AI Scholars Program: Scaling AI Literacy Through K-12 Outreach

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Abstract

As artificial intelligence (AI) becomes increasingly integrated into daily life, there is a critical need for developing AI literacy across all educational levels. However, current AI education remains largely confined to college-level computer science classrooms with limited access for K-12 learners. We present the AI Scholars Program, a novel approach that addresses the AI education gap by preparing college computing students to serve as AI education ambassadors in their communities and empowering K-12 teachers to adopt AI education practices in their classrooms. This experience report presents the curriculum and its outcomes after one round of refinement. The program offers structured AI learning through bi-weekly webinars, resources, and collaborative opportunities to form teams and conduct community outreach projects. Our program invited 63 scholars from 30 institutions across the U.S., including 51 college students and 12 K-12 teachers. Their outreach impacted over 230 K-12 learners. We examine program outcomes for participants and projects through pre/post surveys measuring computing attitudes and self-efficacy for teaching AI, scholar interviews, and outreach project reports. We share lessons learned and challenges for designing similar programs, highlighting the importance of involving educators for effective community-engaged AI education. The program creates a sustainable pipeline for college students to develop technical skills and leadership while addressing K-12 AI education shortages. We contribute insights for scaling AI literacy and broadening participation in computing.

Introduction

Educational institutions worldwide are recognizing the need to prepare students, not only to use AI tools, but also to understand fundamental AI concepts and their societal implications (Li et al. 2025; Lee and Kwon 2024; Zhang et al. 2023). However, current AI education mostly occurs in undergraduate computer science classrooms (Grover 2024) with limited opportunities for the broader student population to engage in AI learning and integrate AI literacy across multiple disciplines and age groups (Walter 2024; Yeter, Yang, and Sturgess 2024).

Beyond lack of education opportunities for many learners, there are additional challenges to make fundamental AI concepts accessible to K-12 learners. There is a lack of effective professional development opportunities to adequately prepare teachers for AI instruction (Grover 2024), and limited research on age-appropriate approaches and tools for teaching complex AI and machine learning ideas to K-12 learners (Druga, Otero, and Ko 2022; Tian et al. 2023; Rizvi, Waite, and Sentance 2023).

We present the **AI scholars program**, a novel approach that addresses the need for more AI education curricula, approaches, and teacher supports while also providing valuable AI experiences for undergraduate students. Our program prepares university computing students to serve as AI education ambassadors in their communities and empowers K-12 teachers in adopting AI education practices in their own classrooms. The program makes three key contributions to computing education:

- We provide cutting-edge AI learning and leadership development for college students and K-12 teachers.
- We offer comprehensive training in K-12 outreach and broadening participation strategies.
- We employ an integrated research and service learning model that engages scholars to implement AI outreach and evaluate their own projects in their local communities.

Our program creates a sustainable pipeline where college students develop both technical expertise and leadership skills to serve K-12 learners in their communities

This experience report presents the AI Scholars curriculum and its outcomes after one round of refinement. We examine the program's impacts on 63 scholars including 51 college students and 12 K-12 educators. We report on scholars' attitudes and program completion, AI outreach project themes, and reflections on their program experiences.

Related Work

The AI Scholars Program builds on three key areas of research: culturally relevant AI education, educator professional development for AI, and undergraduate engagement in K-12 computing outreach and research.

Numerous initiatives have demonstrated the potential of AI and machine learning (ML) outreach to engage all learners through culturally relevant learning experiences. The

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CS Frontiers program introduced an AI/ML curriculum designed for a 9-week course module and investigated through a summer camp taught by K-12 teachers, showing that it increased girls' interest in AI/ML (Alvarez et al. 2022). The TinyMLedu initiative provided AI/ML education in the Navajo Nation by translating curricula into Indigenous languages and preparing teachers to lead the curricula (Plancher and Janapa Reddi 2022). Summer camps designed for middle school students and led by undergraduate facilitators, introduced conversational AI development using personally and socially relevant topics has shown increased student self-efficacy in AI (Katuka et al. 2023; Song et al. 2023). A 30-hour workshop engaging middle school students found that ethics-focused lessons were the most impactful and well-received (Lee et al. 2021). These findings align with recent literature reviews calling for AI as a "pivotal tool for Broadening Participation in Computing," due to its engaging nature and intersections with topics like bias, fairness, and social justice (Melton and Rorrer 2024). The AI Scholars Program builds on these insights by encouraging students to design outreach projects rooted in community relevance, equity, and critical engagement with AI ethics.

Engaging college students in K-12 computing education and their communities has demonstrated improved student outcomes. Previous research show that undergraduate computing student participation in K-12 computing outreach programs fostered computing identity and academic resilience for undergraduate students (Crews et al. 2022). Furthermore, time spent in the program, which includes training on research and outreach implementation, strongly predicts intentions to persist in computing (Wyatt et al. 2024). Our AI Scholars Program implements a similar model by providing structured support through webinars with AI experts and collaborative partnerships with K-12 educators, aiming to enhance computing persistence among college students while expanding access to K-12 AI education.

Sustained educator professional development (PD) is essential for scaling AI education in K-12 contexts. A year-long PD program increased K-5 teachers' confidence and readiness in AI/ML lessons in their classrooms (Sinha, Evans, and Carbo 2023). Similarly, a PD course focused on ChatGPT equipped middle and high school teachers to understand prompt engineering, AI limitations, and integration strategies for classroom use (Reichert et al. 2024). A TPACK-based PD program for 40 in-service CS teachers also significantly improved AI teaching self-efficacy and lesson planning (Sun et al. 2023). However, challenges persist: a systematic review of AI education from 2019 to 2022 found that most curricula were created by researchers, with educators playing a passive delivery role (Rizvi, Waite, and Sentance 2023). Effective integration requires not only teacher training but also active teacher involvement in the development and pilot testing of instructional resources (UNESCO 12). Teachers often lack confidence in addressing AI ethics and algorithmic bias with their students (Hu and Yadav 2023; Lin and Van Brummelen 2021). Connecting teachers with college students computing expertise has shown to be effective in collaboratively supporting CS instruction (Mouza et al. 2023; Isvik 2024). Our program builds on these foundations, pairing scholars with K-12 educators to co-design classroom tools and outreach strategies.

Program Design and Implementation

AI Scholars is an online fellowship program under the STARS Computing Core [1] that runs from October to May and engages scholars across the U.S. in broadening participation in AI. STARS Computing Corps is a national initiative that builds inclusive communities to develop diverse computing leaders. It focuses on empowering students, faculty, and organizations to broaden participation in computing through mentorship, community engagement, and sustainable pathways into the technology workforce. Scholars participating in the AI Scholars program must attend six of 14 offered webinars, complete assignments, and implement a K-12 AI outreach project in order to receive certification and a stipend ($1000 paid in two $500 installments based on milestone completion). The program curriculum provides implementation support through training on K-12 AI education strategies, connections to existing outreach opportunities, and team mentoring. Scholars document their experiences through detailed reports and present their projects at program completion.

Program Staff

Our program staff included five researchers in computer science. Tiffany Barnes, Distinguished Professor at North Carolina State University (NCSU) and co-founder of the STARS Computing Core program, has 29+ years of experience in AI and CS education research and professional development. Jamie Payton, Dean of the College of Computing at New Jersey Institute of Technology, Professor of Computer Science, and Director of the STARS Computing Core program, has extensive experience leading computing education and broadening participation initiatives. Xiaoyi Tian, a Research Scientist at NCSU, has over five years of experience in AI education and informal CS outreach. Yasitha Rajapaksha, a Ph.D. student at NCSU, has four years of experience developing educational games. Om Patel, an M.S. student with a B.S. in computer science, is an active participant in the STARS student chapter at NCSU.

Scholar Recruitment

AI Scholars applications open in early fall, with targeted announcements via mailing lists, professional networks, and social media. The application was open to any university undergraduates, graduate students, faculty or staff, and K-12 teachers and administrators in the United States, though we primarily recruited undergraduate computing students and in-service K-12 teachers. Applicants completed an online form with demographic information and open-ended responses describing their motivation for joining, prior efforts to broaden computing participation, experience with AI concepts or tools, and a proposed K12 AI outreach activity. They also reflected on responsible AI practices and ethical considerations in AI education. These responses were used

[1] https://www.starscomputingcore.org/

Demographic Category	Response	Count	Percentage
Race/Ethnicity	Asian	25	39.7%
	White	20	31.7%
	Black/African American	15	23.8%
	Multiracial	2	3.2%
	Other/Not specified	1	1.6%
Hispanic/Latino Origin	No	55	87.3%
	Yes	8	12.7%
Gender Identity	Woman	37	58.7%
	Man	24	38.1%
	Other/Not specified	2	3.2%

Table 1: Participant Demographics (N = 63)

to evaluate each candidate's alignment with program objectives, commitment, and readiness to lead a feasible, high-impact outreach event. We scored responses using a rubric and collectively discussed applications to make final selections. From 152 total applicants, 63 Scholars were admitted to the 20242025 cohort. Demographics of the scholars are shown in Table 1.

Webinar Structure

The curriculum centered on bi-weekly, 75-minute webinars (Table 2) that delivered structured AI, pedagogical training, and K-12 outreach resources. These sessions covered three areasAI Curriculum/Pedagogy, AI Tools/Ethics, and K-12 Outreach Trainingto bridge knowledge gaps and offer collaborative guidance from field experts. Scholars learned foundational AI concepts, interacted with knowledgeable AI educators, and gained hands-on experience with educational tools like AMBY (Tian et al. 2023) for children to build conversational agents, and SceneCraft (Kumaran et al. 2023) for educators to create interactive scenes using LLMs. While only six webinars were required, scholars were encouraged to attend all sessions to explore nuanced AI-in-education issues. Scholars submitted a reflection survey noting their takeaways, suggestions, and questions. Webinar recordings and slides were provided to scholars in the Google Classroom for asynchronous attendance and accessibility.

Outreach Project

The outreach project serves as a major milestone where scholars design their own AI education activities and data collection methods. Scholars can choose from four project types: curriculum design, tool development, implementation of existing curricula, or conducting AI education research. Scholars can work either individually or in collaborative teams. The program structures this work through multiple milestones including project pitch, proposal, midterm activity report, final report, and presentation. To support remote collaboration, scholars utilize platforms such as Slack, Gmail, GitHub, and Google Classroom, with the latter serving as the primary hub for the curriculum, task assignment, communication, and milestone tracking. Our program staff serves as mentors to provide additional support through Google Classroom outside of regular webinars. Scholars can choose to use provided pre- and post-surveys or develop their own impact measurement systems to capture the impact of their outreach events.

Webinar Title
* Overview of the AI Scholars Program & Past AI Scholars Share Project Experience
* AI Education in K12, Pedagogical tools from AI4GA, and Challenges
+ How to Design & Implement a K12 AI Outreach Project to Broaden Participation in Computing
+ Project Pitch and Work Time
+ Data Collection: Capturing the Impact of your K12 AI Outreach Project
* Inclusive AI Learning Design & Culturally Responsive Teaching Practices
= AMBY: A Tool for Children to Create Conversational Agents
= Linguistic and Ethical Considerations of AI
= SceneCraft: Interactive Narrative Scene Generation with Large Language Models
* Curriculum Development & Lesson Activities (On Google classroom)
+ Project Key Deliverables and Timeline, Collaborative Work Time
= Technology-Enhanced Learning and Assessment
+ Scholars Project Presentations Part 1
+ Scholars Project Presentations Part 2

* AI Curriculum & Pedagogy + K-12 Outreach
= AI Tools & Ethics

Table 2: AI Scholars Webinars

To increase program engagement and accountability, we assign scholars to collaborative project groups where they can either plan joint events or coordinate separate local activities with shared resources and support. We base our grouping process on project pitches that scholars submit as their first project milestone, which include their geographic location, targeted grade level, subject focus, and activity topic. Our grouping process prioritizes feasibility for remote team collaboration through compatible scheduling and alignment of their target grade levels and topics. We also balance the distribution of K-12 teachers and students as teacher-student collaboration has shown mutual benefits: teachers can provide direct classroom access and pedagogical expertise, and university students can provide technical expertise and support for teachers classroom needs (Mouza et al. 2023; Isvik 2024). After initial team assignments, we provide teams time to meet, discuss personal preferences, and rearrange composition as needed. This process resulted in 13 final scholar teams. The detailed information about team composition and projects is in Table 3.

Program Outcomes

Data Collection & Analysis

To understand program outcomes, we collected and analyzed a variety of data, including student and teacher surveys, scholars outreach projects, webinar reflections and end-of-program interviews.

1) Pre/Post Surveys. To measure changes in participants' attitudes and perceptions, we administered a pre/post computing attitudes survey for students and an AI teaching self-efficacy survey for teachers, all using a 5-point Likert scale. **The student survey** was adapted from a long-established computing outreach program survey, that was used with over 2,000 students from 2006-2017 (Wyatt et al. 2024). It includes validated constructs such as CS persistence intentions (7 items, e.g., "I am interested in computing jobs"), computing identity (3 items, e.g., "Computing is an important part of who I am"), sense of belonging: valued competence (5 items, e.g., "People in computing know I can do good work"), and sense of belonging: social acceptance (6 items, e.g., "Students in computing help each other to succeed"). Additional constructs included professional role confidence (8 items, e.g., "Computing is the right profession for me") and self-assessment of ability (4 items, e.g., "I get good grades in computing"). **The teacher survey** was adapted from Boulden et al.s validated measure of self-efficacy for teaching computational thinking (Boulden et al. 2021), modified to focus on teaching AI. The survey included 11 items assessing teachers confidence in teaching AI-related concepts (e.g., "I am confident that I can explain to students how AI works," "I know the steps necessary to teach AI effectively," and "I am continually improving my AI teaching practice").

2) Webinar Reflections, Outreach Project Reports, and Presentations. We analyzed scholars reflections on the webinars they attended, as well as artifacts from their outreach projects, including project proposals, final reports, and presentations submitted during the program. These materials were used to learn about participants project focus areas and learning experiences.

3) Scholar End-of-Program Interviews. At the program's conclusion, nine scholars (five students and four teachers) participated in optional 30-minute Zoom interviews. Participants discussed their experiences, including their motivation for joining the program, outreach project implementation, and group collaboration. Two researchers performed a thematic analysis of the interview transcripts following guidelines specified in (Hsieh and Shannon 2005), specifically an inductive coding process (Fereday and Muir-Cochrane 2006). The resulting themes are reported below.

Scholar Motivations and Engagement

To understand what drew participants to the AI Scholars Program and sustained their engagement, we analyzed interview data to identify three primary motivational themes that emerged across the interviewed participants (labeled as P1-P9).

Knowledge Building and Professional Development. Our participants joined the AI scholar program for a range of personal, professional, and academic reasons. Many were motivated by a desire to build foundational AI knowledge, especially those without prior experience. P3 (grad student, male), who came from a non-CS or AI background, explained, "*I was just grasping for any resource, any program that I could find to help provide me information and resources about DS [data science] and AI.*"

Educators were motivated by a strong sense of professional responsibility and growth. P2 (HS CS teacher, female) shared, "*If I don't have the motivation to continue learning, I feel it's a disadvantage for myself and also for my students...that's the reason why I push myself.*" The opportunity to see the impact of their outreach work and plan future applications in their own classrooms was a strong motivator: "*I want to finish it because I want to see the results, and maybe continue it in my classroom.*" (from P7, HS math teacher, female)

Community and Collaboration. Collaboration and community played a central role in maintaining engagement throughout the program. P3 stated, "*If it werent for being part of the group, I probably wouldve dropped out.*" P8 (HS CS/business teacher, female) emphasized the supportive nature: "*You're not alone. If you don't know anything...I liked the sense of community and information it gave me.*" P1 (undergrad, female) described it as a "*safe environment where you can learn and work with each other.*" P6 (elementary STEM teacher, female) valued the opportunity to learn from diverse perspectives through the webinars: "*Getting to all of the webinars and hearing all of everybody's different perspectives...I have all of that knowledge now. It provided me with the opportunity to grow.*"

Impact on Communities. Several participants were driven by their personal values and motivations to serve their communities. P5 (undergrad, male), a first-generation college student, shared, "*None of my family members went to college...I just wanted to give more exposure to people who are like me...underprivileged...and show them they can also become engineers.*" He emphasized a deep personal motivation to use his background to inspire youth, adding, "*I want to learn more about how to educate others and do more outreach. Even when I get my degree, I think I still want to mentor other kids.*" Seeing the impact was particularly rewarding. He expressed: "*(the teacher) telling me that the kids were actually receptive to the lesson plan and how they started to make the connection between mathematics and computer science, that made me pretty happy.*" These deeply personal motivations reflected scholars' own backgrounds and experiences has shaped the design and focus of their outreach projects, as we explore in the next section.

Scholar Participation and AI Outreach Projects

Of the 63 scholars accepted (12 K-12 educators and 51 college students), 42 met initial milestones for the first set of milestones. By the end of the program, 30 scholars (8 educators and 22 students) completed all requirements, resulting in a 48% overall retention rate. Five of 13 project teams included at least one K12 educator. Table 3 shows the detailed breakdown of the scholars' outreach projects.

Eleven of the 13 projects focused on creating curricula and planning outreach, and two projects centered on research. Nine groups conducted outreach with approximately 232 to 282 K-12 learners (some projects did not report exact numbers). A common goal across the projects was increasing AI literacy or critical thinking (at least six), often through topics like AI ethics, societal impacts, or real-world applications. Four projects explicitly focused on helping students develop the skills to reason about ethical issues in AI, reflecting a broader trend in literature of using ethics as an accessible and engaging entry point to AI learning for all students (Lee et al. 2021; Melton and Rorrer 2024). Several projects also emphasized AI career exposure (three) and increasing student interest in AI (two), suggesting scholars envisioned their outreach as part of a pipeline to influence students educational and career pathways. Five projects focused on supporting underserved or underrepresented groups. For examples, Project H was conducted specifically for blind and visually impaired students by two student scholars, one of whom is blind and conducts research on assistive technologies. Project F was conducted as part of a school-wide Black History Month program. In their project, two teachers employed a culturally responsive approach where students programmed chatbots to research Black historical topics, then created artifacts enhanced with AI-generated artwork. As reflected in the interview findings, scholars' personal motivations to serve communities similar to their own translated directly into project design choices. These projects show that scholars are designing AI education that was deeply rooted in their experiences as well as those of their target learners.

Scholar Project Case Study

To illustrate the impact and lessons learned from scholars' outreach, we present Group L, a project implemented with 11 high school students in an AP CS Principles classroom. This project, led by a high-school teacher and an undergraduate collaborator, examined how LLM tools such as ChatGPT and GitHub Copilot influence students' understanding of Python programming. The focus was on the tools' effects on critical thinking, problem-solving, and code comprehension, along with identifying strategies for guiding students toward ethical and effective AI use.

To align with AP requirements and promote critical AI evaluation, the team designed activities where students debugged code (with and without AI), used AI to explain Python topics, and reflected on learning changes. Assessment involved custom pre- and post-surveys measuring Python comfort/confidence, complemented by oral code-explanation assessments, unit tests, and classroom observations of student engagement, AI reliance, and problem-solving approaches.

An early challenge observed by the project team was that the students tend to accept AI outputs without verification. In response, the teacher-scholar introduced checkpoints requiring students to annotate AI-generated code with explanatory comments and complete written reflections in a shared document. These measures were intended to foster deeper engagement with the material and promote more deliberate use of AI tools.

In their project report, the team conducted a qualitative analysis on the high school students' learning experience. They reported that the AI tutor helped students clarify coding misconceptions such as missing parameters, variable scoping errors, and loop logic issues. They noted that students who actively engaged with AI explanations, questioning and adapting suggestions, demonstrated stronger conceptual understanding, with examples including restructuring conditional statements for clarity and improving data-validation routines. Interestingly, some students chose to limit their use of AI to maintain a sense of ownership over their work, which at times reduced opportunities to explore alternative approaches. The team also reported that all students adhered to ethical guidelines, avoiding requests for complete solutions and, in some cases, crediting AI-generated code in comments. By the conclusion of the project, the team reported greater student awareness of ethical AI use, increased confidence in debugging, and improved ability to evaluate and adapt AI-generated suggestions.

When the team reflected this experience, they stated that the program deepened their understanding of how AI tools can be integrated meaningfully into computer science education. Specifically, the teacher reported learning how to balance AI assistance with student agency and recognized the role of structured reflection in fostering deeper comprehension. She described it as rewarding to see students grow in their ability to explain code logic and gain confidence in debugging with and without AI. The experience also reinforced for her the importance of designing scaffolds that promote ethical and critical AI usage in the classroom.

Webinar Reflection Analysis

To assess the impact of the webinars we offered, we collected 190 webinar reflections from scholars throughout the program. Among these reflections, 75% indicated plans to use webinar content in their outreach projects. Scholars reported three main areas of intended uses: 1) AI curricula and tools, 2) planning and evaluation frameworks, and 3) interest-centered topics. The scholars planned to leverage program resources and demonstrations for AI curricula and tools such as Quick Draw activities, chatbot-building, interactive AI demos, and techniques to adapt them with culturally responsive strategies. They also planned to use structured frameworks such as SMART goals, design-thinking methodologies, and logic models to create measurable, sustainable programs. Finally, most scholars planned to incorporate hands-on activities related to interest-centered topics such as accent detection demos, generative AI storytelling, and video game examples to engage students while addressing critical topics like AI ethics, bias, and hallucinations.

Sentiment analysis of webinar reflections revealed that 91% of responses were positive. Participants particularly valued the interactive components, clear structure and pacing, and practical frameworks they could immediately apply to their outreach. They also appreciated the supportive,

Group	Grade Levels	# K12 Learners	Focus	Outreach Implemented	Topics & Intended Impact
A	ES, MS, HS	50–100	Curricula	Yes	AI ethics, societal impacts, AI career exposure, build critical thinking
B	ES	50	Curricula	Yes	AI for game creation, increase AI interest, robotics
C	MS, HS	NA	Curricula	No	AI career exposure, AI tool access, reinforcement learning
D	MS, HS	32	Curricula	Yes	AI bias, AI ethics, AI privacy
E	ES	90	Curricula, Teacher training	Yes	Classification, sensing, underserved communities
F	MS	16	Curricula	Yes	Black history, equity in AI, image generation, LLM chatbot, underserved communities; scholars presented their work at an event with 600 attendees
G	HS	16	Curricula	Yes	AI career exposure, equity in AI, LLM chatbot, ML, underserved communities
H	HS	NA	Curricula	Planned	AI for blind/visually impaired students, AI history, real-world applications, underserved communities
I	HS	NA	Curricula	No	Prompt engineering, real-world applications, underrepresented groups, underserved communities
J	HS	Unknown	Curricula	Yes	Computer vision, build critical thinking
K	Ugrad	Unknown	Curricula	Yes	AI ethics, societal impacts, increase AI interest, neural style transfer
L	HS	11	Research	Yes	Explore whether LLMs enhance or hinder critical thinking and problem-solving skills in programming
M	MS, HS	NA	Research	Yes	Empower teachers to generate characters for lesson-opener stories that reflect their classrooms

Note: ES = Elementary School (preK-5), MS = Middle School (grade 6-8), HS = High school (grade 9-12)

Table 3: Overview of Scholar Outreach Projects

collaborative atmosphere and diverse topics presented by knowledgeable speakers from varied backgrounds.

Four webinars received particularly high ratings. "How to Design & Implement a K-12 AI Outreach Project" and "Data Collection" were valued for providing templates and resources that scholars could immediately use in their projects. "AMBY" and "SceneCraft" were highly rated for offering hands-on access to generative AI tools, including chatbots and interactive storytelling, helping participants engage K-12 students in creative, ethical AI learning through narrative design, problem-solving, and hallucination detection.

Scholar Attitude Changes

Table 4 shows the results of pre and post surveys. The student survey results show increases in all measured constructs except professional role confidence, with statistically significant increases in computing identity ($p = 0.0387$) and sense of belonging: social acceptance ($p = 0.011$). At the pre-survey, professional role confidence was already high for this matched sample, so there may have been a ceiling effect, and may indicate that only students with higher professional role confidence chose to enroll in and complete the program and its surveys.

These results suggest positive impacts on students' sense of belonging and computing identity. Regarding teacher self-efficacy for AI instruction, all 6 teachers with matched pre-post responses showed statistically significant increases ($p < 0.001$), with mean scores rising from 3.55 to 4.09 indicating that the program positively impacted teacher confidence.

Lessons Learned and Challenges

We detail challenges and lessons learned from implementing a year-long, online program for AI K12 outreach.

Scaffold Team Collaboration

Team-based projects were a highlight for many participants, especially when peer collaboration worked well. However, challenges emerged when team formation felt unstructured or when communication and roles were unclear. Our participants indicated the program would benefit from intentional team-matching based on shared interests, early introductions, and relationship-building activities. Future programs should offer explicit expectations around team roles and responsibilities. Providing a clear collaboration structure, setting time-sensitive milestones, and incorporating regular feedback mechanisms can help teams stay organized and accountable (Hussein 2021; Thomas and MacGregor 2005). Check-ins and collaborative tools (e.g., shared trackers or mid-term reports) could further support balanced participation and help groups navigate common challenges like work-

Construct	Pre/Post	n	Mean	p
Student Outcome				
CS Persistence Intention	Pre	39	4.20	0.1204
	Post	18	4.36	
Computing Identity	Pre	39	3.67	**0.0387***
	Post	18	4.08	
Sense of Belonging: Valued Competence	Pre	39	3.66	0.0685
	Post	18	3.94	
Sense of Belonging: Social Acceptance	Pre	39	3.96	**0.011***
	Post	18	4.27	
Professional Role Confidence	Pre	39	4.33	0.9807
	Post	18	4.29	
Self-assessment of Ability	Pre	39	4.09	0.8779
	Post	18	4.11	
Teacher Outcome				
Self-efficacy Teaching AI	Pre	8	3.55	**$<$.001****
	Post	6	4.09	

Note: p-values were computed using the Wilcoxon signed-rank test on matched pre- and post-responses. n (students) = 16; n (teachers) = 6. $*p < .05$; $*p < .01$.

Table 4: Pre/Post Comparison of Student and Teacher Outcomes Reporting Averages on 5-point Likert Item Constructs

ing schedule differences or uneven workloads.

Involve Educators in K-12 Outreach

We learned from this experience that integrating K-12 educators into AI outreach programs bridges the gap between technical expertise and classroom application and can increase scholar retention in such programs. In the pilot year of our program (Year 1 in 2023-2024), we recruited only college students. Cohort 1 scholars reported having limited access to K-12 classrooms, which hindered their ability to design relevant outreach activities and implement their outreach with learners, and scholar retention dropped to 30% by the end of the program (30 enrolled and only 11 finished)[2]. To address this for Cohort 2, we recruited educators to join scholar teams. Several teams collaborated with teachers to design tools tailored to specific grade levels or curriculum needs. This approach improved scholar retention from 30% in Year 1 to approximately 50% in Year 2 (63 enrolled and 30 finished). One teacher participant noted in the interview: "*I think it's important to collaborate with other teachers or other college or graduate school students, because I want to find out the struggles or the benefits of the use of AI in college.*" In other studies, a similar model has paired undergraduate students in service-learning courses with K12 teachers, connecting students computing expertise with teachers pedagogical knowledge to collaboratively support computer science instruction (Mouza et al. 2023). High school students with programming training have previously also successfully partnered with K-12 teachers to create computing-infused computer science curricula (Isvik 2024).

[2] A 30% retention rate is typical for distributed, part-time, online programs involving voluntary project work (Herbert 2006; Aversa and MacCall 2013)

Provide Tiered and Role-Specific Tracks

Scholars came with different levels of experience and different needs, with large differences between educators and students. While some found the technical content too advanced or too basic, others wanted deeper engagement or more foundational support. Future programs should offer tiered sessions tailored to different experience levels and different tracks for educators and students. Educators who are familiar with educational practices, expressed that they value opportunities to connect with fellow teachers, share strategies, and learn from other AI adopters in schools. Students preferred hands-on technical sessions and sometimes needed extra support with logistical challenges during outreach events, such as accessing materials or navigating network restrictions. Offering early onboarding, track-specific sessions targeting teachers or students, tool demonstrations, and asynchronous resources can help both groups engage at the right depth and pace for their needs.

Sustain Engagement in Remote Learning

Sustaining engagement in remote, year-long programs remains challenging. While scholars in our program valued interactive webinars, they needed clearer expectations, regular check-ins, and post-session follow-ups. We recommend weekly mentor meetings, structured milestones, and online forums to enhance participation and accountability. Additionally, offering flexible, asynchronous review options and multiple content formats can further accommodate different schedules and scholar learning preferences.

Conclusion and Future Work

This report details the design and implementation of an online, year-long AI Scholars program in which 63 college students and K-12 educators engaged in a collaborative learning community focused on AI and K-12 outreach. Their projects reached over 230 K-12 students. Our emphasis on ethics-focused AI education and community partnership significantly enhanced computing identity and sense of belonging among student participants and teachers' self-efficacy for AI instruction. These findings offer valuable insights for CS education researchers and practitioners seeking to scale AI literacy initiatives through structured outreach programs. In the future, we will prioritize improving program retention, conducting longitudinal studies on career trajectories, and adapting the model for different institutional contexts.

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