

Climate Change Education and AI in the Classroom: Illinois Teachers' Perceptions, Practice, and Readiness

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Two rapidly evolving developments are reshaping Illinois classrooms: the widespread adoption of generative artificial intelligence (AI) and the upcoming implementation of statewide climate change education (CCE) requirements. Across the state, teachers are navigating how to incorporate new technologies into their professional practice while also attempting to address complex environmental issues in their classrooms. In both cases, implementation has largely been left to individual educators and local school systems, often with limited guidance, professional learning opportunities, or dedicated resources.

Generative AI is becoming increasingly embedded in everyday teaching practices, yet concerns about the broader societal and environmental implications of AI continue to grow. The expansion of data centers needed to power AI has contributed to rising energy demands and greenhouse gas emissions in the United States (Xiao et al., 2025; Gaffney & King, 2026), even as public support for new data center development has begun to decline (Data Center Watch, 2026; Tavernise, 2026). Yet generative AI is integrated into everyday web browsing, office suites, and workplace platforms (Pew Research Center, 2025).

At the same time, CCE remains a politically and institutionally uneven area of educational practice in the United States, despite broad public support for teaching climate change in schools (Marlon et al., 2026). Educators also frequently report lacking the expertise, preparation, and resources to teach it effectively (NAAEE, 2022). In Illinois, a new state bill requires climate change education to be incorporated across K-12 classrooms beginning in fall 2026 (IL SB4895). However, the mandate does not

Key Findings

- Illinois teachers are already engaging with climate change education: **56% reported discussing climate change with students though only 18% of surveyed teachers reported having participated in professional learning** related to CCE. Teachers who had received such training were significantly more likely to report preparedness, comfort, and classroom engagement related to CCE.
- More than **75% of surveyed teachers reported little or no familiarity with the new CCE mandate** (SB 4895) taking effect in Fall 2026.
- Generative AI is already widely embedded in teaching practice, where **68% of Illinois K-12 teachers reported AI use in the past year**. At the same time, 95% of teachers expressed concerns related to critical thinking, plagiarism, data privacy, and bias. Few teachers reported climate impacts as a concern.

include dedicated state appropriations or detailed implementation guidance, leaving local school systems and teachers to determine how CCE may connect to existing curricula, grade levels, and subject areas.

To better understand how Illinois teachers are navigating these emerging developments, we conducted a statewide survey of K-12 educators in November and December 2025. The findings presented in this report provide insights into the current patterns of AI uses, teachers' perceptions and practices related to CCE, familiarity with the upcoming state mandate, and perceived barriers to implementation. The report further highlights ongoing questions regarding teacher readiness, access to professional learning opportunities and resources, and the institutional support educators may need as schools respond to these rapidly evolving educational and societal changes.

METHODOLOGY

Recruitment

All K-12 teachers in the state of Illinois were eligible and invited to participate in this survey. The survey was advertised via multiple channels including the Illinois State Board of Education's newsletter for teachers, Regional Offices of Education in Illinois, statewide professional organizations, teaching and learning district administrators at all school districts in the twenty most populous counties in the state, as well as a random sample of principals of 10% of schools from those same districts. We asked administrators to share the online questionnaire link with their teachers, and within the survey, teachers were encouraged to share the survey with their colleagues.

Instruments

We developed a questionnaire to collect teachers' demographic data including the county in which they teach, grade level and subject matter, and their number of years of teaching experience. Likert-type items that addressed teachers' concerns and perceptions of CCE and AI were taken from the 2024 Teaching and Learning International Survey (TALIS) the largest international survey of teachers (OECD, 2025). Additionally, the Six Americas Super Short Survey (SASSY) was used to place an individual's level of concern about climate change in one of 6 categories from dismissive to alarmed (Chryst et al., 2018). Questions about teachers' current understanding of SB 4895 and their level of comfort and readiness to teach CCE were written specifically for this survey.

Sample

After cleaning the data, the final sample consisted of 868 educators. The teachers who completed the questionnaire represent 66 of 102 counties in the state, including the 28 most populous which account for 88% of the state's nearly 13 million residents. This sample of teachers is representative of the state's teaching population in terms of gender identity, and similar to the racial demographics of the Illinois teaching population according to the most recent Illinois Report Card (2024). A quarter of the respondents are from the greater Chicago area, which is less than the proportion

expected based on the population. Several of the downstate Regional Offices of Education were more interested in participating in this survey than those in Chicago proper which may help explain the geographic distribution.

TEACHER DEMOGRAPHICS

Approximately 81% of the respondents identify as female, 15% male, and 4% identify outside of the gender binary. The majority of respondents are white (86%), Black (3%), and Latinx/Hispanic (3%). The data reported within this brief are not weighted.

Nearly all respondents (94%) are public school K-12 teachers, the remaining taught in private or independent schools. Approximately half of all respondents teach elementary grades, and 12% of teachers reported teaching across multiple grade bands, especially those from smaller school districts (Figure 1).

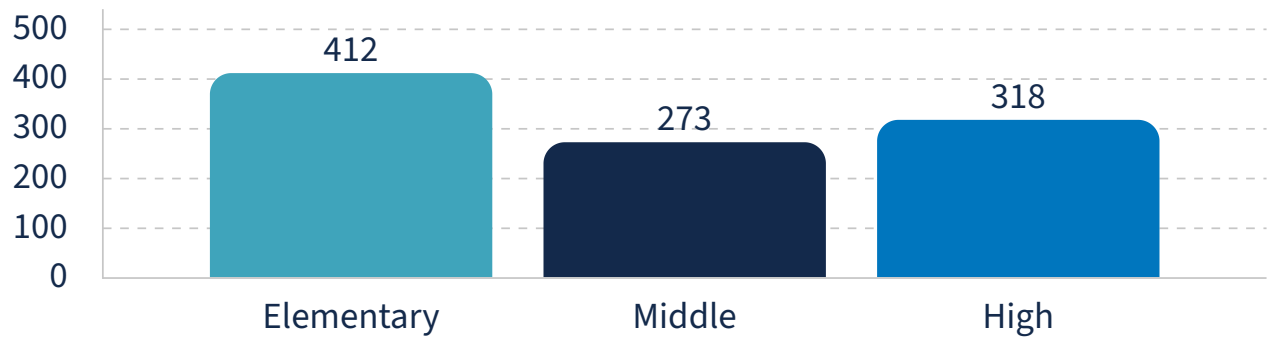


Figure 1. Survey respondents from each grade band. Because approximately 12% of teachers work in multiple grade bands, especially in small school districts or in K-8 buildings, common in Chicago Public Schools, the total number of teachers represented in this figure exceeds the final sample size.

Approximately two-thirds (63%) of middle and high school teachers taught ELA, social studies, math, or science. The distribution of teachers by subject area is shown in Figure 2.

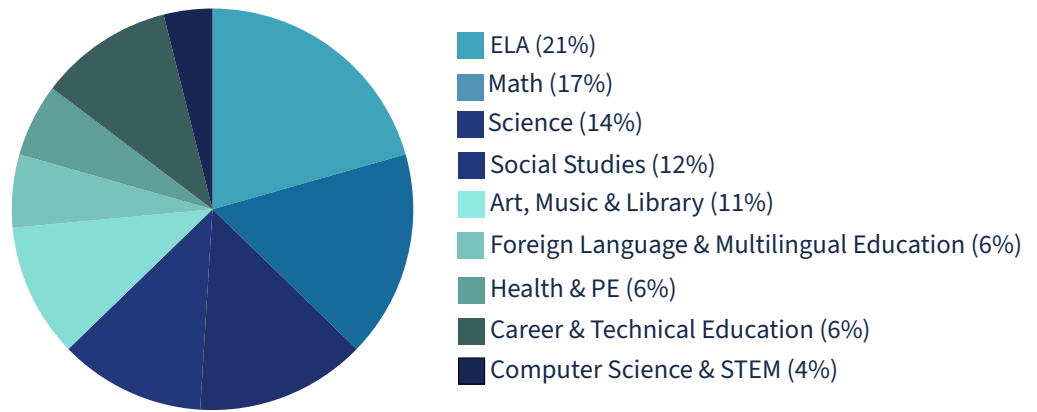


Figure 2. Percentage of middle and high school survey respondents by subject area. Subjects with few participants were grouped together for visual clarity.

Climate Change Education

Teaching on a warming planet

Climate Change Education is a solutions-oriented approach to education that helps learners understand the drivers, impacts, and urgency of global climate change by centering the values and attitudes needed to safeguard the Earth's integrity in the present and for future generations. A climate literate person is empowered to take meaningful and hopeful action.

PERCEPTIONS ABOUT CLIMATE CHANGE AND CCE

The SASSY scale places individuals in 6 categories from Alarmed to Dismissive. Those whose scores place them at Alarmed believe that global climate change is human-caused, and are the most concerned and motivated to take climate action (Maibach et al., 2011). Those whose scores fall in the Dismissive category are also actively engaged in the topic, but from the opposite set of beliefs. They do not believe that climate change is real, human-caused, nor that it requires societal attention (Maibach et al., 2011).

The majority of Illinois teachers are more concerned about climate change than the American public (Figure 3). Using the SASSY scale, the proportion of teachers who are Cautious, Concerned, or Alarmed is significantly greater than the American public in the same categories, $z = 11.45$, $p < .001$. While 15% of respondents were dismissive or doubtful about the threat that climate change presents, only half of those teachers stated that they do not believe in climate change, which is approximately half the rate of the American public (Marlon et al., 2026).

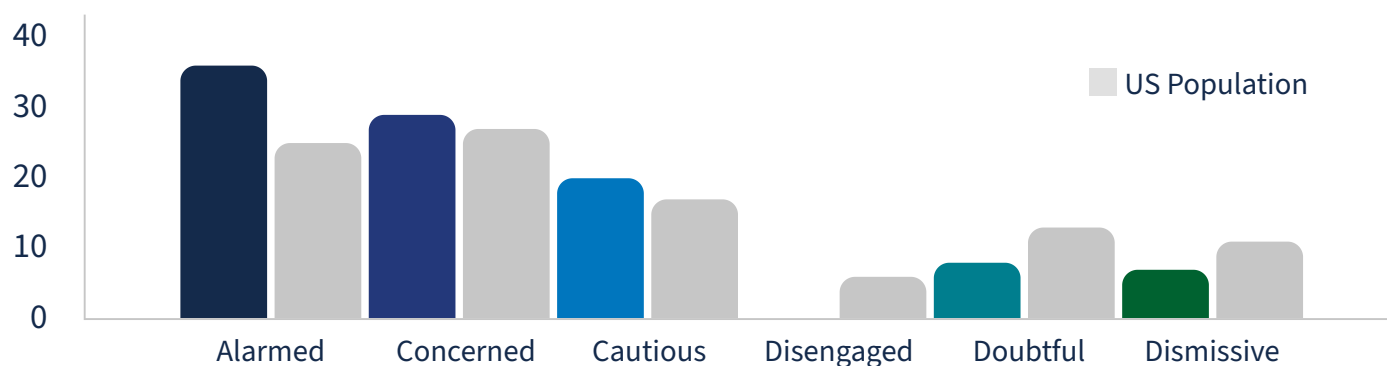


Figure 3. Percentages of teachers in each SASSY category as compared to the American general public.

Female teachers are significantly more concerned about climate change than male teachers, $\chi^2 = 18.89$, $p = .002$. There are no differences in perceptions about climate change between race, regions of the state, nor grade or subject matter (Figure 3). Using years of teaching as a proxy for age revealed no significant differences in concern toward climate change and age.

85%

of Illinois K-12 teachers are concerned about climate change compared to 69% of the American general public.

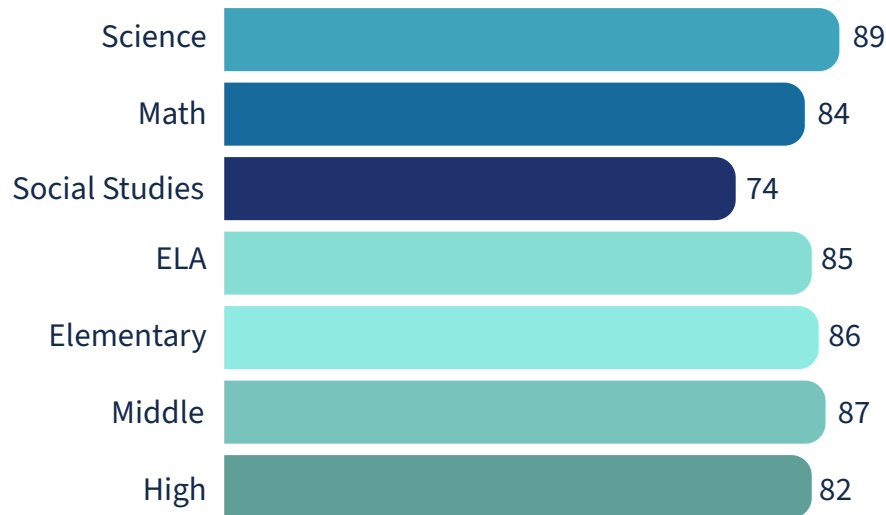


Figure 4. The percentages of teachers who are concerned about climate change across disciplines with the highest proportion of respondents and by grade level.

CCE PROFESSIONAL LEARNING

Just 18% of all respondents reported having had professional learning (PL) opportunities related to CCE. Of these, two-thirds received PL in the form of a university-level course while the rest reported receiving CCE-related PL on the job. Thirteen percent of elementary grade teachers and 20% of both middle and high school teachers reported PL experience.

Of teachers who reported CCE-related PL, more than half (57%) are science teachers. Overall, 47% of science teachers, 26% of social studies teachers, 17% of math teachers, and 8% of ELA teachers reported attending a CCE-related PL opportunity.

Teachers who reported PL experience are significantly more concerned about climate change, as measured by the SASSY scale, than teachers without such experience, $\chi^2 = 16.54$, $p = .005$. There is not a significant difference between teachers who received CCE PL through a university course, in which they presumably elected to enroll, and those who received CCE PL on the job, $p = .167$. There are no demographic differences (e.g., gender, race, location) and experience with professional learning.

CURRENT CCE TEACHING IN ILLINOIS

Overall, 58% of Illinois K-12 teachers are not teaching or mentioning climate change in their classroom lessons. Twenty-seven percent reported that they mention climate change, 9% teach 1-2 lessons, and 6% teach a climate change-related unit (defined as 3-4 lessons or more). Figure 5 shows the frequency of CCE by grade level and subject area.

Of note, teachers who have had PL related to CCE teach it in their classrooms significantly more than teachers who have not received training in this area, $\chi^2 = 78.51$, $p < .001$. Additionally, teachers already teaching at least one CCE lesson per year are the most concerned about climate change, $\chi^2 = 24.90$, $p < .001$, based on their SASSY score.

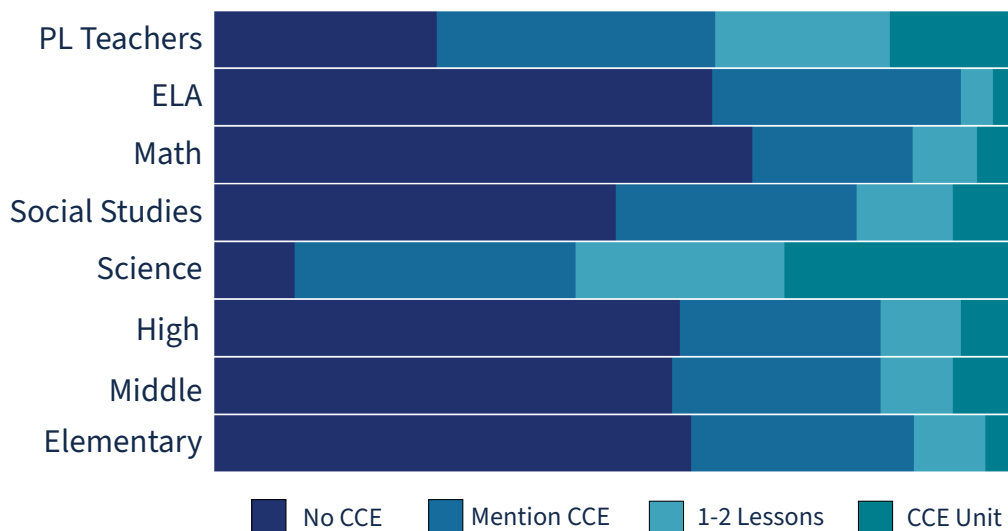


Figure 5. The frequency of CCE teaching by grade band and discipline. Science teachers and those who have received CCE PL teach the most frequently.

Despite 58% of teachers reporting that they never teach climate change, 56% of all teachers said that they do talk to their students about climate change to some extent (Figure 6). Those who report talking to their students quite a bit or a lot (11%), are significantly more likely to teach at least one lesson related to climate change, $\chi^2 = 383.17$, $p < .001$, be concerned about climate change $\chi^2 = 6.26$, $p = .012$, and/or have taken CCE PL, $\chi^2 = 69.96$, $p < .001$.

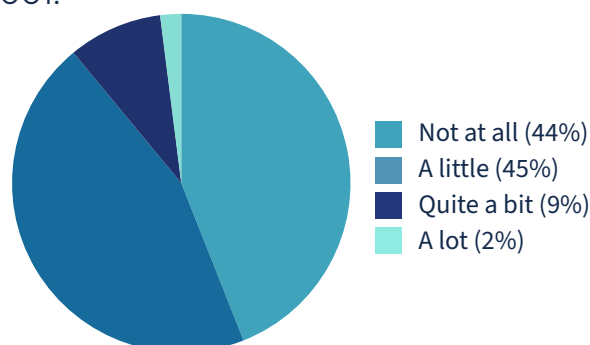


Figure 6. Percentage of teachers who talk to their students about climate change.

CCE CHALLENGES

Perceived Parent & Public Support

Seventy-seven percent of Illinois residents are in favor of teaching climate change in schools (Marlon et al., 2026), yet approximately 40% of teachers surveyed at all grade levels are worried about parent opposition to CCE in the classroom. Social studies teachers are the most worried about parent pushback (41%) and ELA teachers are the least worried (28%).

Nearly 80% of residents in the Chicago area (Cook, Kane, Lake, Will and DuPage counties) are supportive of teaching climate change compared to 72% across the rest of the state (Marlon et al., 2026) which is significantly higher, $z = 88.23$, $p < .001$. However, 41% of teachers in the Chicago area are also worried about parent complaints if CCE is implemented in their classrooms.

Resources and Administrative Support

While there is broad concern about climate change and general willingness among teachers to engage with the topic, about half (49%) of all teachers feel that they have the resources they need in order to teach CCE. This number improves for teachers who have previously engaged in CCE professional learning, where 74% reported having the necessary resources. Moreover, 1 in 3 teachers (34%) feel that their administrators encourage students to take climate action, and 1 in 5 teachers (20%) reported talking to their administrators about climate change.

WHY TEACHERS ARE NOT TEACHING CCE

For the 58% of teachers who reported never teaching about climate change ($n = 434$), the majority (90%) attribute this to the perception that climate change is not related to their discipline. Figure 7 below describes the most common reasons teachers reported for not teaching climate change.

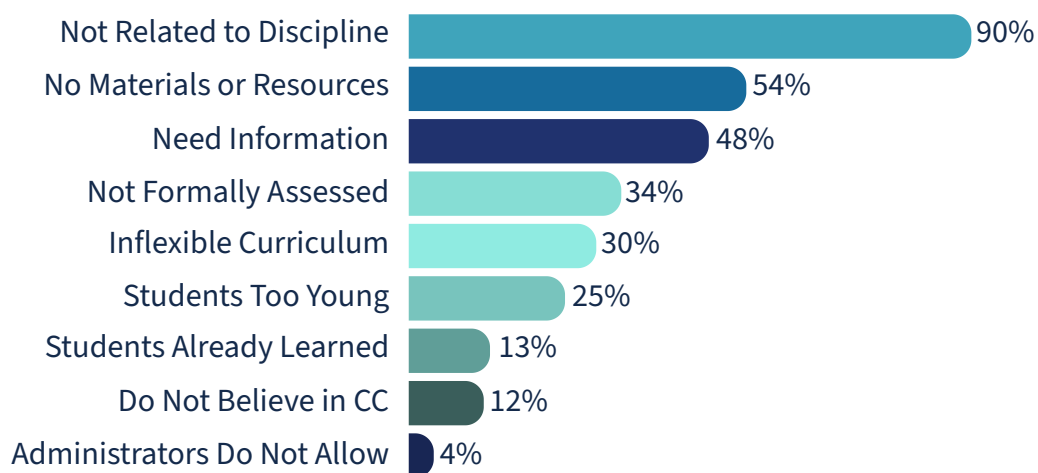


Figure 7. The most common reasons teachers do not teach climate change. Approximately half of the teachers who do not teach climate change stated that they do not know enough about it and need teaching materials and resources.

CCE READINESS

In advance of the upcoming state mandate to teach CCE in all K-12 classrooms, teachers were asked to describe the degree to which they were familiar with SB 4895 to determine how well this mandate has been communicated to teachers. More than three-quarters of teachers (77%) are unaware of the state bill and thus are not ready to implement the state mandate in their classrooms. While 21% are somewhat familiar with the bill, just 2% are very familiar. Science teachers are the most familiar with the state mandate. Fewer than 30% of teachers at any grade level reported familiarity with this new requirement.

Despite few teachers in IL being aware of SB 4895, 54% agree that they are confident in their ability to answer students' questions about climate change and 58% reported that they are comfortable teaching about climate change. Most science teachers (90%) reported comfort teaching climate change, and more than half of all other core subject area teachers reported the same (Figure 8). Of the teachers who have engaged in CCE PL, 85% are comfortable teaching about climate change in the classroom. Half (51%) of all teachers reported talking about climate change with other teachers.

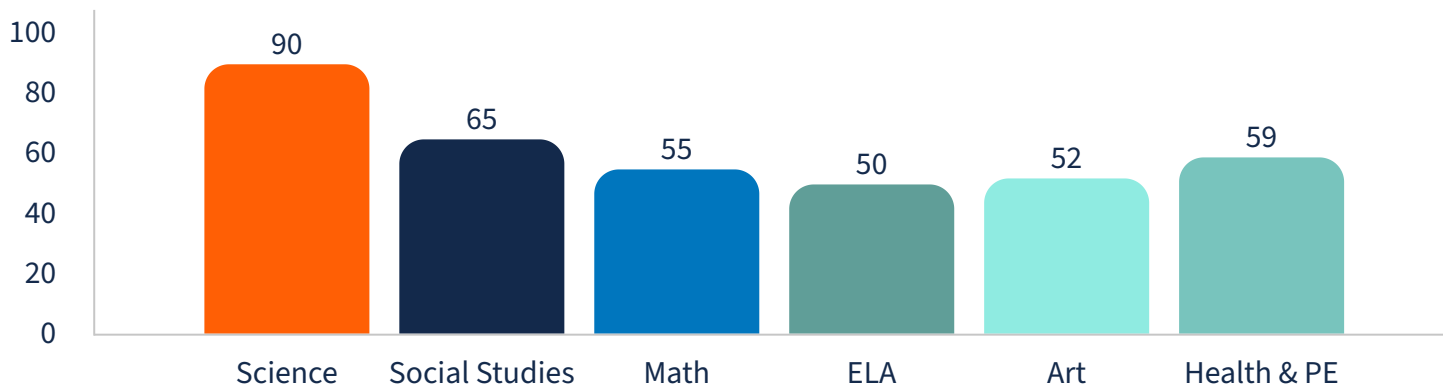


Figure 8. Percentage of teachers of each discipline reporting comfort teaching climate change.

To better understand teachers' readiness to teach CCE, we combined 4 variables related to teachers' comfortability with and preparation for teaching climate change (e.g., their confidence in answering student climate change questions, comfort teaching the topic, having access to appropriate teaching resources, and perceived administrative support for student climate action) to create a scale indicating teacher readiness for teaching climate change. These variables loaded onto a single eigenvalue with factor loadings between 0.51 and 0.69, and demonstrated adequate internal consistency, $\alpha = 0.75$.

This scale consists of 4-point Likert-type items in which teachers expressed agreement with statements such as "I have the resources I need to teach climate change," for a total of 16 possible points. The average score for all teachers was 9.9 ($SD = 2.27$). For the purposes of this report, we consider a teacher who demonstrated a high degree of

agreement with 3 of the 4 items (minimum total score of 10) to be ready to teach CCE.

Overall, 56% of teachers in Illinois are ready to teach CCE in their classrooms, including 45% of those who do not currently teach it (Figure 9). The majority of teachers (85%) who have had some type of CCE-related PL are ready to teach CCE at a significantly higher rate than teachers without this type of PL, $\chi^2 = 52.61, p < .001$.

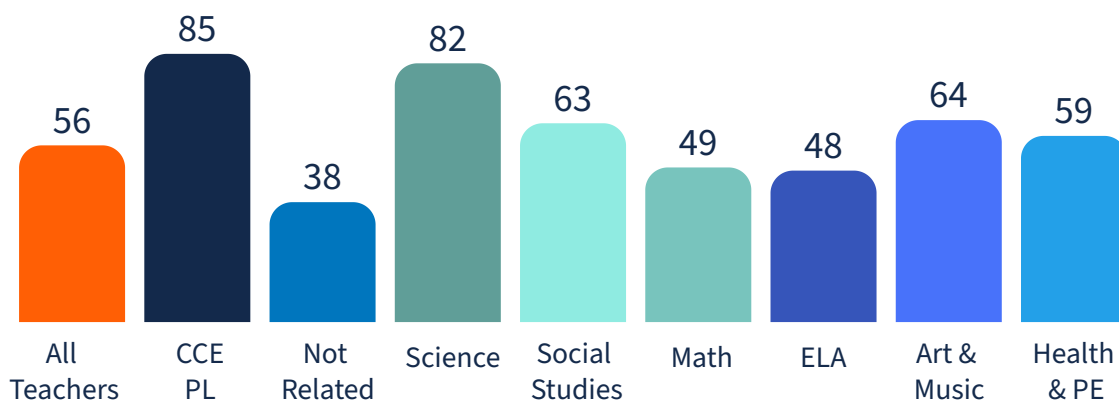


Figure 9. Percentage of teachers of each discipline who are ready to teach CCE, including those who have had CCE PL and those who believe CCE to be unrelated to their teaching discipline.

KEY FINDINGS AND RECOMMENDATIONS

Illinois teachers are concerned about climate change, but most do not teach it

Teachers in Illinois are more worried about climate change than the general public and are supportive of CCE. However, few teachers are teaching CCE in their classrooms. The majority of teachers not teaching climate change believe it to be unrelated to their subject area, a common trend.

The passage of State Bill 4895 has not been widely shared with teachers, however teachers are ready to teach CCE

Illinois was the fifth state to pass CCE legislation, but most teachers reported being unaware that CCE will soon be required in their classrooms. Despite this, the majority of Illinois teachers are well-positioned to teach CCE. More communication about SB 4895 is needed to increase teacher awareness of the requirement and encourage a greater number of classrooms to meet the mandate.

Professional learning for teachers is needed statewide

State Bill 4895 passed without appropriations and thus there have been no state-level efforts to prepare teachers and schools for this mandate to date. Teachers who have received CCE-related PL, offered at a university or through their school district, are significantly more prepared to teach CCE and believe it to be related to their discipline than other teachers. Subject-specific PL may help non-science teachers see authentic and developmentally-appropriate connections between climate change and their disciplines.

AI IN EDUCATION

Teaching in a Changing World

Teachers in Illinois are using AI for a variety of tasks related to their teaching practices. This section of the report provides a snapshot of Illinois teachers' usage of AI, their perceptions of its utility, and their concerns for its application in education.

68% of Illinois K-12 teachers who report using AI as part of their teaching practice in the past 12 months.

Illinois teachers are using AI in their teaching at a significantly higher rate than teachers globally ($p < .001$) and across the United States ($p < .001$) as compared to the 2024 global TALIS data (OECD, 2025) and the most recent reports of US teachers' usage of AI (Langreo, 2026). Amongst the Illinois teachers in this sample, there are no significant differences in AI use between grade bands or years of teaching experience (Figure 10).

Teachers most commonly report using generative AI tools such as ChatGPT (90%), AI-driven adaptive learning systems (24%), and AI tools within learning management systems (e.g., plagiarism detection) (18%). Teachers across all subject matter use AI as part of their teaching practice. The only discipline showing significantly higher AI usage was multilingual education, where 93% reported using AI, $z = 3.72$, $p < .001$.

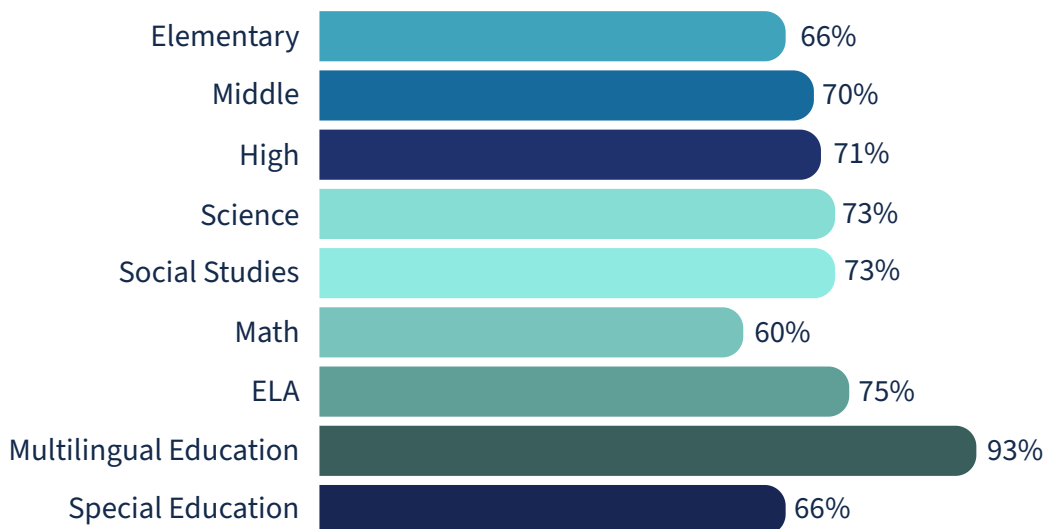


Figure 10. The percentage of teachers of each grade level and discipline that use AI. Because of AI's potential to support diverse learning needs, the disciplines reported in this section of the report are somewhat different than those in the CCE section.

TEACHERS USE OF AI IN PRACTICE

Illinois teachers use AI for a variety of tasks to support their practice. These tasks include creating lesson plans and adjusting the difficulty of materials to support students' diverse and individualized learning needs. Teachers reported using AI to efficiently learn or summarize a new topic, and to generate student feedback and parent communication (Figure 11). Few teachers reported using AI to evaluate student work or for reviewing student performance and participation data.

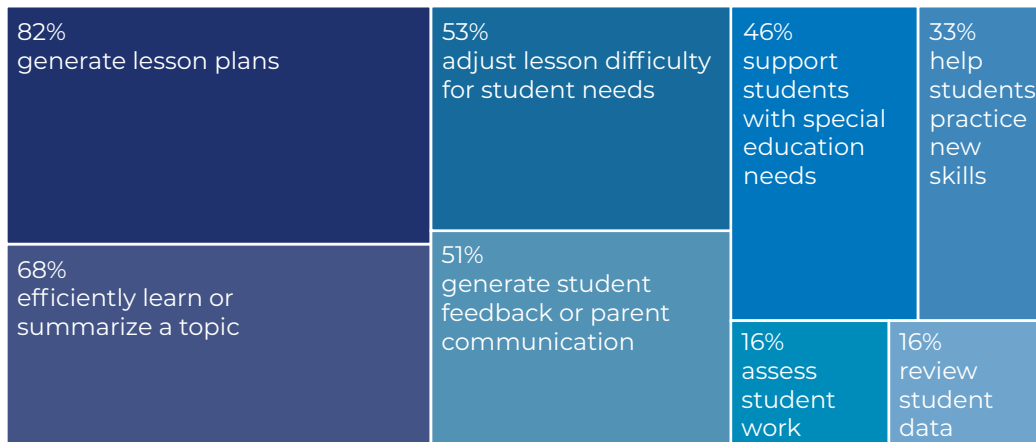


Figure 11. Percentages of teachers who use AI for a variety of teaching tasks.

PERCEPTIONS OF AI'S UTILITY IN TEACHING

Teachers perceive AI to be useful for several teaching and administrative tasks, regardless of their use of AI. Figure 12 represents the percentages of teachers who agree that AI is useful for each task listed, for those who currently use AI in their teaching practice and for those who do not.

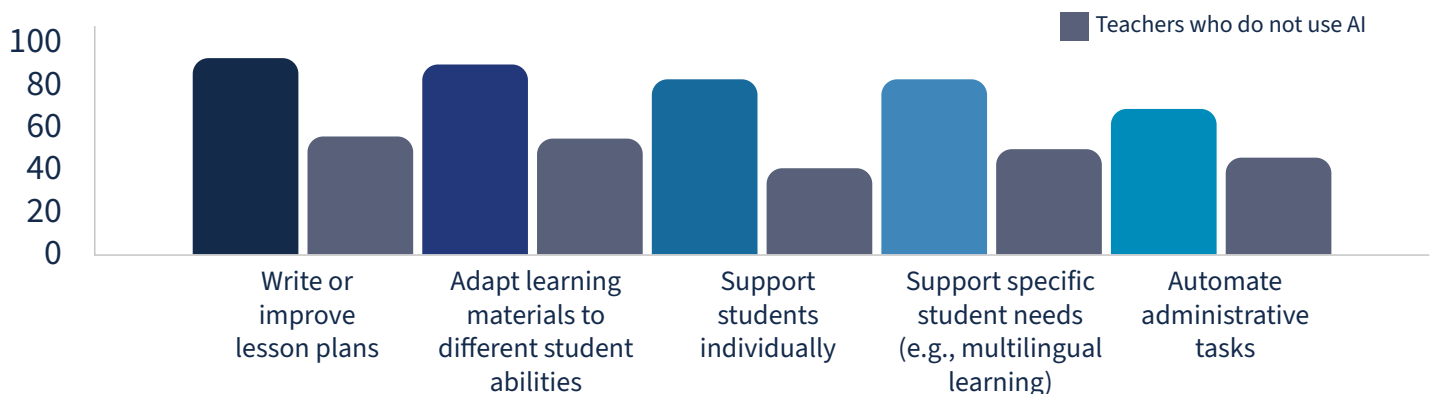


Figure 12 Percentage of teachers who agree that AI can be useful for a variety of teaching tasks. For each task, the bar on the left represents the opinions of teachers who reported using AI in their teaching practice while the dark gray bars represent those who do not.

WHY TEACHERS DO NOT USE AI

Of the 32% ($n = 250$) teachers who do not use AI, nearly half stated that it is because they do not believe that AI should be used in teaching (Figure 13). While 6% reported having limited access to digital tools and infrastructure, just 1% of teachers stated that their administrators do not allow its use in their practice.

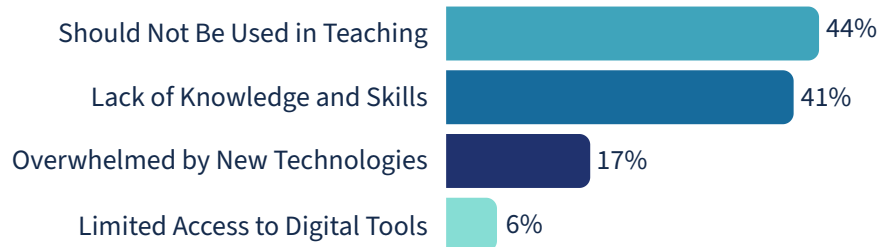


Figure 13. The most common for reasons why teachers do not use AI as part of their teaching practice.

CONCERNS ABOUT AI IN EDUCATION

Teachers have many concerns about AI's use in their teaching and in their classrooms. Despite widespread use, nearly all teachers have concerns about AI including 95% of those who reported using it as part of their teaching practice. Most teachers (84%) listed 2 or more concerns. The concerns most frequently shared are the the risk that AI dependence will reduce critical thinking skills, that AI generates incorrect information, and that it enables academic misconduct and plagiarism (Figure 14).

The environmental and climate implications of AI use were not listed among the concerns from which teachers could select, however respondents were able to write in other concerns not listed. Of the 54 additional concerns reported by teachers, 31% address the environmental and climate impacts of AI.

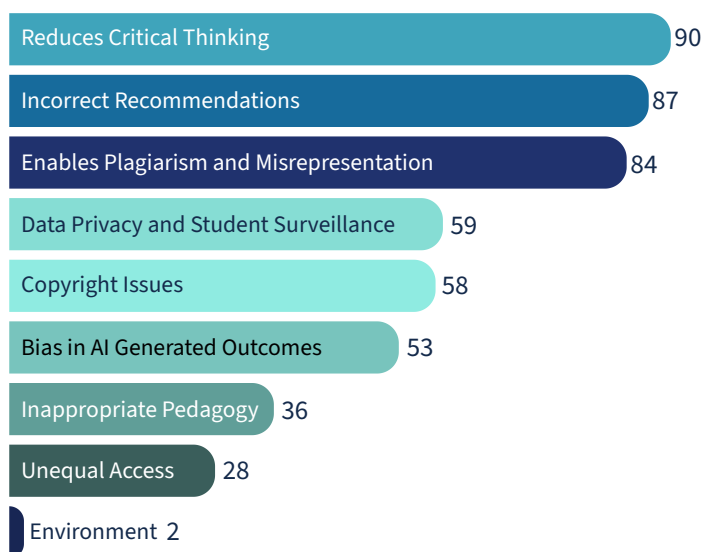


Figure 14. Teachers concerns about AI use in their teaching and classrooms. 2% of teachers wrote in environmental or climate impacts as an additional concern.

KEY FINDINGS & RECOMMENDATIONS

A majority of Illinois teachers have adopted AI across grade levels and subject areas

A majority of K-12 teacher in IL are using AI as a tool in their teaching practice. Years of teaching experience offered limited insight in overall AI adoption, suggesting that both newer and more experienced educators are using AI. Teachers primarily reported using AI for instructional preparation, lesson planning, and generating classroom materials.

Despite widespread adoption, Illinois teachers have concerns about AI in teaching and learning

Nearly all (96%) of Illinois teachers reported concerns about the use of AI, including 95% of the teachers already using it. These concerns are primarily ethical in nature and related to academic integrity, specifically the accuracy and appropriateness of AI-generated responses and student misuse of the technology.

Professional learning and guidelines for the ethical use of AI are needed

Illinois teachers' concerns about AI in education point toward the need for guidelines and policy that support teachers' and students' use of AI as it is increasingly embedded into classrooms and teaching platforms. Professional learning is needed to support the use of this technology in teachers' daily practice, especially as it relates to the ethical and equitable use amongst students and the largely overlooked environmental implications.

SUMMARY

This survey of Illinois K-12 teachers offers a snapshot of two forces reshaping classroom practice: the integration of AI into education and the upcoming statewide CCE mandate. Taken together, the findings reveal that teachers are engaged in these contemporary issues and are concerned about their implications, but are left to decide how to incorporate each into their teaching practice and classrooms.

Illinois teachers are concerned about climate change and the majority are ready to teach CCE. Yet most do not because they lack curricular resources and subject-area guidance that allows them to translate concern into classroom practice. The upcoming implementation of SB 4895 makes this gap urgent. The CCE mandate is unlikely to produce meaningful or equitable change across Illinois communities without concrete supports for teachers to enact this vision.

At the same time, a majority of Illinois teachers have adopted AI, using it to support their instructional planning. However, nearly all teachers — including those already using AI — report significant concerns about the application of AI in education, suggesting that adoption has outpaced guidance about its ethical integration into classrooms.

The ways in which AI and climate change intersect are not yet visible to most teachers. The energy demands and greenhouse gas emissions as a result of AI's expanding

infrastructure is a real and growing climate concern, yet few teachers currently identify this connection. As Illinois teachers prepare for the new CCE mandate while increasingly using AI as part of their teaching practice, this blind spot represents both a challenge and an opportunity.

The recommendations we make in this report – namely subject-specific and grade level-appropriate CCE PL and clear guidelines for the ethical and environmentally responsible use of AI – should be seen as an investment in both teachers and students. Teachers are already navigating significant societal and educational change and need supports as they incorporate new mandates and technologies into their classrooms. Children are learning on a rapidly changing planet and deserve education orientated toward sustainable and just futures.

REFERENCES

- Chryst, B., Marlon, J., Van Der Linden, S., Leiserowitz, A., Maibach, E., & Roser-Renouf, C. (2018). Global warming's "six Americas short survey": Audience segmentation of climate change views using a four question instrument. *Environmental Communication*, 12(8), 1109-1122. 10.1080/17524032.2018.1508047
- Data Center Watch. (2025). *Q3-A4 2025 Update: Data center opposition has consolidated*. <https://www.datacenterwatch.org/q3-a42025>
- Gaffney, M. & King, B. (2026). *Preliminary US Greenhouse Gas Emissions Estimates for 2025*. Rhodium Group. <https://rhg.com/research/us-greenhouse-gas-emissions-2025/>
- Illinois Report Card. (2025). *Illinois Report Card 2024-2025*. <https://www.illinoisreportcard.com/state.aspx?source=teachers&source2=teacherdemographics&Stateid=IL>
- Maibach, E. W., Leiserowitz, A., Roser-Renouf, C., & Mertz, C. K. (2011). Identifying like-minded audiences for global warming public engagement campaigns: An audience segmentation analysis and tool development. *PloS one*, 6(3), e17571. <https://doi.org/10.1371/journal.pone.0017571>
- Marlon, J., Goddard, E., Howe, P., Mildemberger, M., Jefferson, M., Carman, J., Rosenthal, S., Fine, E., Richards, E., & Leiserowitz, A. (2026, May 4). *Climate Opinion Maps 2025*. <https://climatecommunication.yale.edu/visualizations-data/ycom-us/>
- North American Association for Environmental Education. (2022). *The state of climate change education: Findings from a national survey of educators*. https://naaee.org/sites/default/files/2023-02/NAAEE_State%20of%20Climate%20Change%20Education%20Report_SUBMITTED%2012_12_22%5B1%5D.pdf
- OECD. (2025). *Results from TALIS 2024: The State of Teaching*, TALIS, OECD Publishing, Paris. https://www.oecd.org/en/publications/results-from-talis-2024_90df6235-en.html
- Xiao, T., Nerini, F. F., Matthews, H. D., Tavoni, M., & You, F. (2025). Environmental impact and net-zero pathways for sustainable artificial intelligence servers in the USA. *Nature Sustainability*, 8, 1-13. <https://doi.org/10.1038/s41893-025-01681-y>