Getting Down to FACTS

AI and Education across California Schools: Calls for More Professional Development and AI Literacy

Victor R. Lee
Stanford University

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1.0 Introduction

Artificial intelligence (AI) is a topic of growing interest for California schools and classrooms, spurred by new advances in generative AI, many of which are being led by California-based technology leaders such as OpenAI's ChatGPT, Google's Gemini, Anthropic's Claude. The implications for schools are still uncertain and complicated. Early in our current generative AI era, a vision of the ultimate personalized tutor was promoted, whereby every student could learn with a custom chatbot. Yet the initial uptake and impact of generative AI was modest, there were some prominent cases of failure (LAUSD, Keierleber, 2024), and the research has ultimately been lacking. The conversations around AI in education have pivoted several times from digital tutors to teacher efficiency tools to drivers of student cheating to harmful technologies for students' mental health and critical thinking capacities to job displacement. Given worldwide engagement and uncertainty around AI and its relationship to K-12 education or its regional equivalents, this conversation will remain cacophonous and fluid.

With that said, we still seek information to guide decision-making, particularly at the policy level, and clarification on what is the current landscape of AI in K-12 education. This technical report provides information, although with recognition that this is a dynamic situation and that existing publicly accessible data - and specifically data that focus on California - is scarce. Even research studies based in the US are scarce as the currently available academic literature is largely contributed from overseas researchers working in very different national contexts. Under the larger umbrella of AI and K-12 education, the following questions are addressed in this report:

1. What is the current policy landscape for California with respect to encouraging and supporting AI education?
2. To what extent is AI currently being instructionally supported in K-12, both for teachers and students, with respect to school-related educational or instructional activities? How does California compare with what is happening nationally?
3. What are emerging areas of need for the California K-12 education system, given the most recent national and international guidance and research related to teaching about AI in schools?

At present, we as a society and the larger scientific enterprise are not able to answer questions about whether AI is a net positive or negative for schools, under what conditions AI will improve student achievement or teacher job satisfaction, and what kinds of efficiencies or cost-savings (or new costs) AI will have on K-12 education. Some initial information is coming (see SCALE report) but these are questions that require more time (e.g., more years and schools integrating AI) and evidence gathering (e.g., more measures of outcomes and variables of interest, many of which may not yet have valid instrumentation).

It is important to also acknowledge that this recent push for AI is taking place in the 2020s. This period of time included an abrupt shift to remote learning during the COVID-19 pandemic, leading to an immediate investment in chromebooks and digital learning platforms that continue to be in use. The return to schools post-COVID had some documented challenges for students. Alarm about cell phone usage in schools, "screen time", and potential risks associated with both (e.g., Haidt, 2024; Prasanth, 2025; Sved, 2025) has led to new policies about cell phone use, and some of this is surfacing concerns about mental health and student social and emotional development in relation to AI. Again, the latter is still new enough that information is limited even though actions – such as bans or restrictions - are being taken.

1.1 Artificial Intelligence Basics for this Report

Artificial intelligence (AI) here refers to the genre of digital technologies and approaches that approximate human reasoning and decision-making or are intended to complete tasks that would require such capacities. It has a longstanding history reaching back many decades and involving multiple approaches[1]. Since 2022, many have come to associate AI with generative AI and chatbot technologies, exemplified by text-based interfaces like ChatGPT. Current generative AI is showing much better performance on the creation of text, images, video, and audio media than prior generations of the technology. Much of the modern generative AI is based on machine learning that involves training from large data corpora – such as entire scanned libraries of books, decades of message board posts, newspaper archives, driving routes from rideshare services, online reviews, and other user-generated

[1] This includes symbolic and data-driven. For one summary on historical developments in AI, consider Broussard (2018)

and posted content. The volume of data being generated is staggering, making AI model training costly and resource-intensive. That has not dissuaded substantial investment and interest from all sectors. However, many concerns have arisen around issues of copyright, deepfakes, and authorship that still remain to be resolved through legal and other means. Moreover, there are social harms that may come from stereotypes and embedded social biases in the training data or the design or deployment of the systems. There are new psychological tendencies, such as "automation bias" whereby users are inclined to accept what was provided through an automation system as sufficient for decision-making or interpretation. There are also emerging concerns about developmental and mental health impacts of frequent use and reliance on these AI technologies.

However, while chatbot technologies have taken center stage, AI is more than generative capabilities. It has been and continues to be the backbone of search, image recognition, classification, prediction, and recommender systems. This means AI has, for many years preceding modern chatbot technology, been embedded in search results, advertising, content customization, price estimates, spelling correction, predictive typing, digital photos, image filters, sports replay animations, speech-to-text, and many other uses. These are present in abundance across many technologies, and it is increasingly difficult to separate AI from any device, app, or digital service. Phones unlocking from face recognition, red underlines of text in word processing, automatically suggested design templates for slides, auto transcription, backgrounds in Zoom, social media and news feeds, and email spam filtering are all familiar and illustrative of how AI is already embedded in so many things that may not be immediately considered "AI" and quite difficult to separate from the service. Currently, "agentic AI" – the ability to have AI execute actions given permissions to access and use otherwise restricted files or other digital services such as logging into accounts, accessing and updating databases, and generating computer code as part of a workflow, is currently expanding in the professional sphere. Initial efforts are underway to study the implications and potential of agentic AI in educational settings (Kostopoulos et al., 2025).

At present, the educational imagination typically defaults to the image of AI as chatbot technology and the capacities of AI to generate text, potentially serve as an individual personalized tutor for students

or expeditor of digital work common for teachers and school administrators such as preparing lessons, aiding in assessment, modifying instructional materials, producing reports, and data analysis. It is causing some disruption in education in that longstanding targets of instruction (e.g., the five-paragraph essay), methods (e.g., requiring students to read a text and produce a summary), and modes of assessment (e.g., conduct an independent research project) can now be done with AI with a very different involvement (and resultant individual knowledge or proficiency change) from the human than had been originally intended.

Ed tech companies have been eager to explore this, whether it is in the provision of explicitly AI-associated platforms and services such as "Khanmigo" (Khan, 2024), which includes both chatbot tutors and specialized tools for teachers (e.g., create a lesson icebreaker activity), Brisk, School.ai, MagicSchool, and others. Other tools (such as Amira) are integrating them into early literacy and reading instruction. Longstanding educational technology platforms, such as Google Classroom and Instructure's Canvas are integrating AI into their products. Google is also pursuing a number of projects that are supportive of education such as with LearnLM and NotebookLM. Similarly, others have followed suit such as OpenAI's study mode and ChatGPT Edu. Large agreements have been made by major AI companies, such as between California state Universities and OpenAI or OpenAI and the nation of Estonia or Claude for the nation of Iceland, for instructional use.

For the purposes of this report, AI as predominantly of the new generative and machine learning based forms that are explicitly described for education and school use are the focus, although the points made will often span across or be derived originally from other forms of AI. For a default, readers can picture technologies that rely on AI chatbot capabilities that are promoted for learning and tools marketed for teachers and schools whenever AI is mentioned. These typically include AI products or services marketed to reduce administrative load on teachers, aid in pedagogical decision-making, or provide personalized just-in-time support for students. In the future, this image will expand with further integration.

1.2 Policy Context

During the 2023-2024 legislative session, California has thus far passed two AI-relevant education bills. Assembly Bill 2876 (2024) requires the Instructional Quality Commission to

> "consider incorporating Artificial Intelligence (AI) literacy content into the mathematics, science, and history-social science curriculum frameworks when those frameworks are next revised after January 1, 2025, and would require the commission to consider including AI literacy in its criteria for evaluating instructional materials when the state board next adopts mathematics, science, and history-social science instructional materials, as provided."

This legislation does not provide strict mandates, but does strongly recommend AI literacy be an ongoing consideration for new frameworks and materials endorsed by the state. Of note is that this is in reference to content related to mathematics, science, and history-social science. The implication here, and future recommendations, is to acknowledge the relevance of AI to multiple subject areas and classes for students – not strictly for computer lab time, computer science instruction, or media instruction (e.g., teacher librarian instruction).

Senate Bill 1288 (2024), passed in the same legislative session

> "would require the Superintendent to convene a working group, composed as provided, for specific purposes related to artificial intelligence in public schools, as specified. The bill would require, among other things, the working group to develop, on or before January 1, 2026, guidance for school districts, county offices of education, and charter schools on the safe use of artificial intelligence in education, and to, on or before July 1, 2026, develop a model policy for those local educational agencies regarding the safe and effective use of artificial intelligence in ways that benefit, and do not negatively impact, pupils and educators, as provided"

This is being enacted by the California Department of Education (CDE), and a 50-person working group has been formed that met in August 2025, October 2025, and February 2026. The coordination of this effort is taking place under the guidance of the Computer Science Coordinator for CDE. Currently, CDE has one person staffed for computer science coordination and that individual has also taken on responsibility for leading AI guidance for the state, taking the initiative to provide requested initial and updated guidance for schools through the CDE website

(https://www.cde.ca.gov/ci/pl/aiincalifornia.asp). In comparison, other states vary in having a staff team or may not have anyone employed in that capacity. With some consultation from other groups, the coordinator has issued guidance in 2023 and 2025 and actively worked on sharing this information across the state through newsletters and web events.

As home to the Silicon Valley and several leading AI companies, California's state leadership has taken active roles in engaging with these companies and establishing agreements. In August of 2025, the Office of Governor Gavin Newsom announced agreements with Google, Adobe, IBM, and Microsoft for workforce preparation (including students in grades 9-12 as well as for postsecondary students).

Federally, the Biden administration maintained an Office of Education Technology within the US Department of Education (2023, 2024) that had issued guidance regarding Artificial Intelligence and safety for tool developers and educators. The Trump administration has discontinued that unit, although AI continues to be a concern. The current administration has issued an executive order from the White House (14277) "Advancing Artificial Intelligence Education for American Youth" on April 23, 2025. Section 2 of the executive order states:

> Sec. 2. Policy. It is the policy of the United States to promote AI literacy and proficiency among Americans by promoting the appropriate integration of AI into education, providing comprehensive AI training for educators, and fostering early exposure to AI concepts and technology to develop an AI-ready workforce and the next generation of American AI innovators.

This executive order advocates strongly for AI education – namely, in the increase of AI literacy for students, the establishment of an AI Education Task Force, teacher training on AI in the classroom, and public-private partnerships related to AI in education. It also specifically directs the National Science Foundation and Department of Agriculture to prioritize AI education.

As a decentralized system, districts, schools, and communities will ultimately determine which actions to take locally that will ultimately impact the manner and degree to which AI in education is

emphasized in teaching and learning. The current policy landscape strongly urges an emphasis on AI, including AI education (teaching students about AI) with various actions underway in the form of requests for working group guidance, asking state offices and committees to consider AI in future curricular framework decisions, and in encouraging engagements with the private sector.

It is important to note that there is a much larger ecosystem for AI education to consider that will bear on what happens for schools, including the ed tech sector, the AI professional sector as it engages education and students as potential long term users and future employees, philanthropies, universities and other organizations conducting research and development for AI in education as well as providing pre-service and continuing education for teachers, nonprofit and professional groups that advocate for artificial intelligence engagement in schools, private professional development and consulting groups, and educational materials publishers.

2.0 Methods

This report includes mixed methods drawing from existing or pre-collected data sources from other organizations or published research studies and some data collected from interviews with principals as part of the larger *Getting Down To Facts III (GDTF3)* project. Much of the data is national in scope, and upon inquiry for California-specific data, many groups behind those data efforts reported that there were insufficient data from California alone - taking into consideration that the sampling often involved 50 states and the District of Columbia - for the California results alone to be sufficiently informative. At the same time, the adaptation and response to AI is new for all states and research is at an early stage.

In preparing this report, many key education leaders in California – such as staff at CDE and leadership in professional organizations for educators - reported “survey overload” from California educators currently, and very poor response rates. Therefore, new survey data were limited. With that said, there are some consistent tendencies appearing across data that do exist that are still informative.

Table 1. Overview of data sources used or referenced in this technical report.

Data Source	Data Type	Means of Access	Respondents ("N")
RAND Corporation	Survey	Aggregate from published report Doss et al. (2025)	• 1261 middle and high school students (Jan-Feb 2025) as part of American Youth Panel • 967 K–12 public school teachers of all subjects surveyed in October 2024 as part of the American Teacher Panel (ATP) • 8,601 K–12 public school English language arts (ELA), math, and science teachers surveyed in April–June 2025 as part of the ATP • 3,668 principals surveyed in March–April 2025 as part of the American School Leader Panel (ASLP) • 289 school district leaders surveyed in October–November 2024 as part of the American School District Panel (ASDP) • 232 school district leaders surveyed March–May 2025 as part of the ASDP.
Bellwether Survey	Survey	Aggregate from published report, Croft et al (2025)	102 public and charter school leaders, Fall 2024
Consortium on School Networking (CoSN) Survey	Survey	Aggregate from published report, Maylahn (2025)	645 School District EdTech Leaders, Jan-Mar 2025
California Department of Education (CDE)	Survey Interviews	Aggregate, shared by CDE	• 600 educators and school leaders from California, collected in 2025 • Interviews with 2 CDE staff in 2025

California Urban District Teacher Survey	Survey	Aggregate and raw, reported in Chen et al (2025)	1,454 teachers within a single [2]California Urban School District in Summer 2023
Challenge Success	Survey	Aggregate and reported in Lee et al (2024) and Chen et al (2026)	● 3,408 responses across 2019-2023 (Lee et al., 2024) ● 4,354 High School Students (Chen et al., 2026)
Getting Down to Facts III (GDTF3)	Interviews	Raw	81 California Principals (2025-2026)
AI Teacher Time Project (NSF Grant 2500101)	Interviews and Focus Groups	Raw	10 K-12 teachers employed at a single California School District (2025)
Gallup-Walton Family Foundation	Surveys	Aggregate reported in Gallup-Walton Family Foundation (2025)	● 1,989 U.S. teachers Oct. 29-Nov. 25, 2024 ● 2,046 U.S. teachers Jan. 13-31, 2025 ● 2,167 U.S. teachers Apr. 17-May 19, 2025
Pew Research Center	Surveys	Aggregate reported in McClain et al. (2026)	1458 teen and parent dyads, Sept 25-Oct 9, 2025

The findings from these various sources are largely descriptive; they primarily report counts and percentages of different responses from the respective samples. These are not causal or experimental studies and largely look at associations or proportions. Therefore, as is always the case for information of this sort, readers should be cautious about correlation versus causation and consider limitations in sampling and instrumentation when making inferences about the larger population.

[2] As these data were collected as part of university research, Institutional Review Board agreements and professional practice maintain anonymity of the specific participating organizations and individuals in public reports and for individuals not directly approved as project personnel. However, studies based on these samples have been conducted, subject to rigorous academic peer review, and published.

3.0 Results

This section on school and district leaders draws from public reports, drawing from national surveys and also California-specific interview data from principals who participated in GDTF3.

3.1 Educational Leadership

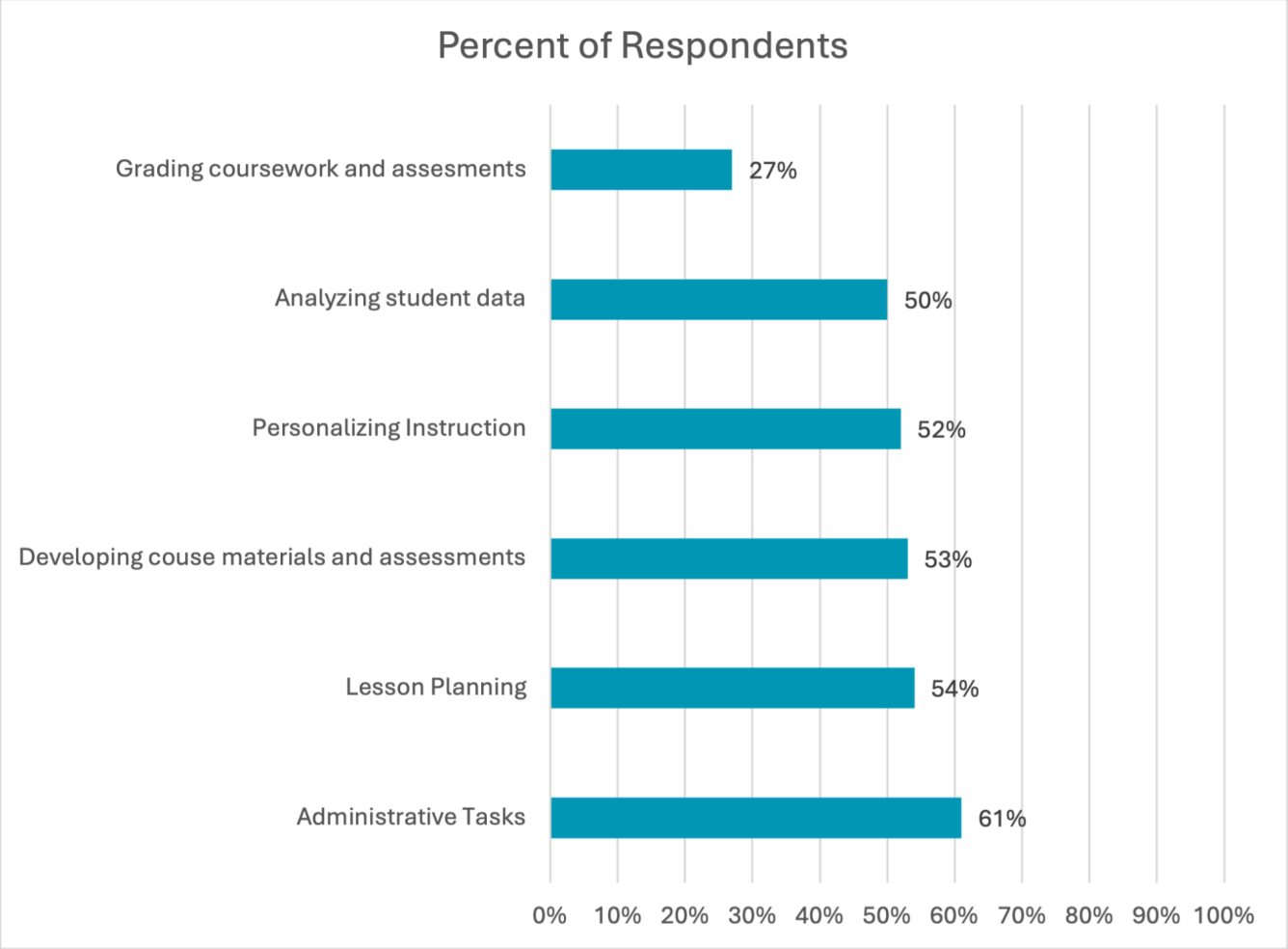
3.1.1National

3.1.1.1 School Leaders

The Bellwether report (Croft et al., 2025) covers a survey from Fall 2024 that sampled a mix of public and charter school leaders. They had 102 responses, representing 37 states and the District of Columbia. By their disclosure, this report had greater rural representation (64% of the sample). Bellwether also reported conducting interviews and focus groups with 12 individuals in November and December of 2024.

The priorities for respondents are presented in Figure 1, along with percentages of respondents identifying those as priorities for the 2024-2025 academic year. Of note, the focus for AI was on administrative tasks (61%), instruction (52-54%), and data analysis (50%). A smaller portion (27%) was prioritizing assessment.

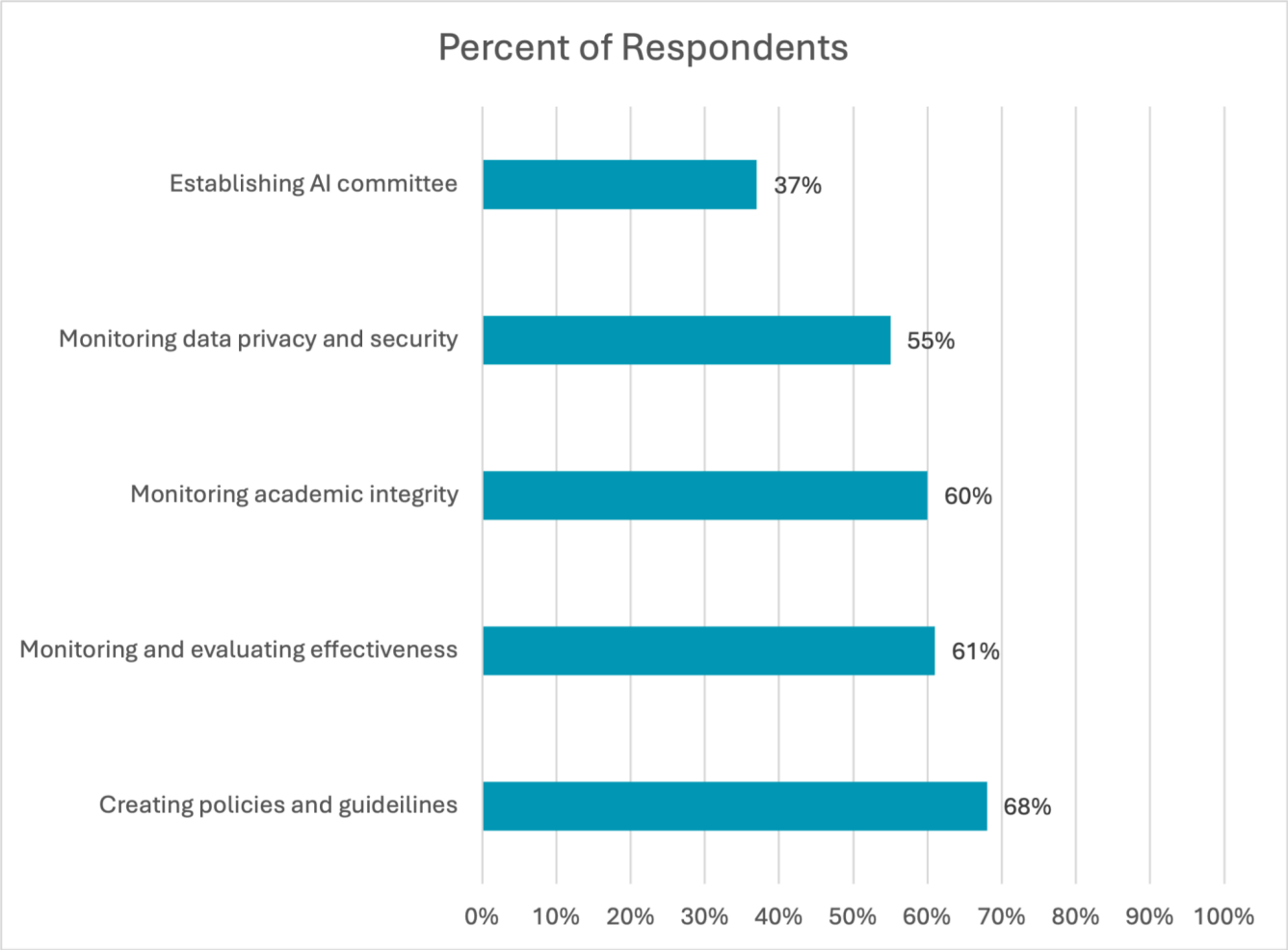
Figure 1: Bellwether's school system leaders planned and prioritized use of AI for 2024-2025



Source: Excerpted from Croft et al. (2025).

The survey administrators asked about priorities for oversight by school district leaders. This is provided in Figure 2. Creating policies and guidelines was the most commonly selected (68%), although other concerns related to academic integrity (60%) and monitoring data privacy and security (55%) were identified.

Figure 2. Bellwether's school system leaders' planned or prioritized AI oversight for 2024-2025



Source: Excerpted from Croft et al. (2025).

3.1.1.2 Technology Leaders in Schools and Districts

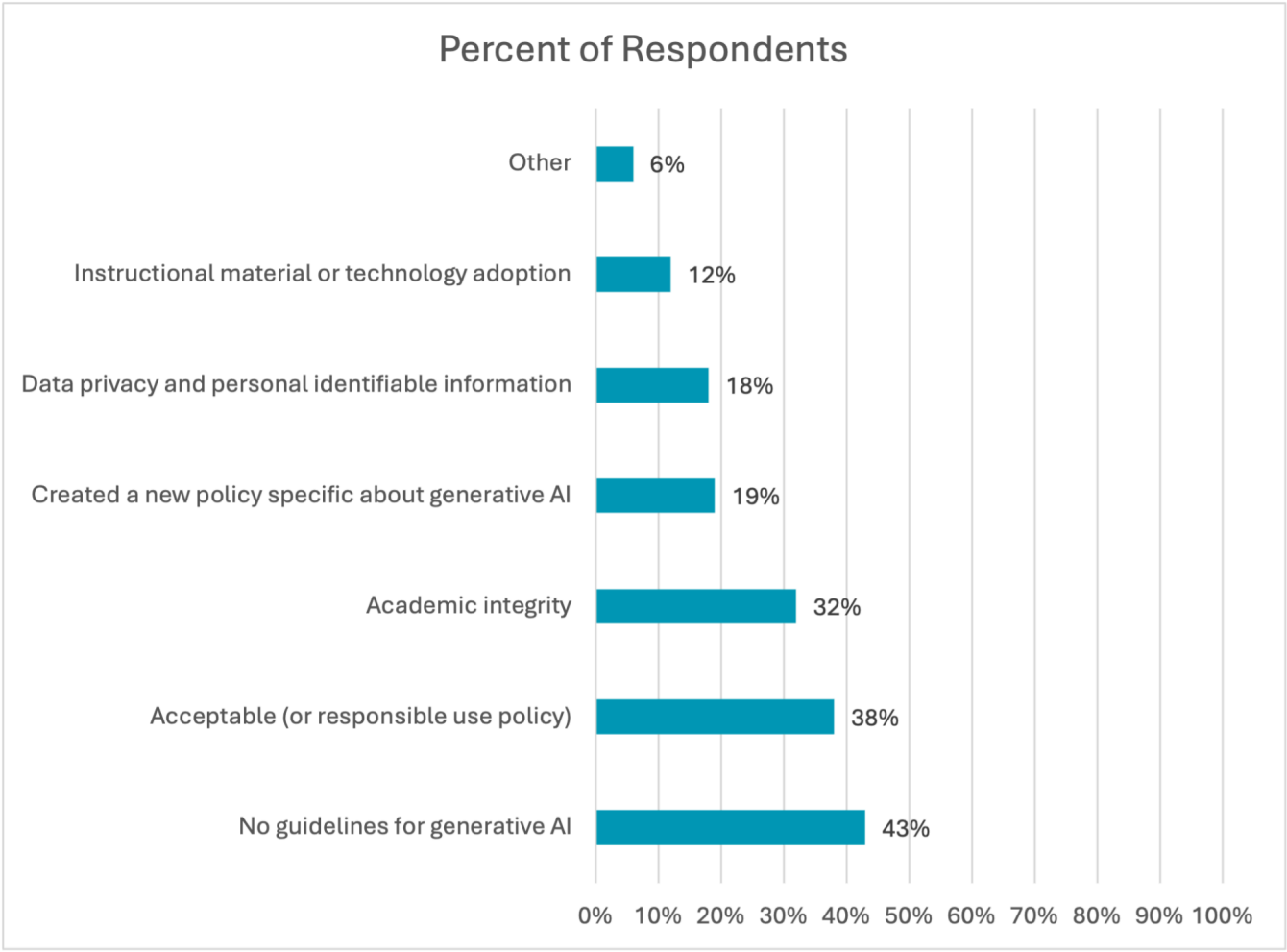
The Consortium on School Networking (CoSN) is a professional organization for technology leaders in school districts, typically housed in a central district office technology department. They provide an annual survey on the state of edtech. For GDTF3, the results from their CoSN 2025 State of Ed Tech District Leadership report (Mayhan, 2025) are shared here. A 41-question survey was emailed to district EdTech leadership, with a response window of January 14, 2025, to March 2, 2025. There were 645 responses, with only one per district included. When more than one respondent from a district participated, the most senior ed tech leader, as defined by title, was the one included. For the 74% of

the respondents, that title was Chief Technology Officer. Most others were other technical specialists or administrators, although in some districts (11%), the respondent was the superintendent. This sample was 98% public school districts. Urbanicity included: 38% Suburban, 29% Rural, 19% Towns, and 13% cities for representation. Respondents were from 46 states, California among them, although the percent of respondents from California is not known.

In 2024, AI strategy was made a survey response option and was identified as the 4th top priority for district leaders, behind cybersecurity, data privacy & security, and network infrastructure. These other three matters are longstanding concerns for educational technology leaders as they are charged with addressing matters of connectivity and safety for their respective districts. AI, however, is rapidly rising as a concern and ranks above other priorities, such as broadband/network capacity or parent-school communications systems.

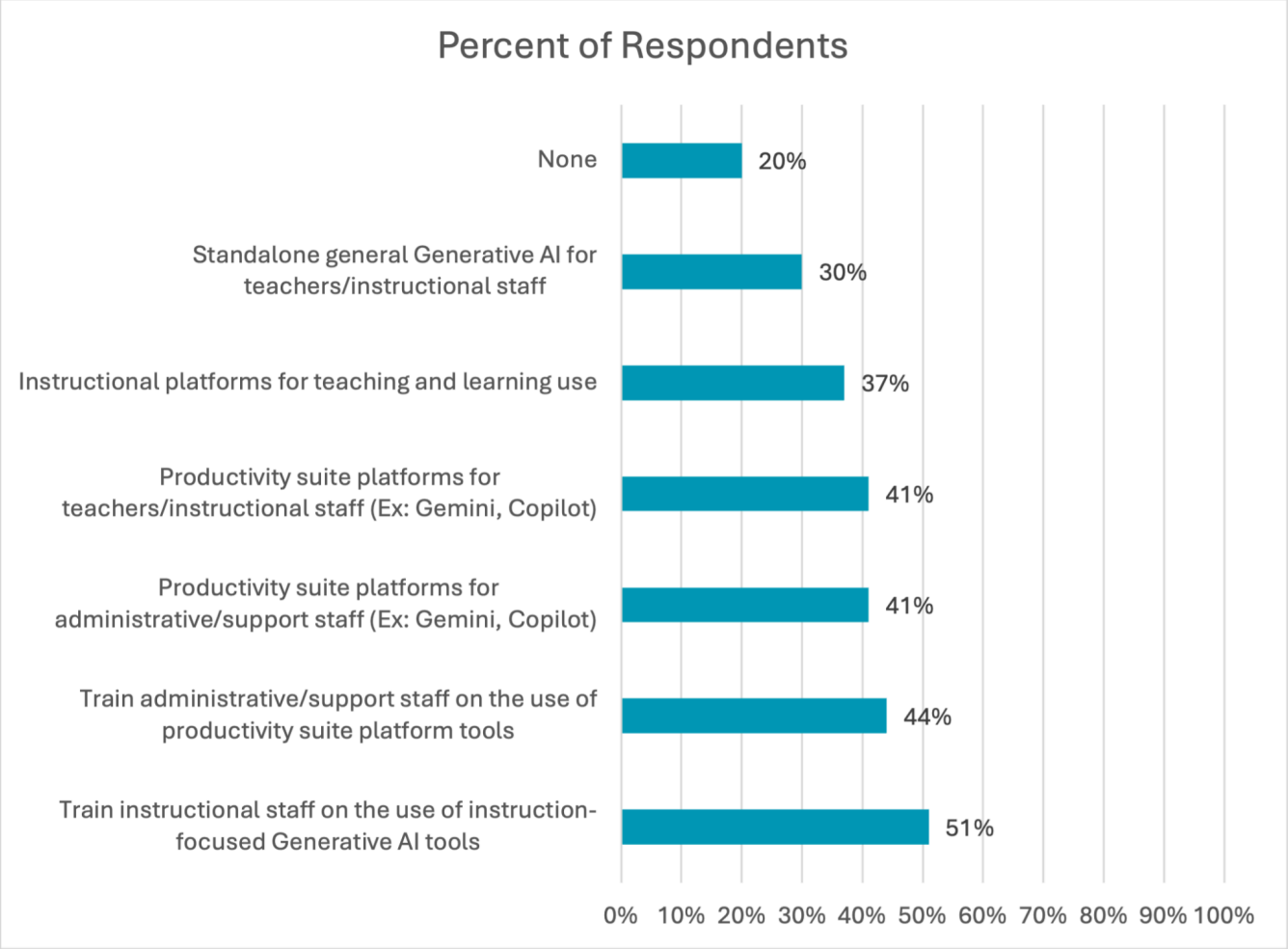
Among the 41 questions asked of respondents, one was about the existence of guidelines in the respective organizations (districts or schools) with options inclusive of the content or purpose of those guidelines (i.e., whether the guidelines related to student academic integrity or about generative AI tool adoption). Responses appear in Table 4.

Figure 3: CoSN's Ed Tech Leaders reporting on Guidelines for Generative AI



In this ed tech leaders sample, 43% reported their district had no formal guidelines for generative AI. However, there has been some effort to establish or update policies related to Acceptable/Responsible use (38%) and Academic Integrity (32%). In Table 5, the current initiatives underway in the respondents' organizations are reported. These include training instructional staff on how to use Generative AI for instruction (51%) and productivity training for administrative and support staff (44%). In the sample, 25% reported using AI-detector tools with another 32% exploring use of detector tools for mitigation of cheating.

Figure 4: CoSN's Ed Tech Leaders reporting on Current Initiatives for Generative AI



Perhaps distinct for this population that is charged with multiple educational technology concerns, student data privacy (45%), lack of teacher training (43%), and new forms of cyber attacks (60%) (p.14, Mayhan, 2025) were the top concerns for AI in school districts. As these are the individuals who are largely seen as having much of the technical expertise and exposure to AI in their roles within the district, these are important observations that are not necessarily foregrounded in discussions of AI use in schools. Security and safety operate in the background but are essential. Also, these professionals are not typically those overseeing curriculum and instruction, but they consider teacher training around AI is lacking and needed.

3.1.2 California-Specific

3.1.2.1 California Department of Education (CDE) Survey

In response to Senate Bill 1288 (2024), which involves the formation of a statewide working group, the California Department of Education held an open application for working group membership among educators and education-related organizations in the state. They received nearly 600 applications, and they asked those applicants to the group complete a survey in 2025 (prior to August 2025) regarding their observations of AI support and use in their respective schools and districts as a means of gaining more information for themselves and for the ultimate working group to inform some of their recommendations. This was also circulated to the County Offices of Education and representatives on Curriculum and Instruction Steering Committee and Computer Science/Digital Learning statewide subcommittees. Individuals provided with a link to the survey were also asked to share the survey with their networks. The survey had 500 responses. Respondents were classroom teachers, school leaders, superintendent staff, and IT representatives for school districts. It is important to note that this is not a random sampling nor is it targeted to a clear subpopulation – because invitees were asked to share the survey with others who may not have initially applied to join the subcommittee. There also may be redundant representation from schools or districts, so the responses should be considered with appropriate limitations for generalizability. Survey results were shared by CDE in aggregate form to the author of this report.

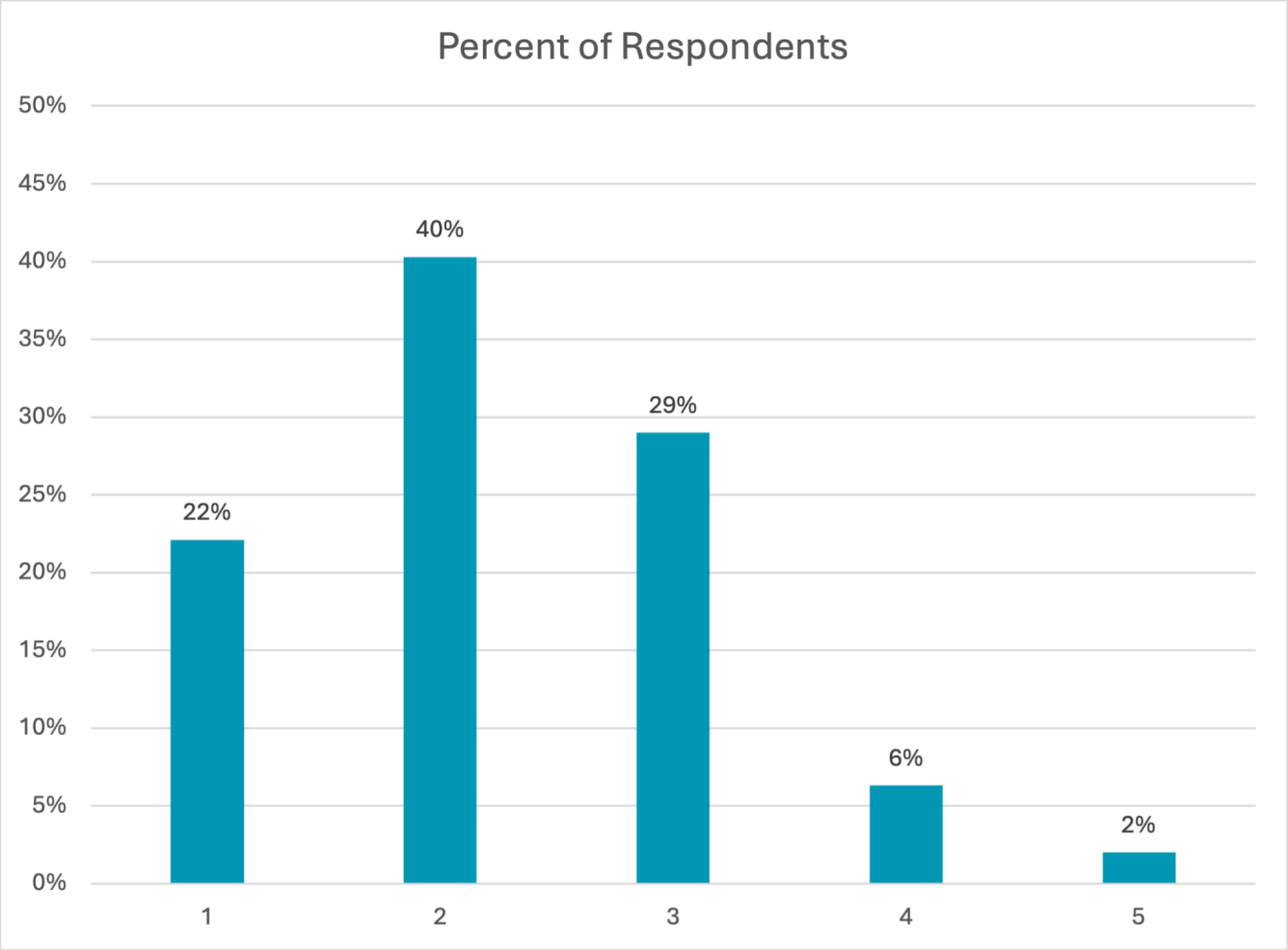
While responses came from all over California, the top responding regions, as classified by CDE, are summarized in Table 2.

Table 2. Top respondents for California Department of Education Survey on AI in Schools

California Region (provided by CDE)	Percentage of Respondents (N = 500)
Southern California	41.2%
Capital Central Foothill	15.1%
Bay Area Consortium	15.5%
Valley to Coast	15.5%

Among the questions asked were a self-rated appraisal of how prepared the respondent's staff was to integrate AI into teaching and learning, along a 5-point scale. The median response was 2 (mean 2.26, standard deviation 0.94), suggesting that the appraisal from the population of educators and leaders who are interested in helping with AI guidance for the state is that educators and staff have low readiness for AI integration. The distribution of responses (N = 489) is shown in Figure 5.

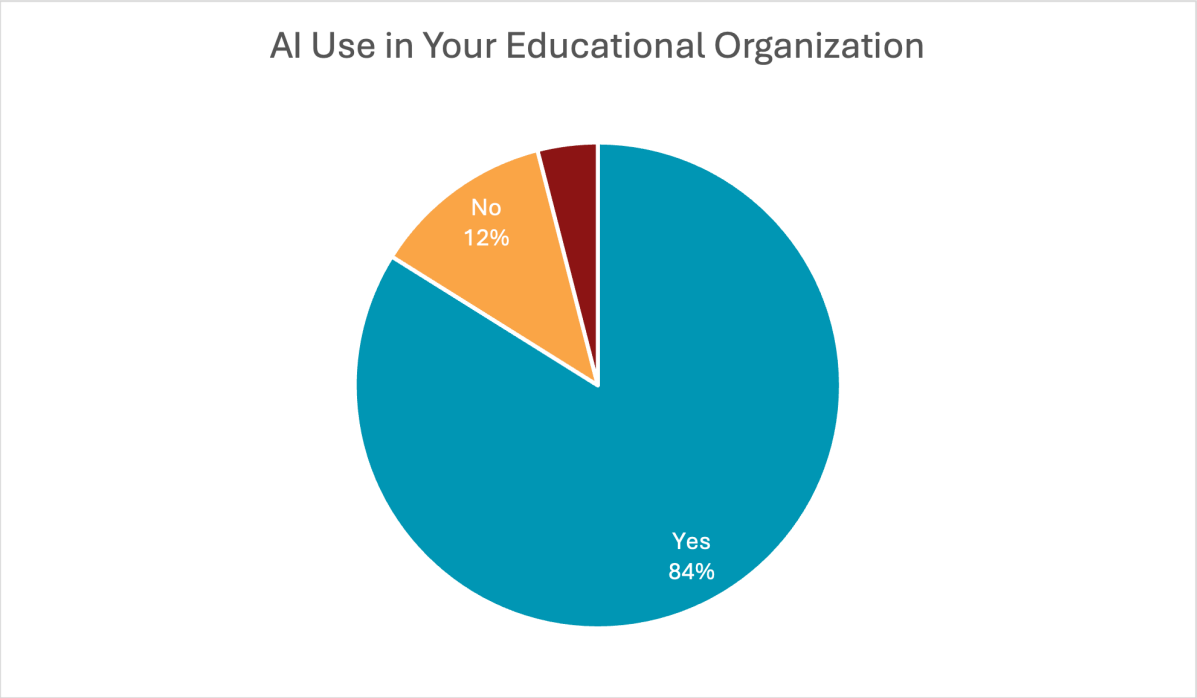
Figure 5. California Department of Education's survey respondents on staff preparedness to integrate AI



Note: The question was posed as "How prepared do you feel your staff is to effectively integrate AI into teaching and learning" on a 1-5 scale (N = 489).

A large majority of schools and districts reported that AI was being used in their organization (83.9%). Note that this question did not distinguish between officially endorsed AI uses (I.e., using an AI tool or platform explicitly provided by the district) or discretionary use by professionals (choosing to use AI just as one might choose to use Google search or Wikipedia for some purpose while at work).

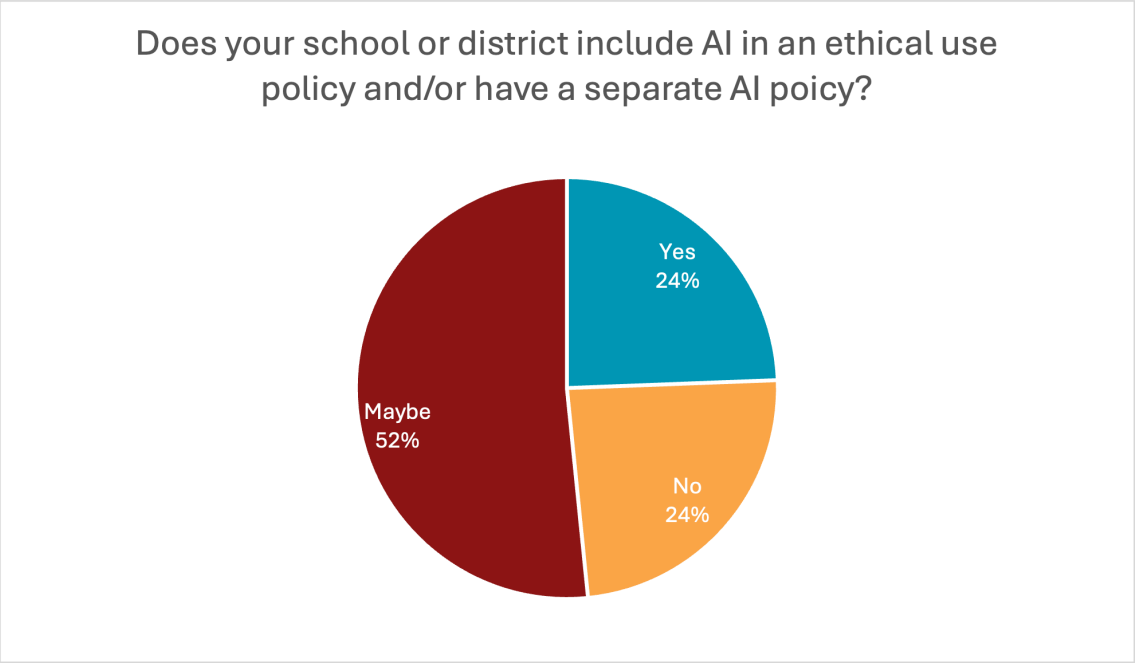
Figure 6. California Department of Education's Survey Respondents on AI Use



Note: 479 respondents.

Just as was a question for other groups such as the CoSN sample and the Bellwether sample, the existence of an AI policy was also asked by CDE (Figure 7.). While AI was being used, the vast majority reported they did not have an ethical AI use or separate AI policy (75.6%). However, 51.6% of respondents reported that some use policy for their school or district was "in development". Note the wording of the item is broad. While AI use for student academic integrity is presumed, this could potentially also be construed by respondents to refer to AI for work functions, approved AI licenses, or AI access on work or school devices for security purposes. In some California school districts, the preference is to decenter AI and characterize these as "Responsible AI Use Policies" (Ruiz & Tsai, 2024).

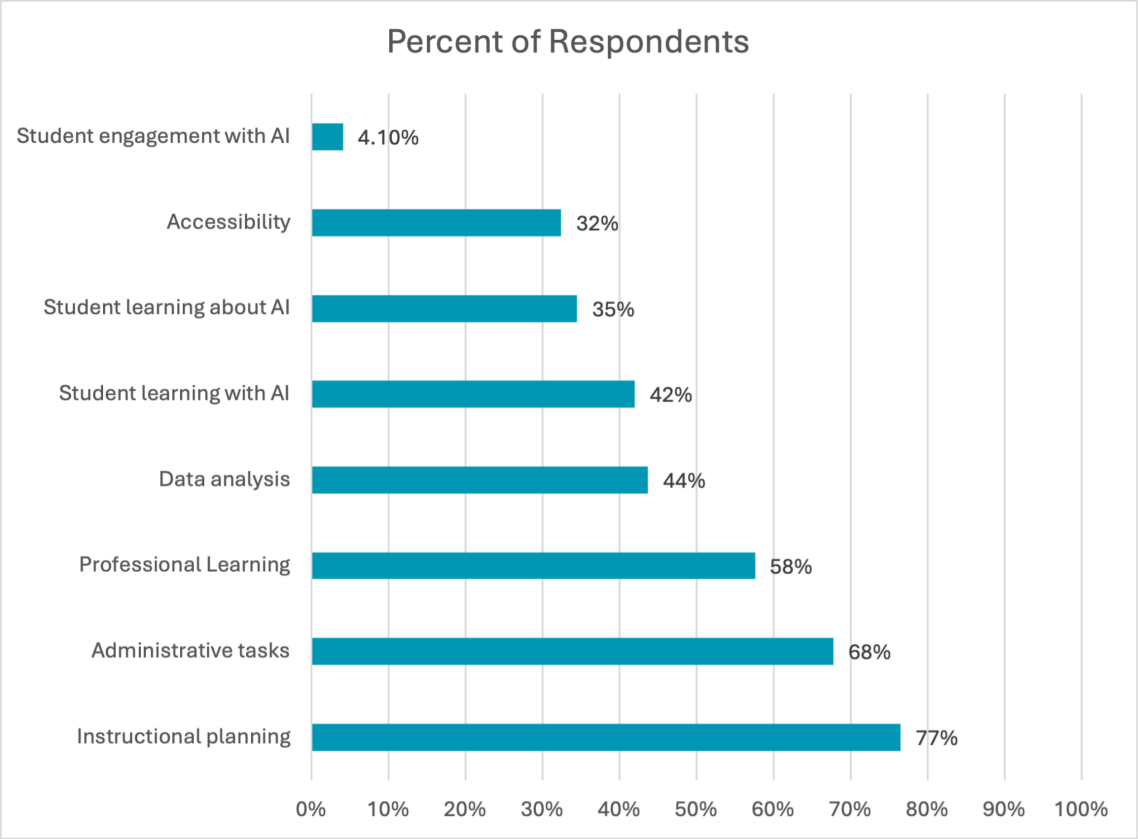
Figure 7. California Department of Education's Survey Respondents on AI Policy



Note: 479 respondents.

For AI use, the areas that were reportedly being impacted (respondents could choose multiple), the two highest here instructional planning (77%) and administrative tasks (68%). These two categories of tasks appear as the highest for the Bellwether school leader survey and also for the CoSN Edtech leader survey – suggesting these two areas are where AI is immediately being engaged across leaders whether they are principals, superintendents, or chief information officers.

Figure 8. California Department of Education's Survey Respondents on Areas of AI Impact



Note: 469 responses.

3.1.2.2 Policies reported in Getting down To Facts III Principal Interviews

As part of the GDTF3 interviews, principals were asked whether their school had established a formal AI policy (see Table 3). Overwhelmingly, they said no (74.4%). Note that the percent that said "yes" is comparable to the CDE survey response above, where approximately one quarter of educational organizations do have an established policy. Similarly, the CoSN survey reports that only about 19% of schools have established a new policy for generative AI specifically, suggesting California is consistent with a national sample.

Table 3: Getting Down to Facts III Established AI Policy Responses

Does your school have a formal policy for AI?	Count	Percent
No	58	74.4%
Yes	20	25.6%

Note: 3 missing responses are excluded from this (N=78)

During the interview, the principals were given names of major sources of guidance documents written for schools regarding AI usage and policy, including sources like outside professional organizations like ISTE, Code.org/TeachAI, CDE. While 20 principals reported having a policy, only 19 principals provided information about the primary source. The most frequently offered source for the policy was someone or some team from within the district office. This varied with mentions of directors of information technology or technology-savvy Assistant superintendents being named. If a committee was explicitly mentioned, this tended to involve not just the central district office but also explicitly involve some teachers, administrators, and parents. Outside organizations were not mentioned nor recognized by most of the principals, although they observed that those who worked on the policies may have encountered those guidance documents.

Table 4. Getting Down to Facts III Source for AI Policy Development

Source for AI Policy Development	Number of Respondents
District Office	6
Outside Professional Organization	4
Committee	4
Teachers	2
Other Schools	1

CDE makes efforts to provide guidance and model policy, and Senate Bill 1288 (2024) is providing guidance in a legislative report. It is unknown currently if that guidance document is being used as a

source in the development of these policies, although CDE and other 34%stakeholders are advised to engage both district offices and professional organizations that engage with California schools to share their recommendations.

3.2 Teachers

3.2.1 National

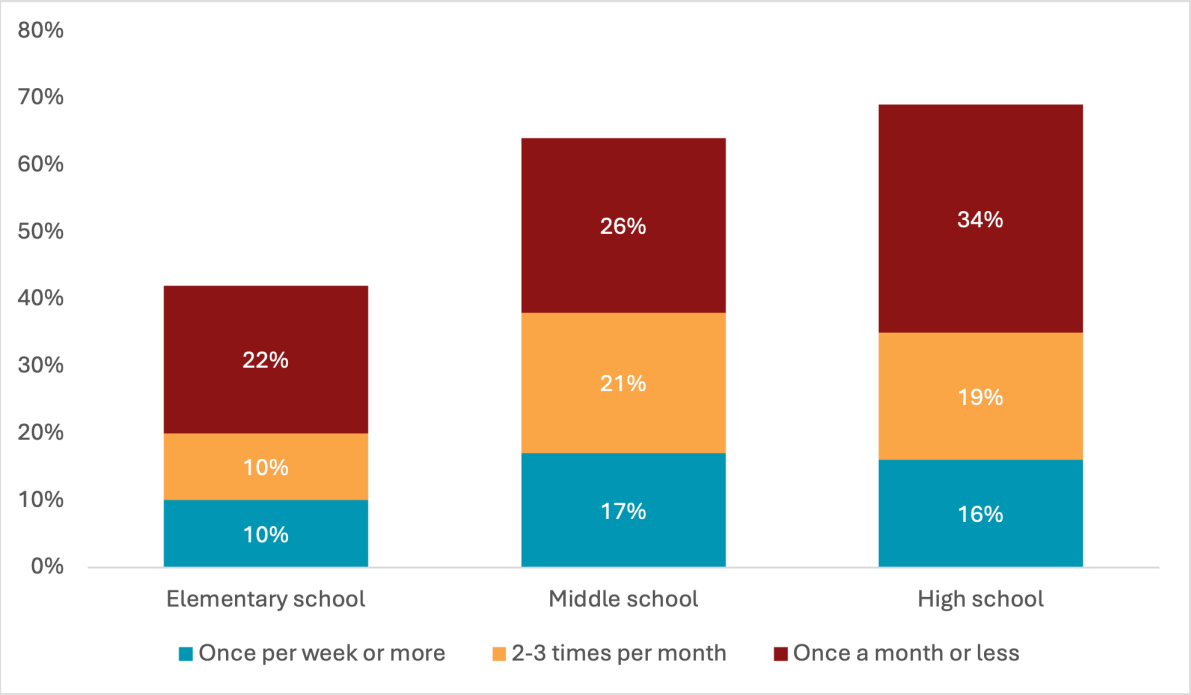
3.2.1.1 Teachers' AI Usage

In 2023, just a couple of months after the release of ChatGPT, the Walton Family Foundation (WFF) commissioned a national survey that had a finding that surprised observers initially assuming students would immediately migrate to generative AI for schoolwork: teachers were heavier users than students. Within two months of ChatGPT's introduction, 51% of teachers reported using ChatGPT. In contrast, about a third (33%) of 12-17 year old students reported using ChatGPT for schoolwork during that same time period. These data were collected from a national survey of N=1002 K-12 teachers and N=1000 students ages 12-17 conducted by Impact Research February 2-7, 2023.

Since then, related and follow-up surveys from various organizations have been conducted. EdWeek (Langreo, 2026) reported in their own surveys that in 2023, 34% of teachers used AI at least a little. There was a decline to 24% of teachers in 2024, and then tremendous growth in 2025 to 61%. From 2023 to 2024. RAND (2025) reported that teachers' AI usage went from 58% to 70%. WFF's 2025 survey, done with Gallup (Gallup-Walton Family Foundation, 2025) , reported 58% of teacher respondents using AI in the 2024-2025 academic year. The Center for Technology and Democracy (CTD) (Laird et al., 2025) report 85% of teachers using AI, whether for work or personal reasons. Overall, the image is that as of 2025, the majority of teachers across the US are using AI for their work in some capacity and that is tremendous growth compared to previous years.

Levels of AI use thus far seem to be related to grade level served. High school teachers are heavier users of AI tools than those in elementary schools, according to RAND's 2025 survey data (Figure 9).

Figure 9. RAND's reported AI usage by teachers across elementary, middle, and high schools



Note: N = 8601, source RAND report (2025)

For teachers, lesson preparation and support in planning instruction appear to be the top use (Table 5). The Gallup-WFF 2025 survey reports more than a third are using AI for these purposes, with specific related activities including creating worksheets or modifying materials. Administrative work is the second most frequent use (28%). However, few are using it for grading (16%) or analyzing student data (12%). It is worth noting that this differs from how administrators and school leaders view AI use, which considers administrative work support as the top AI use.

Table 5: Gallup-Walton Family Foundation's Teacher Reported AI Activities

Activity for AI	Percent Selected (Multiple Selection)
Preparing lessons	37%
Creating worksheets	33%
Modifying material to meet students' needs	28%
Doing administrative work	25%
Grading	16%
Analyzing student data	12%

In the CTD survey (Laird et al., 2025), the most frequent use for AI was curriculum and content development (69%). Grading and assessment were lower (45%). These are markedly higher percentages than those from Gallup, potentially from sampling strategies and question design – although the relative rank ordering appears comparable. Nationally, teachers are primarily using AI for planning and preparing materials related to instruction and to a lesser degree, it serves a role in assessment.

With access to usage data from School.AI, the SCALE initiative at Stanford University and the Stanford Accelerator for Learning shared results from analysis of 9000 teachers' who joined and had access to the platform over a 6-week period (08/01/2024-09/15/2024) (Leiva et al., 2025). Of note was that usage varied, with a 16% of teachers only using the system once, 43% used the platform less than a week, 41% using the platform for up to 49 days (slightly above half of the days of observation) although 1% of teachers were power users using it more than 50 days. Power users spent more time working with the chatbot (50% of their usage) – the canonical conversational chatbot interface – than with the tools that are on the landing page and intended to support teachers in frequent, specialized tasks (e.g., create a multiple-choice quiz).

3.2.1.2 Professional Development

Various national reports observe that while a number of schools and districts have provided some official professional development that was related to AI, teachers and districts believe there should be

more. For example, according to the RAND report (2025), 25% of teachers reported receiving some training on the use of AI, whereas 57% have reported they have received no training and would like to receive training.

3.2.2 California-Specific

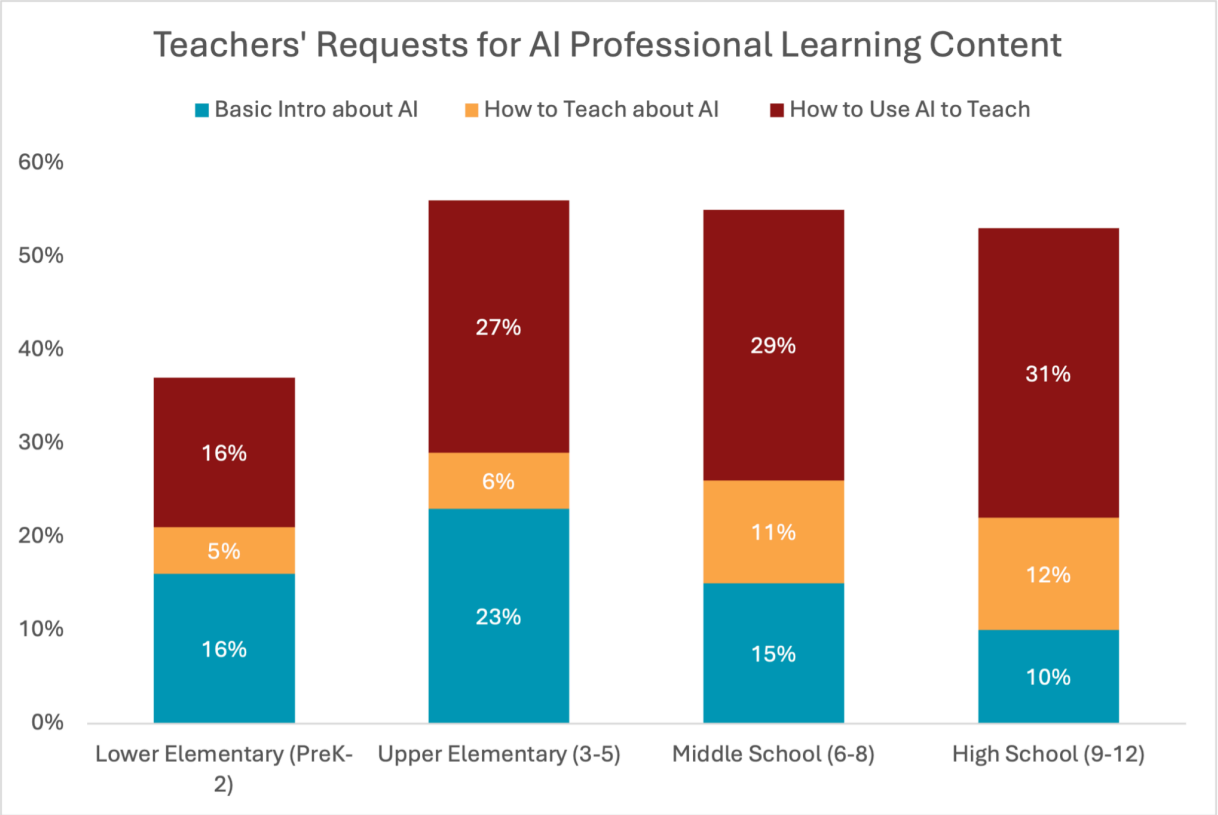
3.2.2.1 Teachers' AI Concerns and Professional Development Requests

Chen et al. (2025) reports on a California-based urban school district survey administered in 2023 regarding teachers' perceptions about AI and their needs for professional development. This was a unified (K-12) district that served over 60,000 students, with over 50% classified as socioeconomically disadvantaged and 27% as English Language Learners.

The final sample consists of 1,454 responses from teachers all from the same district (57.35% effective response rate for the district). The responding workforce self-reported as 70.99% female and 28.26% male. Ethnoracial identification includes White (35.84%), Asian (33.63%), Hispanic/Latinx (17.02%), Black (3.51%), and American Indigenous (0.48%). This survey had relatively good balance with respect to the district's teacher racial composition but slightly overrepresented female respondents.

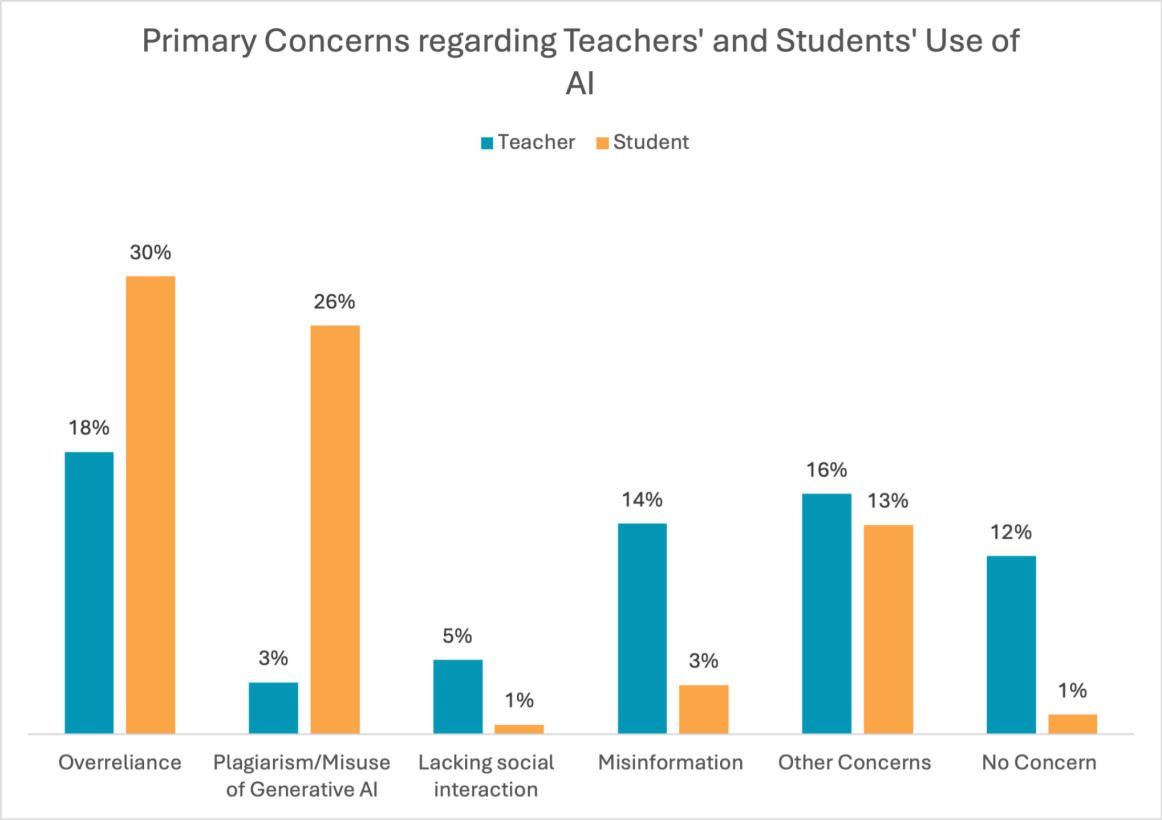
Of note from this study was the differences in teacher requests for professional learning across grade level and subject matter (Figure 10). Elementary grade teachers have a larger proportion of teachers who want basic introduction about AI, whereas for upper grades, there is a growing interest in teaching students about AI, all teachers wanted guidance on how to use AI in support of their teaching or during instruction.

Figure 10: California District's Requests for AI Professional Learning Content



Teachers were asked to provide an open response regarding their concerns regarding AI, once with respect to its use by teachers and again with respect to its use by students. These written responses were then systematically coded into categories. The results of this are shown in Figure 11 below, and elaborated in Chen et al., (2025). With respect to primary concerns that teachers had with respect to AI use, they had different priority concerns depending on if it was for teachers' use or students' use. For teachers, the primary named concerns for themselves were Overreliance (18%) and Misinformation (14%). Their primary concerns with students using AI were Overreliance (30%) and Plagiarism (26%). Students being on the receiving end of misinformation was much lower (3%).

Figure 11. California District's Primary Concern's regarding Teacher and Student Use of AI



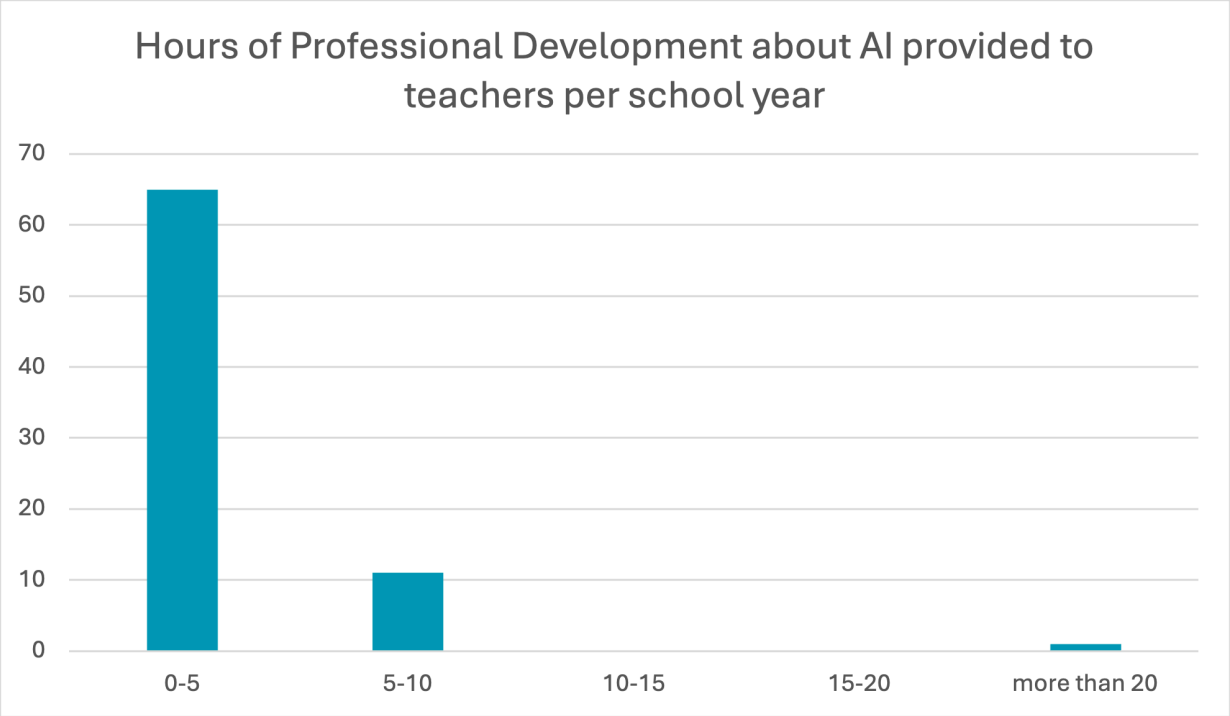
3.2.2.2 Professional development in California

As part of the principal interviews obtained as part of GDTF3 and collected in 2025-2026, the principals were asked to state roughly how many hours, within increment of 5 hours, during the entire school year were for PD related to AI. Some responded with different estimate windows, and their responses were then coded to fit within the 5-hour increment structure. The results of this are shown in Table 6 and in Figure 12.

Table 6. Getting Down to Facts III Table of Reported Hours of AI Professional Development

Hours of PD related to AI provided during school year	School Count	Percent
0–5	65	84.4%
5–10	11	14.3%
20+	1	1.3%

Figure 12. Getting Down to Facts III Bar Graph of Reported Hours of AI Professional Development



Principals were also asked about where the PD came from. Results are shown in Table 7. Most principals reported that provision of PD tended to be from the districts themselves (55.6%). That is, personnel in the central district office, whether it was from the district's Information Technology department or Curriculum and Instruction unit or a teacher on special assignment (TOSA) who was charged with working for the district and across schools were the organizers and providers of PD. This implies also that these district individuals were determined the content of the PD. The next most

frequent was in-house professional development led by teachers within a school's faculty (20.6%) whereby a principal or school leader would ask one or more teachers to lead a portion of scheduled professional development time and concentrate on how to use AI. A little less frequently utilized were County offices of Education (15.9%), who actively develop and offer PD for schools and teachers. For small rural districts, the County Office of Education was named as a critical resource given they had limited access to other educators nearby who had more AI experience. Some principals (7.9%) reported relied on commercial providers, such as online training platforms.

Table 7. Getting Down to Facts III Reported Providers of AI Professional Development

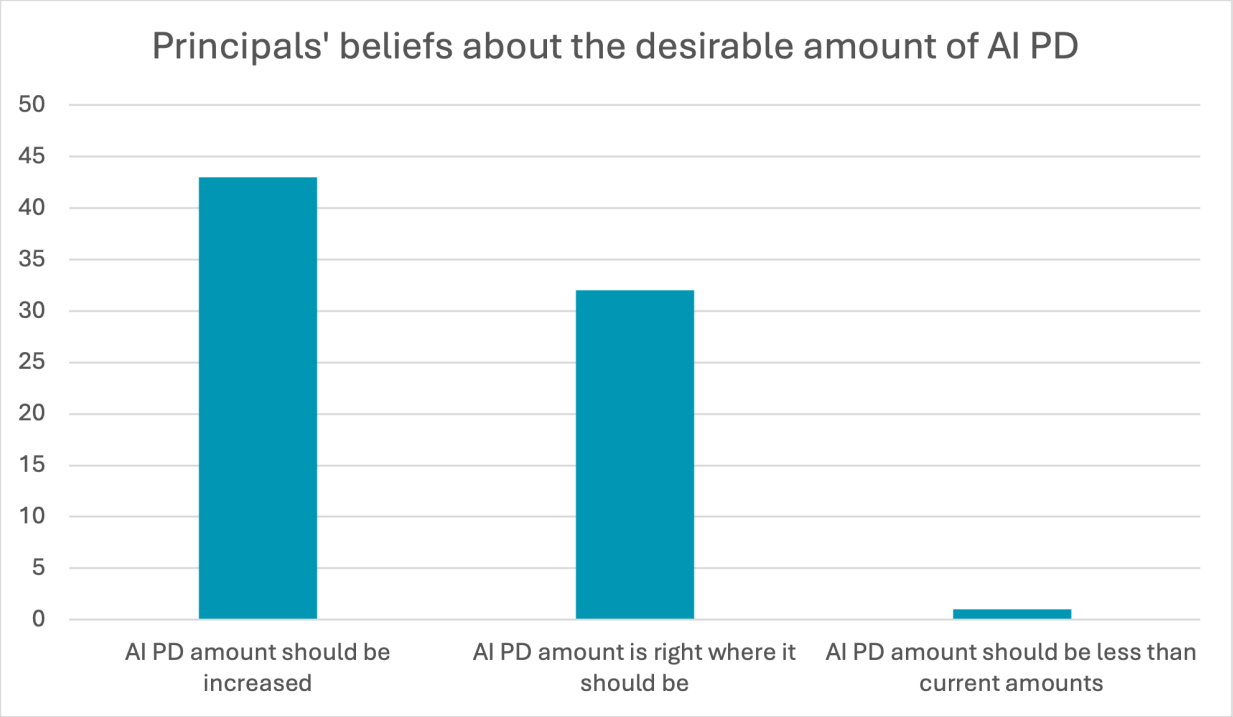
Provider	Percent Respondents (N = 63)
District Office/Administrator	55.6%
Teachers	20.6%
County Office of Education	15.9%
Vendor/Third Party Commercial Entity	7.9%

Principals were also asked, after reporting the amount of AI PD that was provided for teachers, whether they felt that their school needed more, had the right amount, or needed less hours of AI PD. The results of this are shown in Table 6 and Figure 13. The majority of principals (56.6%) believed there should be more professional development provided for teachers regarding AI. This is most likely for those principals in schools where less than five hours of AI professional development are being provided (Cramer's V = 0.701, implying high association). However, the content and degree of specialization (e.g., focus on AI for specific student populations or subjects or grade levels) of these PDs is not clear. For overall structure and format, guidelines from Darling-Hammond et al. (2017) regarding effective teacher professional development are considered to be appropriate to use. Included in these guidelines would be PD qualities such as the professional learning program would be distributed throughout the year (rather than a single session), situated in teachers' practice and activities, and be supported by high-quality coaching.

Table 6. Getting Down to Facts III Table of Reported Preferred Change to Amount of AI PD

How should number of hours for AI PD for teachers be changed?	Percent (N = 76)
There should be more AI PD	56.6%
The amount of AI PD is right where it should be	42.1%
There should be less AI PD	1.3%

Figure 13. Getting Down to Facts III Bar Graph of Reported Preferred Change to Amount of AI PD



A comparison of these preferences by school type (elementary, middle, and high school) is provided in Table 8. In general, high school principals are more likely to feel that more AI professional development is needed. Elementary and middle school principals are split in whether the amount of PD provided is the right amount or more is needed. By a 2:1 ratio, high school principals feel that more is needed rather than the current amount being appropriate.

Table 8. Getting Down to Facts III Reported Preferred Change to Amount of AI PD by School Type

Type	More	Right	Less
Elementary	52%	48%	0%
High	63%	33%	3%
Middle	50%	50%	0%

3.2.2.2.1 Academic Research on Professional Development About AI

Research on teacher professional development, including on its impact on teacher knowledge and teaching capacity, the consequences of different designs and formats, and the content addressed related to AI is sparse. As Tan et al. (2025) notes in a systematic literature related to AI and teacher professional development, studies on programs for teachers learning to use AI as part of their practice are few in number (Yang found 7 total out of 95 journal studies, with their search parameters). There is some early exploratory research (in Israel) prior to even the release of ChatGPT that teacher trust and comfort with AI the technology can increase as a result of professional development (Nazaretsky et al., 2022). One smaller design study in the US reports increases in teachers' self-reported AI literacy from a professional development organized around case studies and case-based learning approaches (Ding et al., 2024). Most of these are still exploring different ways to organize professional development on the basis of different theories of professional learning and finding initial signs of success, although comparative experiments currently do not exist.

3.2.2.3 Teachers' AI Use

In a currently ongoing project funded by the National Science Foundation (Grant number 2500101, PI: Victor Lee, Stanford University), a team of researchers is investigating how AI is impacting the work of teachers - including, for example, exploring whether it is "increasing efficiency". At the current phase of their work, they have been studying 10 teachers across grades K-12 all working in the same AI-supportive school district in California through multiple research interviews and focus groups to understand how AI is being used in their work. AI-supportive refers to the school board explicitly passing a resolution for AI integration into schools, the central district office explicitly supporting AI tool

use and having formed workgroups to help advance AI use in schools, full adoption of the Khan Academy's Khanmigo AI platform for students and teachers, and as of 2026, full professional licensing for Gemini for Education from Google. The superintendent's office for this district is encouraging teachers to pursue more professional education on AI and to share how they are using it.

In public presentation materials from January of 2026, this district reported that they were seeing an average of over 1500 daily AI tool users as monitored from the school's information technology records. The district also reported over 130 educators had participated in 1-1 coaching related to AI in education. According to teachers in the district, "Instead of just learning about AI in theory, we were shown how it can actually support teaching in meaningful and responsible ways."

Against this backdrop, the teachers participating in the NSF study appear to be largely using AI for a variety of tasks although there are some tendencies of note. For one, they do not rely on a single AI tool. On average, the teachers reported using 4.2 different AI tools in service of their teaching work. This also included every teacher using ChatGPT for work, a platform that is not provided nor supported for their district-related work. For some, this is through the free version and for others, they are paying separately for their own accounts. This district, as one that embraces AI technology, currently provides less district-based licensing than what teachers are actually using, although it is more than what appears to be happening nationally. RAND reports nationally that 18% of teachers were provided with at school or district licenses for use of at least one AI service, whereas 57% said they did not have those provided.

On repeated occasions, the teachers were asked to share recent examples of AI use with the researchers. Examples included creating rubrics, planning out physical education (PE) units, creating slides, suggesting seating arrangements, generating descriptive comments for student feedback, and refining the content and tone of emails. The tools teachers use are diverse with AI mentioned not strictly with ChatGPT, Gemini, Claude, Khanmigo, and NotebookLM but also Grok (from X), Flexi (from CK12.org), Grammarly, and Brainpop.

3.2.2.3 AI and Impacts on Teachers' Time

There has been some speculation regarding the ability of AI tools to reduce time demands on teachers, although the research base is still thin. One experimental study from England (Roy et al., 2024) suggests some time reduction in lesson preparation without degradation of quality, although differences in teacher training, work demands, and curriculum across nations may be non-trivial. AI tool companies often state a number of hours saved from using their tools although methods and sampling are not disclosed, and they are not neutral parties. The potential for AI to save teacher time on certain tasks is possible, although that is still an empirical question requiring further research. It may simply lead to teachers reallocating their time on a given task such that they are doing different activities in service of the (comparing and revising text on performance distinctions on an AI-generated rubric for possible editing rather than writing those distinctions as the teacher conceives of them). The above-mentioned NSF project represents one of the few federally backed efforts to examine this issue in the US, although that work is in its earliest stages.

3.3 Students

3.3.1 National

3.3.1.1 Course Offerings and Access Nationally

Code.org is a major intermediary organization that advocates for computer science education and played a critical role in the adoption of computer science standards and coursework across states, in partnership with other organizations such as the Computer Science Teachers Association. One ongoing activity for code.org is to monitor the growth of computer science availability and offerings in US schools. With national interest in AI, code.org expanded their focus to AI with their TeachAI initiative. In 2025, Code.org and partner organizations (Code.org et al., 2025) released a report on the state of Computer Science and AI Education across the US.

From 2019-2020 to 2023-2024, high school access to CS courses nationally has grown from 47% to 60%. It has since plateaued for 2024-2025 with access remaining at 60%. Participation nationally was 5.1% in 2019-2020, peaked at 6.4% in 2022-2023 and 2023-2024, and has dropped to 6.1% in 2024-2025. The drop is attributed to decreases in state funding for computer science. As might be expected, states that

have made CS or AI a graduation requirement appears to have high school access and participation than states that do not (Code.org et al., 2025).

As of early 2026, 4 out of 50 states emphasize AI in their computer science standards, and 5 states provide funding for professional development in this area. California is in neither group of states that are emphasizing AI in computer science standards nor providing funding for AI professional development.

3.3.1.2 Student AI Familiarity and Use

Following the 2024-2025 academic school year, student familiarity with generative AI is far more widespread than in 2022. Based on RAND's (2025) analysis, 54% of students use AI for schoolwork; 21% of middle and high school students used AI less than 1 time per month, 12% reported using AI about one time per month, and 21% reported using it more than 1 time a month. High schoolers were reportedly heavier users of AI, with 61% of high school respondents reporting some prior use of AI and 41% of middle school students' reporting 41% prior use. Note this statistic does not distinguish between permitted and unpermitted use.

Unpermitted use, particularly for activities that may be considered in violation of academic policies, is a common concern for educators. RAND (2025) reports that 19% of middle and high school students had been provided instruction by their teachers on appropriate ways to use AI for schoolwork.

Gallup-Walton Family Foundation (2025) reported that 39% of middle and high-school-aged students used AI without permission. One study from Stanford University drew from academic integrity self-report data before and after the release of ChatGPT (Lee et al. 2024). That study found no significant change in overall cheating levels, including specifically with plagiarism. However, students were unclear on what was the boundary for too much use, and they considered a number of uses such as AI helping a student to start on or improve some of their writing or to explain a concept to them as being appropriate. In a follow-up study, those numbers maintained themselves in the subsequent academic year (Chen et al., 2026).

In 2026, Pew reported, based on surveys of 1,458 teens (ages 13-17), on their uses and perceptions of AI. 10% reported using AI to assist with all their schoolwork, whereas 44% used chatbots for some schoolwork assistance but not for completing all of their schoolwork. The largest use was for researching topics (48%), solving a math problem (43%), and then editing something they had written (35%). Note, where similar questions have been asked, this is consistent with what other reports and studies have identified (e.g., RAND, 2025; Lee et al., 2024, Chen et al., 2026). The majority of teens (59%) believe other students are cheating with chatbots often at school. Black and Hispanic teens are more likely to have used AI chatbots for schoolwork (61% for each) than White teens (52%). Lower-income households have higher rates of AI chatbot usage for school support (20%) than higher-income households (7%).

3.3.1.3 A Press for More AI Literacy Content in Schools

At present, there is AI education and AI literacy advocacy nationally, with urgings from the executive order (14277) and events such as National AI Literacy Day (e.g., March 27, 2026) as a recurring event to introduce AI to students. Many states have formed committees to make recommendations for schools, but standards specific to AI content have not been formally established. A distinction may exist between AI literacy and AI education, with the latter being more technical and serving to prepare future AI engineers. Thus, AI literacy is often emphasized as a universal goal for education.

As an area of proficiency, AI literacy is not well-defined beyond generalities of being able to use AI effectively. In the research literature, one of the most cited documents is a literature review by Long & Magerko (2020) that identifies 17 competencies that span a range of topics that include: recognizing AI, understanding “intelligence”, knowing AI strengths and weaknesses, knowledge representation, data literacy, machine learning, sensors, and ethics. Another common source for identifying essential AI content is from AI4K12’s big ideas framework which includes: perception, representation and reasoning, learning, natural interaction, and societal impact. While AI literacy is recognized as important and highly-relevant for student preparation now and into the future, how these are most

effectively taught and structured into instruction is still an open question of active investigation for AI education and AI literacy researchers (Yang & Capan, 2025).

The Organization for Economic and Cooperative Development will be releasing a framework for AI literacy in the spring of 2026 that will form the basis of PISA assessments on AI literacy. The Computer Science Teachers Association has been a major organization in providing model standards for states regarding computer science. In 2026, they are releasing new standards that integrate AI and computer science content for states to use. The National Academies of Science, Engineering, and Medicine (2026), just released a report in March 2026 identifying new competencies for data and computing that should be addressed in K-12 based on an expert committee's review of the current research. This report and its recommended competences bears on AI content in education.

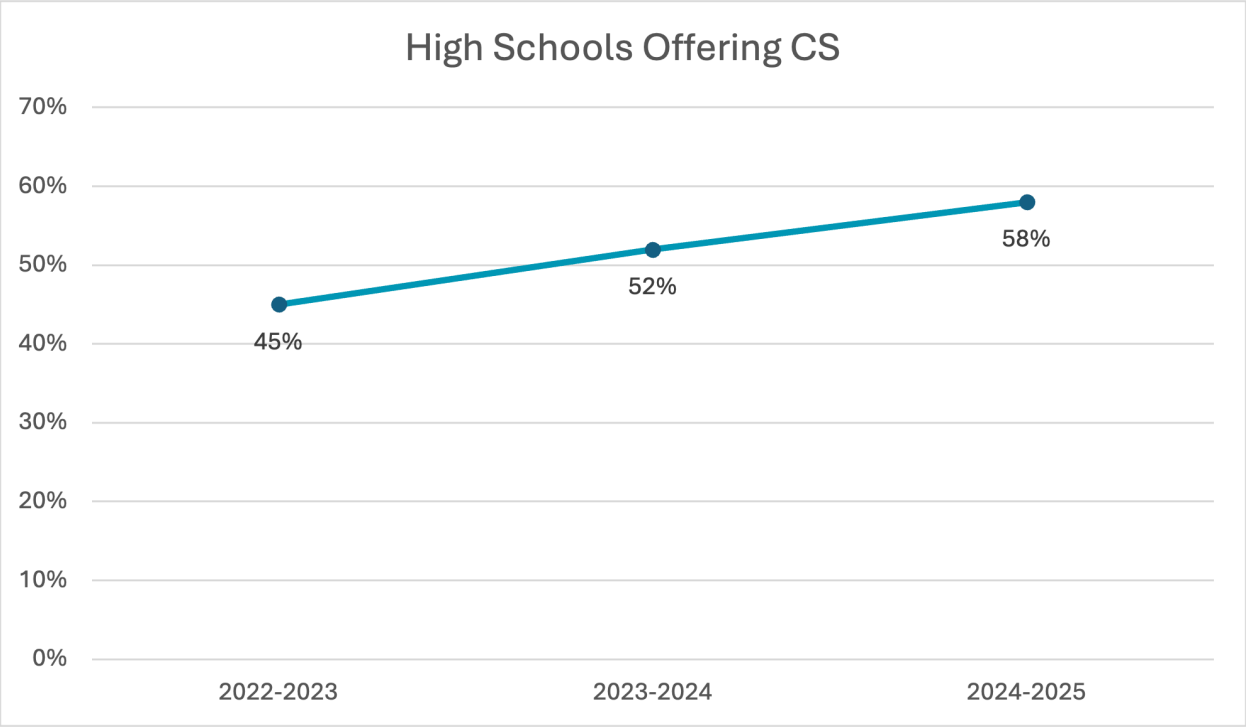
Likely, all states will need to examine what requirements and expectations they hold for K-12 schools in teaching students about AI and enculturating students to its appropriate use. These upcoming documents represent important sources of field and educational expertise for priority areas and potential models for standards or state guidance documents.

3.3.2 California-Specific

3.3.2.1 AI Coursework by way of Computer Science

In California, AI as a focal topic for coursework is unusual. The most likely subject for it to be integrated – and where it is overseen and advocated at the CDE – is computer science. Years ago, ethnographic research in California schools on the availability of computer science coursework showed unevenness in course availability and quality (Margolis, 2017). Code.org et al's (2025) state by state analysis shows growth of computer science course availability at the high school level in California, but it is still far from universal. In the 2024-2025 academic school year, still more than a third of high schools do not provide CS courses.

Figure 14. Code.org's reported percentages of California High Schools offering Computer Science



Computer science is not a graduation requirement for students. Code.org's estimate is 5.3% of California high school students have taken a CS course. Note that this is lower than the national percentage of 6.1%. Relative to other states, California high schools have lower proportions of access and participation to CS and AI coursework.

3.3.2.2 AI Literacy Offerings in Schools

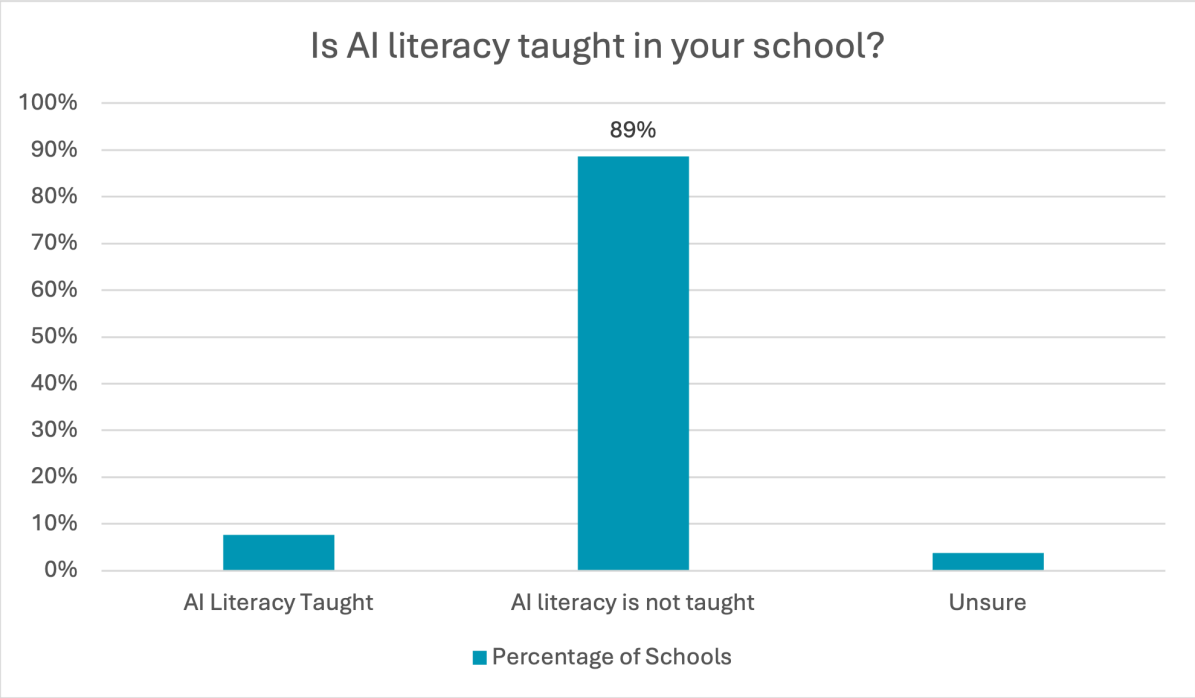
Given that computer science coursework typically emphasizes computer programming, software design, and networks, AI content in computer science courses or as part of a computer science track is likely to be more technical in nature.

AI literacy –content and experiences for all students whereby students learn what AI is, how to use it, what are its limitations, and what are its risks and potential negative impacts – without the same level of accountability to technical know-how that enables design and engineering of new AI architectures, datasets, and algorithms, is emerging as a broad-reaching priority. As stated above, AI literacy has

appeared in California Assembly Bill 2876 (2024) as a consideration for the instructional quality commission and in Executive Order 14227 for federal agencies and federally-backed education-focused efforts.

In the principal interviews conducted by GDTF, only 6 principals reported that AI literacy instruction, as they understood it, was being provided in their schools. A summary of responses is provided in Figure 15.

Figure 15. Getting Down to Facts III Principals' reports on Teaching of AI literacy



Formal AI literacy instruction appears to be rare for California schools. However, it is more than twice as likely to be provided in high school than in middle or elementary school (Table 9).

Table 9. Getting Down to Facts III Principals' reports on teaching of AI literacy by school type

School Type	No	Yes
Elementary	89%	4%
High	87%	13%
Middle	90%	5%

While principals report AI literacy instruction is being provided in their schools, it is highly variable in content and perceived effectiveness. Some view it as a pro forma, beginning-of-year obligation that accompanies basic technology use instruction (how to access and use digital accounts and basic expectations for conduct) for the school year. For example, a middle school principal at a school where ChatGPT specifically has been banned described the following for their AI literacy instruction:

> "Yes, man, I'm trying to remember the program that we adopted this year. Is it super effective? I don't, I don't think so. It may be just a checkbox, because I'm like, even with there's these programs sometimes that during one week in September, we're going to focus on this and then for the rest of the year, if you don't revisit it, then it loses its impact."
>
> - Principal 285, Middle School

Principals also lump it into other modern digital literacy requirements (such as "media literacy", "digital citizenship", and "information literacy") and maintain a broad sense that whatever is provided formally in their schools is likely too short and limited in duration to be effective. For example, a high school principal explicitly situated AI literacy in media literacy programs and commented on the limited amount of AI focus:

> "It [our media literacy program] maybe touches on it [AI literacy] one day for kids, and not even for a long time. So, I would say that it needs to be more."
>
> - Principal 230, High School

The content of these program is not well understood, at least from the sample of administrators. As some group it with media literacy, others treat it as explaining the school or district's policy on AI use. This is likely encouraged by legislation that directly links AI literacy to media literacy (e.g., Assembly Bill

2478). None of the principals mentioned the technical mechanisms of AI as a focus for their schools' AI literacy instruction.

There does seem to be a relationship between the establishment of school or district policies and AI literacy instruction of this sort. Schools with an AI policy (whether it is theirs or the district's) are 7.5 times more likely to report AI literacy instruction (Fp = 0.030, Fisher's Exact test). It seems that if the school or district has put in the effort to reflect upon and articulate their views on AI use formally, they do take some efforts to systematically communicate that to students. However, this does not mean that all schools with an AI policy provide instruction, nor that all schools that provide AI literacy instruction have a policy. There is currently a mismatch between school/district-level policy and instructional implementation, and overall AI literacy instruction provision in California schools is quite low.

4.0 Discussion

For a number of reasons, research and data on California's positioning in schools with respect to AI is limited. Some of these have to do with the relatively short time since AI became a cross-sector concern and with the steps toward integration and engagement in schools that have been taken thus far. While we may not have a definitively clear picture, by drawing from existing national reports and data and some amounts of data obtained specifically about California, there are some indications of where California is with AI engagement.

First, there is substantive major school/district level policy and practice gap. Research nationally and from state data suggest that AI us being used by administrators, teachers, and students. While not universal, it is substantial. CDE data suggest 84% usage of AI. This is not in line with the number of schools that have established policies, whether they are within school or within the district. Various sources, including GDTF3 interview data and national surveys of ed tech leaders (CoSN) (Mayhan, 2025) and Bellwether (2025), suggest about 25% of schools have an established policy. As far as policy and practice alignment goes, the image is of schools – and schools in California – being reactive to AI rather than proactive in guiding how it is used and the degree it is to be embraced or restricted.

This is understandable in that the popular view is that AI, and generative AI particularly, has caught the world largely unprepared. This is an ongoing struggle as all sectors make sense of how work, recreation, education, and day-to-day living will be altered by the increased prevalence of AI. Education as an enterprise is also focused on many things including literacy, mathematics, civics, science, social development, student health, safety, community engagement, and many other things. For the California education system, which is tasked with doing so much and in a state with unique features related to socioeconomic status, linguistic diversity, and demographic changes, it may not be fair to assume that education has been anticipatory and ready for AI more than any other sector. However, there are many non-profit and industry organizations, private and government institutions, and other supports that could be better utilized in the service of the public education system. This includes increasing AI preparation from certification bodies (universities), continuing education, guidance agencies, and in resource development.

Education is also a very complex enterprise with many different actors doing connected but different work. Of note in this report is the different concerns and priority areas of various actors. Administrators are largely focused on prioritizing AI for use in administrative tasks. Teachers seek guidance and instructional materials that relate to their work in service of what they do with students in the classroom. There are some common acknowledgments across actors that support for teachers is needed and that teachers are not to be “replaced” with AI. The CoSN survey (Mayhan, 2025) for instance makes clear that teacher training and preparation is a priority – and in their report, they make clear that they do not anticipate AI replacing teachers nor see this as an appropriate direction for how AI is used in schools.

This point – AI will not and should not replace teachers - is important to reiterate because a substantial amount of the discourse around AI, particularly from actors who have influence on education but do not work directly in schools, is that AI will be a teacher replacement. It is talked about as a superior tutor for each student that can personalize and customize instruction in ways that a teacher with dozens of students to teach simply cannot. For instance, press has emerged around Alpha School, a private school model that was branded early as “teacherless” and reliant on AI for academic instruction

(Maiberg, 2026). Valid concerns have arisen around this model that merit further disinterested research and evaluation.

Similarly, concerns are growing around the teaching labor supply. In recent years, teachers have felt increased demands and scrutiny and overall underappreciation. Other reports as part of GDTF3 summarize specifics about California's teacher labor market. We can recognize that it is tempting to address potential teaching shortages by leaning more heavily into AI. Some schools have nationally explored AI for schools that do not have enough teachers. This is also an untested approach and raises concerns. Disinterested research and evaluation should be done, as well as responsiveness to the priorities and values of communities for whom such an approach is considered.

AI supporting teachers in reducing laborious and repetitive tasks through the support of AI is appealing. However, while the potential may be there, it is unclear what is actually happening on the ground is actually increasing efficiency, improving job satisfaction, or helping teachers in reclaiming time. What we are seeing in some early data is that there is a practice of "shadow AI use" among teachers whereby they are using tools beyond what their districts provide. This raises privacy concerns for personally identifiable information about students. It can also become an added work expense for teaching that is not covered by the district or school. Questions should be asked about how well districts are providing necessary tools for teachers and making it possible for all work to be done on school and district-provided resources.

It is important for there to be more research ongoing around teachers' AI use. Some signs are that with more experience with AI, teachers are using it as a thought partner rather than as an automated producer of teaching materials. There are also some signs that using AI for certain high-stakes activities – such as assigning grades or in assessment – is being approached with caution by teachers overall. This may be something we wish to further encourage, but first we should gather more data and perspective from teachers and students.

Notably, there appears to be a shortage of high-quality professional development for teachers with respect to AI. From GDTF3 interview data, as well as other surveys from national samples, teachers are not being provided with professional learning opportunities regarding AI. The vast majority of schools appear to provide fewer than 5 hours. Consider that a single continuing education credit in California on a specialized topic is typically 10 hours. Professional development requests, based on data from Chen et al (2025) also covers many topics – ranging from basic explanations about what AI is and how it impacts us – to how it can be effectively used in the many facets of teaching work to how to teach students about AI. The latter speaks to AI literacy for students. Currently, AI literacy appears to be formally taught in very few schools despite legislation in California (Assembly Bill 2378) and press nationally for it to be a priority. To the extent it is being taught, it appears to be nor concentrated in high schools. Arguably, AI literacy should begin in elementary school as expectations for what AI is, what AI should do versus what humans should do based on inherent limitations, and how to use it responsibly and safety given so much uncertainty should be set even before adolescence. Currently, it is mixed into media literacy and by some principals' accounts, covered cursorily as a matter of "checking a box".

Overall, the picture is one of minimal proactive engagement with AI for schools – one that seems to be out of step with the state of California's image as the nation's technology sector leader and the home of the leading AI companies that are driving much of this worldwide transformation. Given the size of California's population and economy, as well as its influence nationally, it is an imperative that the state do more. There are actions underway that are happening without any state involvement – which can be a source of important innovation and efficiency. At the same time, given the role of the state in ensuring high-quality education and preparation for its students with the betterment of the state's future in mind, this does seem to call for more thoughtful engagement with AI in the state's education system at all levels.

5.0 Conclusion and Recommendations

California can and should do more at the state level to better position schools, educators, and students for a world that is undergoing dramatic change as a result of AI. This should be especially important as California is already the nation – and arguably the world's – engine for AI innovation. The following recommendations are worth considering with respect to how the state could act with an eye toward the future. To some extent, some steps are underway in one form or another, but lawmakers and the governor's office should explore how to provide more support and coherence.

5.1 Recommendation 1: Require Minimum Professional Development Hours related to AI, with Support from State Funding.

AI professional development support is limited and lacking. Principals and teachers report wanting more. It is important that the professional development be of high quality and based on research and best practice regarding teachers' professional learning. This means caution should be exercised, as if this recommendation is pursued, some entities may seek to capitalize on the opportunity and offer PD that is not informed by research, of poor quality, and ultimately will not serve California teachers and students. Funds could be provided for districts to pay trusted providers for extended work with the schools. Funds could also be used to increase district staff that can support teachers' AI learning, whether it takes the form of more funds for teachers on special assignment, more district professional development personnel, or more in-house coaches. Also important to consider is that while schools often have formal PD times scheduled in their academic year, there are occasions when teachers may need classroom release time – which requires paying for substitute teachers and for associated expenses (e.g., travel). For future teachers, this may also involve modifications to certification and credentialing requirements so that pre-service programs include teacher-relevant AI training. Additionally, funds from the state could be an important means to generate evidence, evaluation, and reporting regarding effectiveness and value of various professional development programs from disinterested (i.e., non-commercial) parties.

5.2 Recommendation 2: Enhance policy development support for districts.

For the fraction of schools that have policies, they are largely looking to their district offices. Currently CDE is charged to provide some guidance through Senate Bill 1288, with a legislative report forthcoming. Note that current staffing for the management and oversight is one person who is charged with Computer Science education and is now taking on AI education as well. If California intends to lead in this area, more resources for CDE, in the form of staffing and funding to "get the word out" to districts would help the actions resulting from SB 1288 be impactful. CDE should also be provided resources to engage more expert consultants beyond their volunteer working group. There are academic, education system, non-profit, and industry expertise that could be harnessed but likely requires more funds to access. Policies regarding AI are nebulous and range from topics such as academic integrity to privacy to procurement to conduct of professional work. It is important to recognize the many facets of policy that are involved and ensure that this is not treated superficially and in ways that are ineffective because key questions or practices of relevance are not being addressed.

5.3 Recommendation 3: Commit to AI literacy and AI instruction across K-12 education

Currently, AI literacy is appearing in few schools and largely just high schools. Upcoming guidance from national organizations and even from AB 2876 suggest AI literacy should not be a "one-and-done" engagement for schools at the beginning of the year or in a single grade level in the K-12 experience. It should be integrated across subject areas so that students and teachers can thoughtfully use (or choose not to use) AI for different tasks and in different contexts. They should understand the distinct risks and concerns associated with different fields of study and work. AI literacy is currently being placed under the umbrella of media literacy. This is reducing its prominence and impact, and AI literacy should be elevated as a commitment. New framework documents are forthcoming from major organizations, and CDE has done some work to begin articulation of AI literacy goals for students. More work should be done there and resources to increase awareness and facilitate translation across district contexts, schools, subject areas, and grade levels.

5.4 Recommendation 4: Provide funds for trustworthy and responsible AI tool use for schools

With teachers engaging in "shadow usage" that can come at their own expense, and with major concerns about security and privacy being voiced by educational technology professionals, resources for schools to make the necessary investments and support continued maintenance of school-appropriate, pedagogically and professionally useful, and secure AI should be made. In order to abide by privacy regulations, and also to steer the manner in which AI companies position their services toward schools and educational settings, the provision of funds could have direct and indirect benefits. There should still be room for new, evidence and research-backed tools and solutions to enter the digital ecosystem that serves schools – and resources to support that are necessary as well. Additionally, there are still some fundamental access issues that are pre-requisites for AI use in schools – such as consistent broadband access, device access, and other infrastructural investments that may still not be universal across the state.

5.5 Recommendation 5: Invest in continual and rapid evaluation of AI use in the education system

Data are currently scattered and scarce regarding AI use in schools, even though the available data still points to important future directions. In order to be more evidence-driven in policy-making and investment decisions, there should be better systems in place to gather information about AI expenditures and usage as well as rigorous studies - that can be done internally or commissioned to outside research organizations – regarding impact and efficacy for California schools and various actors (administrators, teachers, staff, students). While student achievement is often understood as the priority, understanding AI's impact on teacher job satisfaction, the teacher labor market, the quality of district/community engagement, the effectiveness of paraprofessional educators, the reduction of expenses for necessary district operations, and student well-being are all important for future monitoring. Requirements in contracts with service providers may require data sharing agreements with the state or research bodies that can provide information of value to the state. Continual evaluation can and should also center equity concerns. Access and quality of experience should be

audited regularly across the state and for various subpopulations (e.g., multilingual students, newcomer students, students with disabilities, rural students, foster youth, youth engaged with the state justice system, etc.) to prevent AI from furthering any divides in opportunity that already exist within the state.

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