly evident in how multilingual students utilize their diverse language repertoires to engage with computational practices. As AI Literacy gains importance, new opportunities are emerging to explore how AI can be taught and learned in multilingual classrooms, a field ripe with unexplored potential.

In this article, we describe the design and implementation of an AI literacy summer camp for upper elementary and middle school students at a community center in Southern California. We recognize that this article does not offer findings from empirical research; instead, it merges a review of AI literacy concepts with insights gained from our experience in the design and execution of a curriculum for the summer camp. The camp attracted over 40 students, with more than 90% being Latine and Spanish-speaking, from the surrounding middle- to low-income communities. During the camp, we tested existing AI literacy frameworks, activities, technologies, and curricula. Our goal was to gain insights about their usability, engagement, and learning impacts on this specific population. The insights from this experience are valuable for designing technologies and activities suitable for diverse settings and a variety of learners, especially multilingual learners. We will detail three pedagogical strategies for multilingual elementary and middle school students aimed at enhancing specific AI literacy competencies using conversational agent technologies — AI that interacts with users in written or spoken natural language. The strategies are: (1) storytelling to model AI decision-making, (2) role-playing as an AI to demonstrate programmability and learning from data, and (3) programming text-to-speech-to-text AI to illustrate sensor functionality and action-reaction concepts.

Background

AI Literacy

AI literacy encompasses the skills necessary for effectively interacting with and utilizing AI-based technologies. Long and Magerko (2020) have broadened and contextualized this concept, focusing on non-technical audiences. They suggest competencies and design considerations for learning experiences that aim to enhance the public's understanding of AI. According to their definition, AI literacy involves "a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace" (Long & Magerko, 2020, p. 2). The broad scope of AI literacy encompasses a diverse range of resources for teachers and learners, as illustrated by Ng et al. (2021), who identified four distinct definitions in their review of AI literacy studies, catering to different levels of cognitive development: Know and Understand, Use and Apply, Create and Evaluate, and AI Ethics. Furthermore, Long and Magerko (2020) identified specific competencies that form the core of AI literacy and developed various activities to facilitate its acquisition. These activities, designed to enhance thinking processes often supported by technology, can be performed without electronic devices. They include workshops where students engage in oral discussions or write papers, and games that introduce them to fundamental AI concepts (Long et al., 2021).

Machine Learning, a pivotal technology that provides methods and algorithms for AI systems to learn from data and improve, is central to AI literacy curricula. These curricula, though varied, share a common theme: they teach understanding of machine learning and AI tools by emphasizing the use of data, rather than code, in shaping computer program behavior (Zimmermann-Niefield et al., 2019). This approach is reflected in programs combining unplugged activities, like reflections and board games, with digital experiences. For instance, platforms like Google's Teachable Machine enable students to explore machine learning models, as discussed by Carney et al. (2020). Some curricula, such as Daily-AI, concentrate on AI's technical aspects, using interactive materials like slide decks and teaching scripts to cover fundamental concepts, including algorithms, decision trees, Supervised Machine Learning, and future AI considerations. Others, like the AI Ethics for Middle School curriculum, adopt a socio-technical approach, focusing on AI ethics, stakeholder interests, and critical issues like bias and fairness. Additionally, there are curricula that blend AI literacy with computational literacy skills. An example is integrating AI literacy into software like Scratch, which facilitates computational thinking through the creation of multimedia stories and interactive applications (Maloney et al., 2008). The Machine Learning for Kids curriculum (Lane, 2021) exemplifies this by enhancing Scratch with machine learning features like speech-to-text, text-to-speech, and language translation functions.

Echoing Vogel and García's (2017) findings that students' computational literacies correlate with their other literacies, we hypothesized that enhancing students' digital and data literacies would concurrently bolster their AI literacy. To support multilingual students, we integrated linguistic resources from various languages throughout the curriculum. This approach included activities like translating key AI vocabulary, fundamental logic structures, and everyday sentences, particularly in the third activity. These practices were designed to ensure that language differences did not hinder the learning process, but rather enriched the students' understanding of AI concepts.

A rationale for integrating AI Literacy in multilingual classrooms

We suggest a mutually reinforcing relationship between mastering a second language and developing AI literacy. As AI increasingly permeates classrooms and daily life, AI-based technologies such as ChatGPT, Siri, and Alexa are poised to become more integral to instructional methods. For instance, ChatGPT, a large language model powered by AI, generates text remarkably similar to that created by humans, offering significant potential for second language learning. Researchers, including Topsakal and Topsakal (2022), have highlighted how ChatGPT can facilitate interactive dialogues in multiple languages, a point also explored by Du & Tate (2024) in their commentary on ChatGPT in this issue. Moreover, these AI technologies provide young learners with tools to explore and express their bilingual and multilingual identities.

AI literacy extends beyond simply using and interpreting AI; it also encompasses the application of AI in various contexts (Ng et al., 2021). A comprehensive understanding of AI's mechanisms allows learners to critically assess AI-based technologies for their personal learning needs. Importantly, AI literacy activities that capitalize on learners' existing linguistic skills offer significant benefits to multilingual learners. Employing translanguaging strategies (García et al., 2017), which allow students to draw from their full linguistic repertoire, facilitates rapid engagement with AI concepts, enabling learners to understand how AI can be applied, created, and used in a critical manner.

Conversational agents, a key category of AI technologies, are particularly suitable for linguistic practices due to their design, which enables interaction through reading, writing, speaking, and listening. These intelligent systems excel at understanding and processing human language, facilitating seamless communication that aids in language skill development. With the increasing prevalence of these technologies, they are set to play a more integral role in second language teaching and learning (Tate et al., 2023). In educational settings, learners naturally enhance their AI literacy while learning to use and interact with these technologies. For instance, ChatGPT can quickly generate complex texts in response to user prompts, a feature that can be leveraged for writing assignments both at home and in the classroom. Therefore, it is crucial for educators to acknowledge the presence of these tools and understand their potential for enhancing educational experiences.

As AI-based technologies increasingly permeate our daily lives, the necessity for learners to develop AI literacy alongside second language proficiency becomes more pronounced. This shift also requires English as a Second Language (ESL) teachers to understand how these technologies can be utilized both inside and outside the classroom. Tools like ChatGPT offer significant potential for second language learning by creating interactive and engaging activities. Additionally, conversational agents such as Apple's Siri and Amazon's Alexa provide opportunities for learners to practice listening and speaking skills in real-world contexts. Incorporating these technologies into language lessons can assist students in improving their pronunciation, intonation, and fluency (Dizon, 2021). Crucially, ESL teachers are now positioned to design lesson plans and activities that not only incorporate AI technologies but also leverage multilingual learners' existing linguistic abilities. This approach not only enhances AI literacy but also fosters a mindful and critical use of these tools in second language learning.

In the forthcoming sections, we delve into a narrative account of our learning design, foregrounding our dual roles as educators and researchers. We blend a review of AI literacy with practical insights from designing and implementing a curriculum for a summer camp aimed at elementary and middle school students. During the summer camp, students were divided into three different groups based on their age. Our AI literacy activities were two weeks long, featuring one-hour daily sessions for each of the age groups. Our reflections and the rationale behind our activities' design, deeply informed by our memos as educators and the existing literature on supporting multilingual learners in computational literacies, prioritize AI literacy while thoughtfully incorporating linguistic scaffolds for language learning. It's crucial to emphasize that our aim is to initiate a dialogue within the educational community about these practices rather than present this narrative as formal empirical research. Through this approach, we aspire to contribute to the ongoing conversation around educational strategies that bridge AI literacy with the nuances of multilingual education.

Storytelling to Model Decision-Making in AI

As previously mentioned, *decision-making* is a crucial competency in AI literacy, as highlighted by Long and Magerko (2020). Although a detailed understanding of AI reasoning isn't necessary, grasping the high-level logic behind its decision-making processes can help users comprehend why AI produces certain outcomes. In this strategy, we demonstrate this concept using a commercial conversational agent, drawing parallels between its decision-making and that of fictional characters in stories. This comparison is illustrated through the use of decision trees, which are comprised of nodes (akin to decision points in a story where paths diverge), branches (options available at each decision point), and leaves or "leaf nodes" (representing a final decision without further branches). The starting point of any decision tree, known as the "root node," signifies the initial decision.

During the camp, we employed Apple's Siri to illustrate AI decision-making to the students. We initiated the lesson with a question to the class: "How does Siri know you are talking to it?" Using responses such as, "When you say 'Hey Siri,' it recognizes that you're speaking to it," we demonstrated that Siri makes decisions like determining when to activate. We further engaged the students by asking, "Do you think Siri understands Spanish? How would Siri know if you were calling her in Spanish?" This led to an exploration of activating Siri in Spanish. Subsequently, instructors introduced a decision tree to the class. The root node posed the question, "Is someone saying 'Hey Siri' or 'Oye Siri'?" This branched into two options: "If yes" leading to the outcome "Activate," and "If no," leading to "Do nothing." This exercise effectively visualized the decision-making process for the students.

Following the Siri demonstration, the instructor drew a parallel between decision trees in AI and storytelling, specifically referencing "Choose Your Own Adventure" stories. In these stories, readers face explicit decisions, leading to branching narratives akin to the possibilities in a decision tree's nodes. To illustrate this, the instructor used seven images, each randomly generated by a website, to inspire different story elements. These images represented individual scenes or concepts in the storytelling exercise. The instructor then crafted a two-layer decision tree: the first image was placed at the root node, the next two images at the decision nodes, and the final four images were assigned to the leaf nodes. This setup effectively demonstrated how decision trees can map out narrative paths in a story, mirroring the decision-making process in AI.

In this exercise, the instructor used the word "if" in each node, guiding students to contemplate the conditions influencing the story's direction along each decision branch. This approach resonates with the findings of Jacob et al. (2018), who underscore the importance of explicit vocabulary instruction in teaching core computational thinking concepts like decisions and conditions, particularly for multilingual students. The use of "if" serves as a bridge in pedagogies that draw parallels between human reasoning and machine reasoning. This concept aligns with Minsky's (2019) observation that both human and machine reasoning often follow a two-part rule format: "If the situation is S, then do action R." Building on this, the instructor demonstrated how to construct such sentences for each decision in the tree. To support Spanish-speaking English learner students, the Spanish equivalent, "Si la situación es S, haga la acción R," was also provided, illustrating the same logical structure in both languages.

Once the students understood the logical and linguistic structures underlying decision-making, they were tasked with creating their own "Choose Your Own Adventure" stories. This involved using a decision tree and seven randomly selected concepts or images. We provided each student with a worksheet featuring a two-layer decision tree, and used Story Dice (Birss, 2023), a web application that generates random images for story creation, to obtain fresh concepts for the class. Students were instructed to write a sentence following the "If the situation is S, do action R" format for every decision point. After completing their stories, they shared and explained them with the group, correlating the decision tree's visual representation with their oral narratives. This approach differed from other storytelling methods in AI literacy (Ng et al., 2022), which typically focus on digital storytelling to elucidate AI's workings and applications. Our method utilized storytelling to draw analogies between algorithms and decision-making, crucial for understanding AI's internal processes. Throughout this activity, students were encouraged to work in their preferred language(s). To conclude, students contemplated and discussed other decisions required for their stories to function effectively, apart from activating Siri or another conversational agent like Alexa. The insights from this discussion were then leveraged to segue into the next strategy.

Role-playing as an AI to Demonstrate Programmability and Learning from Data

Two other essential competencies identified by Long and Magerko (2020) in AI literacy are *Programmability* and *Learning from Data*. Programmability involves understanding that AI agents can be programmed, a concept that builds on research showing children initially personify these agents before recognizing their programmability. Conversely, Learning from Data focuses on how machines learn from data, urging learners to critically assess data and reflect on how machines might learn from their own data. The second strategy in our program, *Role-playing as an AI to model Programmability and Learning from Data*, is designed to imbue learners with these competencies. It involves students simulating the operations of a conversational agent, thus deepening their understanding of how AI works.

In the subsequent exercise, following the storytelling activity, students engaged with Siri more extensively than before, posing questions and interacting with its responses. We revisited the previously learned concepts of decision-making and introduced new queries to deepen their understanding: "How does Siri know what to answer to a prompt?" and "How did Siri learn so many languages?" When some responses hinted at Siri's learning from user interactions, the instructor clarified that Siri uses a database of answers linked to specific prompts. The sentence structure from the previous activity was adapted for this context: "If the user says prompt P, then answer with response R." To support our Spanish-speaking students, we also presented the Spanish equivalent: "Si el usuario dice la frase P, responda con la respuesta R."

Following the introduction to the prompt-answer relationship, the instructors demonstrated the activity before having students pair up to conduct it themselves. In each pair, one student created a worksheet of prompts and corresponding answers, forming a "database" for their partner to learn. The other student, acting as the "Conversational Agent," tried to memorize this database, associating the correct answers with their prompts – a process we termed ‘training.’ Subsequently, the Conversational Agent engaged in a conversation with a student from a different pair, responding to various prompts to elicit the memorized answers, an exercise labeled as ‘testing.’ The final step involved calculating the accuracy percentage of the Conversational Agent's responses. This incorporation of a competitive element was designed to enhance engagement among multilingual students in STEM-related subjects like AI, as supported by findings from the National Academies of Sciences, Engineering, and Medicine (2018).

After observing a teacher demonstration, students were prompted to regroup and replicate the activity themselves. A key aspect of acquiring AI literacy, particularly in understanding how AI works, involves multilingual students learning content-specific vocabulary, similar to the process in computational literacy (Jacob et al., 2018). To facilitate this, the activity was conducted in pairs or small groups, where students were encouraged to use AI-specific terms like ‘prompts,’ ‘training,’ and ‘accuracy’ during collaboration. Each student had the chance to create their own database of prompts and answers, and then take on the role of a conversational agent. This involved being ‘trained’ on the database and subsequently ‘tested’ on their knowledge of another student’s database, thereby reinforcing their understanding and use of AI vocabulary in a practical setting.

By role-playing as an AI, students were able to engage with the concepts of programmability and learning from data, reflecting on Long and Magerko’s (2020) competency of programmability while embodying intelligent agents. This method of engaging students also resonates with Long’s design consideration of including *Embodied Interactions* in AI Literacy teaching and learning. In the activity, students enact the algorithms of a conversational agent by following prompts to help demystify machine learning concepts. Furthermore, the process of creating a database was designed as an introductory exercise in data literacy, illustrating how both humans and machines learn from data. This hands-on experience provided students with a practical understanding of data processing and its significance in AI.

Programming Text-to-Speech-to-Text AI to Illustrate Sensor Functionality and Action-Reaction Concepts

Our third strategy, 'Programming text-to-speech-to-text AI to illustrate sensor functionality and action-reaction concepts,' was designed to engage students with the Action-Reaction and Sensors competencies. Long and Magerko (2020) suggest that AI literacy encompasses understanding AI's capability to produce physical effects, such as sound generation by conversational agents. The Sensors competency focuses on how AI agents, like Siri, collect data (e.g., using a phone's microphone) and interact with the world, including performing internet searches. This concept aligns with Touretsky et al. (2022), who emphasize perception - the ability of AI to sense the world using sensors - as a fundamental concept in AI literacy. In this Conversational Agent-based activity, our goal was to enable learners to understand that conversational agents detect and interpret human speech using microphones. This process involves analyzing the spoken words and generating appropriate audio responses, thereby showcasing the agents' ability to reason and react.

To achieve our objective, we involved students in a practical project using Scratch, a block-based programming language from MIT designed for teaching coding to young learners. The task was to develop an application that captures human speech, translates it into text, converts this text into another language, and finally vocalizes the translated text as spoken words using the computer's voice. As using Scratch’s code-blocks effectively requires considerable knowledge and skills, particularly in computational thinking – a concept proposed by Jeannette Wing (2006), which can be defined as “the thought processes involved in formulating a problem and expressing its solution(s) in a way that a computer—human or machine—can carry out” (Wing, 2014)– the project was preceded by several days of activities focused on computational thinking. These activities, which involved using Scratch to create animated character algorithms, were tailored to the students' learning needs, following Jacob et al.

(2018)’s insights on the multilingual development of computational thinking. This approach included providing linguistic scaffolding to support multilingual learners in acquiring these skills.

We introduced the strategy of using Scratch to illustrate *sensors* and *action-reaction* competencies by first asking students, “How do you think Siri hears you?” This question aimed to draw on their existing knowledge about how conversational agents use microphones to perceive user speech. Following this, the instructor discussed with the students how Siri responds in both sound and text, implying the existence of a modality converter. This led to proposing a "challenge" for the students: to develop a program that can "hear something in English, translate it to another language, and play the translation as audio." The learning activity involved creating an algorithm with three distinct steps: (1) converting speech to text; (2) translating the text from English to another language; and (3) converting the translated text back into speech. The use of Scratch's block-based programming was particularly effective in this context, as it allowed learners to visually distinguish and contemplate each step of the algorithm and the specific blocks associated with them.

Multilingual students demonstrated effective engagement with the Scratch programming activity, evident in their enjoyment and curiosity. They often inquired about translation inaccuracies or the software's pronunciation of various languages, including Spanish. This behavior resonates with Vogel and García's (2017) observations about the influence of students' perspectives on languages in their translanguaging practices. Recognizing this, instructors encouraged the use of translanguaging, combining native languages with the language of instruction, to enhance understanding and communication across different contexts. This approach was clearly beneficial during the AI literacy activities, showcasing how translanguaging can enrich learning in a technology-rich environment. Interestingly, some students envisioned creating a chatbot that could use multiple languages fluidly within a single sentence, reflecting their own multilingual capabilities and deepening their engagement with AI's potential in language use. To further embed AI literacy competencies, instructors asked targeted questions about computer processes, such as speech and text processing and the databases involved in these conversions. They explained the training of Text-to-Speech AI using databases that mimic human speech patterns, drawing parallels between machine learning and second language acquisition. The concept of conversational agents engaging in action-reaction dynamics was also discussed, deepening students' understanding of how these agents perceive and interact with their environment.

Towards an AI Literacy Curriculum for Multilingual Students

In designing the AI literacy curriculum detailed in this article, we incorporated effective practices for engaging multilingual students in STEM education. Recognizing the parallels between AI literacy and computational literacies within STEM, such as algorithm usage and technology integration, we followed guidelines set by the National Academies of Sciences, Engineering, and Medicine (2018). These guidelines emphasize the value of multilingual students' unique abilities and recommend specific strategies to engage them effectively in STEM subjects. Our approach involved practical applications in computer science, particularly in the realm of Artificial Intelligence. We fostered rich classroom discourse, utilized students’ diverse linguistic resources, encouraged the use of different language registers and modalities, and maintained a focus on the role of language in computer science and AI contexts. This methodology aimed to create an inclusive and effective learning environment, catering to the specific needs of multilingual students in AI literacy education.

In line with our inclusive teaching approach, instructions for all three activities were provided in both English and Spanish. This decision was made to allow students to utilize their existing linguistic resources fully. We actively welcomed and encouraged translanguaging during the activities, allowing the children to communicate in any language they were comfortable with. This flexibility enabled them to freely translate concepts and explanations back and forth, ensuring they fully grasped and understood the material in their preferred language.

In the three pedagogical strategies outlined in this article, we emphasized the use of multiple registers and modalities, extending beyond linguistic elements like speech and text to include nonlinguistic aspects such as images and physical gestures. For instance, in the storytelling activity, students not only wrote their stories paralleling decision trees but also visually represented them through drawings, illustrating the varied outcomes based on different decisions. During the role-playing strategy, we encouraged students to enhance their portrayal of conversational agents using sensory experiences and body language. In the programming strategy, the multimodal nature of the Scratch environment was crucial. They enabled students to create interactive, animated characters. Furthermore, the multimodality of Scratch has been demonstrated to allow multilingual students to incorporate elements of their personal lives, including their identities, families, and interests, into their projects (Ojeda-Ramirez et al., 2023). The translations they programmed were not only expressed verbally but were also visually represented by characters set against graphic backgrounds, thereby embedding the translations in a contextually rich and visually engaging environment.

Furthermore, our strategies immersed students in disciplinary practices integral to AI. In the storytelling strategy, for instance, students considered decision outcomes, mirroring a common practice among AI programmers and users. This approach helped them understand how choices lead to different scenarios, a core aspect of AI functionality. Additionally, the programming strategy emphasized algorithmic thinking, reflecting a fundamental practice in AI. Students engaged in conceptualizing a sequence of steps, akin to designing an artificial intelligence tool, thereby gaining insights into the structured thinking process crucial to AI development.

Conclusion

In this article, we have outlined three AI literacy pedagogical strategies developed for a 4-week summer camp in Southern California, targeting elementary and middle school multilingual students. Our experience in designing and piloting these strategies has led us to recognize the significant role of linguistic scaffolding and translanguaging in crafting AI literacy pedagogies for multilingual learners. These strategies not only contribute to second language acquisition but also enhance students' AI literacy, equipping them to engage with prevalent technologies for exploring their second language. Moreover, these pedagogical approaches encourage children to utilize their existing linguistic skills, involving both linguistic and nonlinguistic modalities. This integration aids in their mastering of specific disciplinary practices and vocabulary related to AI technologies.

As the educators and researchers involved, we acknowledge that this article blends a review of AI literacy with insights from our experience in designing and implementing a curriculum for a summer camp. Our insights draw from our memos as educators and our rationale for the activities' design, resonating with existing literature on multilingual learners in computational literacies. However, we emphasize that this article initiates a dialogue rather than presenting formal empirical research. We conjecture a mutually beneficial relationship between second language proficiency and AI literacy development, but these insights are largely based on our experiential understanding. Accordingly, this article presents a narrative description of a learning design initially crafted for AI literacy, later infused with linguistic scaffolding considerations. Empirical research is needed to conclusively address questions such as the mutual benefits of AI literacy and second language acquisition, as well as the roles and dynamics of translanguaging in AI literacy learning.

We conclude that employing conversational agents as AI examples effectively addresses multiple AI competencies, while simultaneously leveraging the multilingual speech and writing skills of students. These agents, being inherently language-driven AI technologies, offer a rich platform for engagement and discourse. Storytelling proved to be a powerful tool for multilingual students, enabling them to practice decision-making, a crucial aspect in both narrative creation and AI technology. Personifying AI encourages students to familiarize themselves with AI-specific vocabulary such as databases, training, testing, and accuracy, and to contemplate how AI systems learn from data. Additionally, programming activities involving the conversion of modalities, like speech and text, allowed students to explore how AI perceives and generates speech. Looking forward, we plan to systematically evaluate these pedagogical strategies' impact on AI literacy learning and investigate how multilingual students utilize their linguistic abilities to engage with and learn about AI.

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