

Celebrate, Promote, Inform in Service to Connecticut

## BRIEFING

## From the Connecticut Academy of Science and Engineering

This briefing was initiated by the Connecticut Academy of Science and Engineering, Inc., (CASE) at the request of the Joint General Law Committee of the Connecticut General Assembly's Artificial Intelligence (AI) Working Group (see <u>Public Act 23-16</u>, §5 for a description of the working group). The purpose of the briefing is to provide an initial overview of AI skills development and use in Connecticut.

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## An Initial Overview of Artificial Intelligence Skills Development and Use in Connecticut

CASE's research focused on AI for the following sectors: 1) Connecticut businesses and industries; 2) Connecticut public schools and districts, and organizations that support Pre-Kindergarten through Grade level 12 (PreK-12); and 3) Connecticut private and public, 2- and 4-year institutions of higher education.

The research included interviews with:

- / Five Connecticut companies/health systems with 1,000 or more employees
- Six private and public, 2- and 4-year Connecticut colleges and universities, and
- Six public school districts. Additionally, CASE met by phone with staff from a regional education service center, and from a commission empowered by the Connecticut General Assembly to oversee integration of technology into the state's schools, libraries, colleges, and universities.

The AI Working Group, and others at the discretion of the Co-Chairs of the working group, edited and provided comments on the focus of the research for all three sectors. Meeting participants and survey respondents were advised that responses would be aggregated and not reported individually. See Appendices B, C, and D for the final core questions that guided the interviews and the AI Skills Survey (described below). Interviewees received core questions in advance of their interview to assist in preparation and received directly following the interview a summary for their review and edit. Additionally, CASE partnered with the Connecticut Business and Industry Association on a survey that the association distributed to their members with 100 or less employees. The Connecticut Data Collaborative assisted in development of the survey. The assistance CASE received from the Connecticut Business and Industry Association, including further edits to the survey, along with distribution and timely transmittal of the results, was provided in a spirit of service to the people and the state of Connecticut (see Appendix A for the survey questions).

CASE appreciates the opportunity provided by the AI Working Group to submit this CASE Briefing and the time of all those that met with CASE and/or participated in the survey and interviews. Many of the interviewees confirmed their willingness to be acknowledged, but due to the small numbers and for those requesting confidentiality, CASE opted not to name any business, industry, non-profit, school, or higher education institution in this briefing.

While all comments were considered, CASE's Governing Council is responsible for the content of this briefing document. Special thanks to David Pines, Professor, College of Engineering, Technology, and Architecture at the University of Hartford, for his involvement throughout the research process and to INQ Creative for preparing this document for publication.

As access and use of AI tools becomes more pervasive, additional research will be needed to inform public policies. The working group should be cautious as it considers the information contained in this briefing, as the sample size was small.

The report sections include the following:

#### **Connecticut Institutions of Higher Education**

- Al Initiatives
- Al: Skills for Students
- Challenges
- Opportunities
- Professional Development Strategies
- Business and Industry, and PreK-12 Collaboration
- Suggestions for State Policy

#### **Connecticut Pre-Kindergarten – Grade 12**

- Al Initiatives
- AI: Skills for Students
- Challenges
- Opportunities
- Professional Development Strategies
- Business and Industry and Institutions of Higher Education Collaboration, and Extracurricular Activities
- Suggestions for State Policy

#### **Connecticut Businesses and Industries**

- Al Initiatives
- Challenges
- Skills Needed and Training for Employees
- Recruitment and Effect on the Workforce
- Suggestions for State Policy

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## CONNECTICUT INSTITUTIONS OF HIGHER EDUCATION

Respondents from six colleges and universities participated in interviews, including a 4-year public university, a 2-year public college, a private, post graduate university, and three, 4-year private universities. Positions of those interviewed included a provost and faculty from one university, a dean and a deputy dean, a vice president for strategic initiatives and outreach, a chair and department head, and a head of digital learning and scholarship.

## AI INITIATIVES

All Institutions of Higher Education (IHE) respondents reported being at the exploration stage of planning for AI on their campuses; no one reported policies and/or frameworks in place. One IHE respondent was surprised at how quickly AI became an issue, taking their campus by surprise, with other campuses confirming a similar sentiment. Although some campuses reported efforts will be underway on a framework planning process in early 2024, most indicated that there was no timeline in place.

The majority of IHE respondents reported that campus efforts were focused on providing opportunities for faculty to explore the use of AI tools. One campus reported the importance of faculty engagement in the discussion and that they do not view planning for use of AI as a top-down process.

Faculty have been asked to add AI use policies to their syllabi, with no formal position on whether they should restrict or allow use. It was noted that there is variability for colleges and universities within their schools and departments (e.g., schools of business, schools of arts and sciences), with some departments and schools further along than others. Several respondents indicated that computer science and other more technical courses of study had incorporated into their coursework the mathematics and theory behind the development of AI as necessary to better prepare their students.

Respondents reported that integrating AI into courses and programs will require time. Some campuses reported that discipline committees will come together in a shared governance process. Some campuses are looking at options for developing AI non-credit courses while in parallel initiating the type of campus-wide, or discipline specific processes that would be required for changes to credit courses. Another option suggested would be to have the state require that undergraduate students take a general education course, which would include ethical, safe, and responsible use of AI.

Respondents from the interviews were responsible for overseeing or development of educational programs and, when asked, all indicated they were unaware of AI tools being used to improve university operations.

## AI: SKILLS FOR STUDENTS

IHE's respondents identified the following skills as important for students to possess:

- **Critical Thinking and Evaluation:** Ability to critically evaluate AI-generated content, assess the accuracy of information, and think about when to use AI.
- **Data Analysis and Utilization:** Data-related skills, such as data analysis, utilization, visualization, and prediction.
- **Data Privacy:** Recognize the risk of data leaks and use practices that mitigate the risk to sensitive data.
- Digital Literacy, Media Literacy, and Ethical and Responsible Use: Be responsible, safe, and ethical users of AI and have a healthy skepticism when using these tools. Must understand that these tools are fallible and will produce incorrect or biased information. IHEs are a safe environment for students to explore AI and it is important to provide students with the opportunity to do so before beginning their professional careers.
- **Prompt Engineering:** Be able to interact with AI, using an iterative process between the user and AI. This is especially important for non-technical majors.

#### CHALLENGES

- Data Privacy and Security: Protecting data privacy and ensuring the security of educational systems and student information. This will require new policies and measures to safeguard sensitive data.
- Ethical, Safe and Responsible Use: Ethical and responsible AI that encompasses bias, privacy, and the employment of AI tools that align with ethical principles. It was noted by one respondent that AI tools deepened the challenges created by social media and should be included in any broader discussion about ethical, safe, and responsible use.
- **Digital Divide, Equity and Access:** AI can magnify existing inequalities and further deepen the digital divide. Ensuring equitable access to AI tools was seen as essential.
- Environmental Impact: The environmental consequences of AI tools, including their energy consumption and effect on global warming; sustainable and energy-efficient AI tools should be a consideration.
- Human-Centered Approach: The importance of human interaction in education should be preserved, with the value of a comprehensive, interactive, and face-to-face learning experience recognized. Al should not be considered as a replacement for teaching.
- **Provenance:** Establishing provenance and intellectual ownership when AI is used is a significant issue that will need to be addressed. Plagiarism related to AI emerges when a student or employee places a claim as their own text that was generated by AI.
- **Resource and Cost Challenges:** The computational power and maintenance required for the use of AI tools will be challenging for smaller colleges and universities, both public and private, and will contribute to a digital divide.
- Transparency: Even the creators of some AI tools cannot determine once in motion exactly how the outcomes were determined. Developers must be transparent to assist with the challenging process of vetting outcomes.

#### **OPPORTUNITIES**

- **Equity and Accessibility:** Recognized as a strategy to address issues of equity. For example, the tools can offer translation assistance for English as a Second Language students.
- Innovation in Teaching and Learning: Al tools have the potential to catalyze innovation in education. For example, the tools can assist in idea generation for creative and engaging lessons, making the learning process more dynamic, and in facilitating personalized, student-centered learning by adapting lessons to individual student needs and preferences. Additionally, faculty will have a key opportunity to educate students in the ethical, safe, and responsible use of these tools to better prepare them for future study, the workforce, and in their leisure time.
- Interdisciplinary Opportunities: Respondents mentioned the importance of AI in understanding and leveraging opportunities across different academic disciplines and bridging gaps between fields.
- **Productivity Improvements:** The ability of AI tools to streamline tasks such as content creation, curriculum modification, and meeting management, which can free faculty time for increased engagement in their profession (e.g., research, publications, outreach).

## PROFESSIONAL DEVELOPMENT STRATEGIES

IHE respondents reported that most faculty have not yet begun to explore the use of Al professionally. However, some are at an exploratory phase and others incorporating into their teaching and/or using it for their research. Faculty members have the latitude to choose their level of involvement with IHE-based professional development resources and will opt to engage based on their needs for teaching and activities related to their profession, such as research and publications. The strategies or supports used or suggested for use include:

- Collaborative Learning: Some campuses reported that faculty and staff engagement with their
  professional organizations and networks tended to be their preferred method of professional
  development. This type of professional development includes participating in peer-to-peer
  networks, attending conferences, and utilizing their networks for learning and sharing best
  practices related to AI. Professional development resources are available to faculty and staff to
  support expenses for items such as registration and travel.
- **Teaching and Learning Centers:** IHE-based centers provide support to faculty for improved teaching and learning, with several respondents reporting that their IHE centers had Al-in-teaching workshops available and offered individual support if requested. Two IHE's indicated that their centers were working with other support areas, including digital technology support, and schools or departments of education.

One campus offered a limited number of faculty members, or faculty working together in teams, with a subscription to ChatGPT, described by OpenAI, its developer, as "... an AI chatbot that uses natural language processing to create humanlike conversational dialogue." Faculty were required to apply to receive the support with a request that they report back on their experience. The college was disappointed by the response, with only a few faculty members submitting

applications and no applications received from faculty teams. The respondent indicated there might be several reasons why, including: 1) some faculty may already have access to ChatGPT, with currently a low, annual subscription cost; and/or 2) a preference to rely on professional networks for AI guidance.

## BUSINESS AND INDUSTRY AND PREK-12 COLLABORATIONS AND PARTNERSHIPS

Most IHE respondents reported minimal engagement with the business and industry, and the PreK-12 sectors related to AI, with the following noted:

- Business and Industry AI Products: IHE Respondents indicated they had been contacted by smaller technology companies with IHE AI-enhanced products and services looking to sell their products. However, only one of the IHE's reported that their institution had been contacted by a major technology company, such as Amazon Web Services, Inc. (AWS), Meta, Google, and/ or OpenAI. The remaining IHE respondents indicated that to the best of their knowledge, their institution had not been contacted.
- Business and Industry: Most IHEs reported minimal requests for courses and/or professional development for employees or research support. However, respondents indicated that there is a growing interest and uncertainty about AI in the business sector and recognized that there will be a need to:
  - Align the educational system, including AI content and skill development, with workforce needs, and
  - To create seamless pathways from 2-year to 4-year IHE programs of study for students seeking AI-related degrees
- PreK-12: One university reported an active partnership with a technology-focused high school local to their campus and several respondents highlighted a collaboration with Skills21 at EdAdvance, a Regional Education Service Center. Skills21 provides project-based learning platforms, with IHE faculty serving as advisors in areas such as curriculum development. Additionally, it was reported that faculty participate in professional networks that include educators from the PreK-12 system, such as EduCause, and the Northeast Regional Computing Program.

#### SUGGESTIONS FOR STATE POLICY

IHE respondents appreciated the opportunity to share their policy ideas for consideration by policy makers. The following is a summary of the policy concepts discussed:

• **Collaboration and Knowledge Sharing:** Collaboration and knowledge sharing across educational institutions, and between sectors should be encouraged, with the state helping to facilitate these activities through strategies such as a competitive grant program for multi-sector AI projects and/or the creation of a clearinghouse for AI best practices. These types of projects will promote a collective understanding across all sectors, help to establish best practices for

education and the preparation of students for the workforce, support vertical articulation from PreK-12 to the workforce, and provide for a diversity of perspectives about solutions to the challenges presented by AI.

- Engagement with Technology Companies: The engagement of the state with large technology companies working at the forefront of AI will be important to position the state to be competitive. If not already underway, state-level efforts should be made to connect these companies with leadership at the state's colleges and universities.
- General Education Requirement for AI: Some, but not all, respondents recommended the state consider an IHE general education requirement for basic technology skills that would include AI. This requirement could catalyze changes at the state's IHEs and would ensure students have a foundational understanding of technology in general, and specifically AI.
- High-Performance Computing Centers and Resource Challenges: A majority of the IHE respondents suggested the State consider options to support the building and maintenance of a state-based, high-performance computing center (HPCC). IHE's reported that the increasing cost to develop and maintain computing power in the constantly evolving world of technology was prohibitive, and this issue has been further exacerbated by the emergence of the newest AI products. For our state to be a "Knowledge State," access by colleges and universities—a valuable contributor to this enterprise—to up-to-date computing power will become a basic need. The HPCC would provide equitable access to powerful computing overbuilding a center at a public university or establishing a non-profit, that would then manage and facilitate use of the HPCC with colleges and universities and others (businesses and industries) with a willingness to cost share.
- Policy and Framework Development: Many respondents confirmed the need for guidance from the state for the development of AI policies and frameworks - specifically guardrails - that will guide development of individual college and university policies and frameworks. The goal for campuses is to be innovative in their practices, while ensuring responsible and ethical use of AI, including data privacy. Having direction from the State will help streamline their process.

Respondents from six districts participated in interviews, with district student populations ranging from ~3,500 to ~12,000. Positions of those interviewed included a superintendent, two assistant superintendents — one for curriculum and instruction and the other for digital learning and innovation —, two directors in areas of digital learning and technology systems and supports, data integration resource teachers, and a system lead for technical education. Additionally, meetings were held with the commission empowered by the Connecticut General Assembly to oversee integration of technology into the state's schools, libraries, colleges, and universities, and with a director of AI strategy and skills for the 21st century at a Regional Education Service Center. The research effort included attending the Connecticut Education Technology Leaders Conference on Understanding AI and its Impact on K-12 Education (Dec. 11, 2023).

## PREK-12 AI INITIATIVES

The districts reported being in an exploratory phase of planning for the use of AI throughout their curriculum, including all grades and disciplines, and for use in the business operations of the district (e.g., communications, contract reviews). Most reported that frameworks had been drafted or were in the planning process for development, with these frameworks to include responsible use, ethical considerations, and professional development. Most districts have included or plan to include a diverse group of stakeholders in the framework development process, including teachers, administrators, parents, students, and members from the community.

One district has an AI policy in place, which is available to the public via their website. However, most districts reported that policies would not be developed until more was known and that existing, more general policies, such as student policies regarding honesty and existing technology policies, were general enough to cover AI. The districts also reported concerns about the impact of social media and felt a sense of urgency "...to get out ahead of AI," specifically about what it is, its capabilities and associated risks, and ensuring their students are prepared for a future where AI will play a significant role.

## AI: SKILLS FOR STUDENTS

District respondents identified the following skills as important for students to possess, specifically in response to the increase in the use of AI tools:

- Awareness of AI: Recognize the prevalence of AI and when interaction is occurring with AI tools.
- **Critical Thinker:** Critically evaluate AI-generated content, assess the accuracy of information, and think about when to use AI. Fundamental understanding that on-line content should be considered with a healthy skepticism.

- **Digital Citizenship:** As defined by the International Society for Technology Education (ISTE, 2018), "Digital citizenship is the ability for students to recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical."
- **Project-based learning skills:** as defined by Edutopia, is a "...classroom approach in which students actively explore real-word problems and challenges and acquire transferable knowledge," with skills including comparing, analyzing, solving complex problems, communicating orally and in writing, generating ideas, and drawing conclusions.
- **Prompting:** Asking questions, or prompting, when interacting with Al.

Additionally, respondents reported that educators will need to measure AI-related competencies and assure a balance of content with skill development.

CHALLENGES ------

Districts respondents spoke about the challenges they are encountering with the emergence of AI, expect to encounter, and/or possible impacts on students from the use of AI.

- Data Privacy and Security: Privacy, particularly student data privacy, is a concern. The increasing
  sophistication of AI will further escalate the type of actions that can put systems at risk and
  opportunities for data leaks. Additionally, some districts reported concerns with the state and
  federal student privacy statutes and the burden placed on districts to comply, while others reported
  approaches being used to facilitate district compliance.
- District-based Educational and Operational Technology Leadership and Expertise: Educational and
  operational technology leadership is needed, with the race to acquire these skill sets and competitive
  wages making it difficult to recruit and retain talent.
- Equity and Digital Access: A digital divide exists, and this gap will increase in districts that have smaller staffs, limited funds, and/or with families and caregivers unable to provide the technology and access that better resourced communities and families have available for their students. Of note, the Connecticut Education Network (CEN; www.CTEdunet.net) connects every school district, college and university, and most libraries and towns to highspeed broadband with built-in cyber protections. CEN will be rolling out the next phase of the "Community Wireless" program with American Rescue Plan dollars to expand access to high-speed and safe internet connections to communities around the state.

Additionally, digital resources exist but it is not always clear how they support ethical, safe, and responsible use of Al. Currently the common approach among respondents is to restrict access.

- Ethical Dilemmas and Bias: Bias exists and has the potential to be magnified. Additionally, educators have the responsibility to be culturally sensitive and to model that behavior for students. Al tools will make decisions without understanding the parameters, which will in some cases lead to unethical outcomes.
- **Impact on Critical Thinking and Cognitive Abilities:** Increased use of AI may lead to a reduction in human cognitive abilities, critical thinking skills, and an over-reliance on technology.

- **Multiple major impacts on schools:** Districts generally are risk adverse and significant complex problems that require solutions are coming rapidly, with a pace difficult to manage. The ramifications of the pandemic, the social, emotional health of students, exacerbated by social media, and now AI can be overwhelming.
- Plagiarism and Cheating: Some districts reported student plagiarism (i.e., copying what AI software has generated) and cheating with evidence pointing to the use of AI tools. AI plagiarism detector tools are being marketed to schools, but several districts report that these tools are not adequate since AI generates de novo text. Several district respondents recognize that the tools used are new, but that cheating is not new; educators will need to employ new practices to address this current trend.
- Social Media and AI: Several district respondents noted the similarity between social media and AI. With social media, educators did not recognize the impacts and are being more proactive with the emergence of AI.

## OPPORTUNITIES

Al tools will provide new ways to engage students in their learning and teachers will need time to explore these tools and how they can be used to assist with planning lessons, with a focus on making these lessons more relevant for students, differentiating instruction, development of assessments and rubrics, and other labor intensive, sometimes daily, activities. This is particularly significant with teachers at the middle- and high-school levels who may see 100+ students a day, but also for elementary teachers seeking to reach each student. Respondents recognize that a goal of student-centered, personalized instruction, always sought, may be possible but also recognize these tools cannot replace the teacher.

#### PROFESSIONAL DEVELOPMENT STRATEGIES

Several different strategies are being used for professional development, with one district reporting a draft professional development plan for use of AI in place and several others in the planning stages. Respondents shared the following strategies or supports needed:

#### In-District Professional Development:

- Some districts have staff or roles responsible for supporting teachers in their use of educational software, AI tools, and for embedding these tools into instruction. Two districts reported they have plans to recruit and hire additional staff used for technology integration.
   Some districts have their library and media specialists spend up to 50% of their time on school-based, in-classroom support for digital integration.
- Peer-to-Peer Training: Providing opportunities for peers to learn from peers; this strategy includes encouraging teachers who are early adopters to take a lead.
- Collaborative Forums and Networking: Generally, respondents value opportunities to engage with peers to share best practices for curriculum and instruction and the integration of technology, and specifically emphasized the need for collaboration and professional development opportunities as it relates to AI. Evidence of this was the "Understanding AI

and its Impact on K-12 Education," conference held 12/11/23. The conference, presented by the Connecticut Education Technology Leaders (CETL), was closed to additional registrations within 48 hours of the registration being open, with 60 districts attending. According to the respondents, outside expertise, such as the speakers presenting at this conference, help districts establish a foundation, provide insights for in-district planning, and help to identify potential resources.

• State-level Professional Development: Districts recommended that the CT Department of Education, working with and through the Regional Education Service Centers (RESC), the Connecticut Education Network (CEN), and professional associations such as, but not limited to, the Consortium for School Networking (CoSN) and CETL, develop training for administrators and other district-leaders responsible for curriculum and instruction, and digital integration, with this training model then used for in-house training. Several districts mentioned the benefit of participating in Skills21@EdAdvance (EdAdvance is one of the state's six RESCs) programs and professional development.

#### BUSINESS AND INDUSTRY AND INSTITUTIONS OF HIGHER EDUCATION COLLABORATION, AND EXTRACURRICULAR ACTIVITIES

All districts reported little to no pressure from the business community to incorporate Al into their curriculum and minimal communication with the higher education community. One district reported robust partnerships with the business community and their local campus of the Connecticut Community College. Several districts have internship programs, work-based learning opportunities, and job shadowing at local businesses. There have not been reports that these students have been asked to work on projects that include the use of Al tools.

Several districts noted extracurricular activities including but not limited to Girls Who Code Clubs, Junior Engineering Technical Society TEAMS competition, and FIRST (robotics).

## SUGGESTIONS FOR STATE POLICY

Educators that participated in the interviews were thoughtful and forthcoming in their policy suggestions and recommendations. Most offered to engage further, if asked, and respectfully requested that policy makers include educators in forums, panels, and task forces as future policies are being considered. The following is a summary of the policy concepts discussed:

• **Digital Divide:** Al tools have the potential to exacerbate inequalities in education. Respondents reported that all students should have equal access to resources and tools, regardless of socio-economic backgrounds or geographic locations. One district respondent commented that Al has been, "...commoditized and once that happened, we cannot turn back." The digital divide is not new, but there is a sense that the state must act to ensure the divide does not widen. CEN has the Community Wireless Program to address some of these issues; other barriers will need to be identified and addressed quickly.

#### • District Requests for State Agency Guidance on AI and Support for Collaboration:

- Five of the six districts have frameworks in place, in draft, or at the planning stage. These frameworks are intended to guide the decision-making process. One system indicated that a policy was approved and in place, but the remaining districts indicated they were seeking guidance from the state before planning for or finalizing district-based policies. Several districts referenced the CT Association of Boards of Education (www.cabe.org) sample Al policy and indicated this would be useful to consider. CABE has a history of releasing timely sample policies, including in the areas of cyberbullying, pandemic flu and emergency preparedness, and data security.
- All districts indicated that there is value in collaboration and best practices sharing and recommend resources to help facilitate these opportunities. Some respondents suggested support for professional associations and others suggested the RESCs may be wellpositioned to facilitate these opportunities within their service areas.
- Teacher certification may need to be examined based on the impacts of digital integration and use of AI tools.
- Innovation versus Safety and Security: The districts recognize that this is a challenging time for policymakers and acknowledge that a balance between innovation on one side, and safety and security on the other must be the goal. Again, many respondents emphasized the need for clear guidelines and guardrails to ensure the security of student data and that policies do not inadvertently compromise privacy.

No specific suggestions were provided, but several districts recommended revisiting a report released March 25, 2019, by the <u>Student Data Privacy Task Force</u> pursuant to Public Act No. 18-125: An Act Concerning Revisions to the Student Data Privacy Act. The task force was charged under §5 of the public act with reviewing issues pertaining to the protection of student data, information, content, and records, in addition to the study of other issues relating to the protection of student data. The recommendations contained in the report should be revisited as they may provide value for consideration for future policy and/or study.

 Multiple, Major Impacts on Districts: Some district respondents reported feeling overwhelmed by multiple challenges, including the pandemic, care for the social, mental, and physical wellbeing of their students, exacerbated by the pandemic and social media, and now the onset of generative AI. These educators urged caution when developing new policies and mandates and requested that policy makers proactively seek to avoid unintended consequences that will add additional pressures on educators.

#### CONNECTICUT BUSINESS AND INDUSTRIES

Respondents from five Connecticut businesses and industries with 1,000 or more employees, including insurance, aerospace, health care, defense, and utility sectors, were interviewed. Interviewees included general counsels, vice presidents and senior vice presidents, lead security officers, chief information officers, and directors. Additionally, the Connecticut Business and Industry Association transmitted a survey on behalf of CASE to approximately 2000 businesses and industries with 99 or less employees (N=82). Although the number receiving the survey was high, the response rate was low. This is due to several factors, including the small window for response and the technical nature of the survey (see survey in Appendix A). Al challenges and opportunities for businesses and industries will continue to grow; the state will benefit from increased engagement with all sizes and types of businesses and industries that will lead to policies that will help them to innovate, while maintaining safety and security for them and the people of Connecticut.

#### AI INITIATIVES

The respondents acknowledged the historical context of AI development and stressed the importance of taking a pragmatic approach. They are learning from early exploration and adapting to technological advancements as they adopt AI into their businesses. AI is being considered across various business and logistical functions and it is viewed as a tool to enhance efficiency, improve services, and drive innovation. One company noted that increased efficiency would not necessarily translate to lower costs for goods and services, as costs can come from additional expenses related to the use of AI. According to this respondent, the cost-benefit is not always clear and sometimes difficult to justify.

The respondents are using a "human-in-the-loop" approach, where AI supports human decisionmaking. This approach ensures human oversight and accountability in AI-driven processes.

Safety and security considerations are paramount across all industries. Respondents highlighted the need to ensure the safety of critical operations, protect sensitive data, and mitigate cybersecurity risks. Thus, respondents emphasized the importance of having clear governing directives in place to guide decision-making and ensure ethical AI usage. In the interest of transparency, one respondent's company has created and then posted a publicly available AI framework that includes their core principles.

Healthcare has been using AI in areas such as radiology interpretation, and a respondent shared that it has significant potential to improve patient care, research, and gain efficiencies once processes are streamlined.

In general, respondents indicated that AI would be useful for non-technical business processes, including customer service functions, human resource queries, the training and on-boarding of employees, and enabling staff to interact faster with lengthy, multiple page documents through the implementation of natural learning models. On the technical side, machine learning is being

explored as a first pass for analyzing data and predictive maintenance, and AI-enhanced imagery.

Responses to the survey indicated that there was a wide range of use and even understanding of how AI tools can be used to improve their business processes. Of the 82 companies that responded, only 20% are currently using AI, with 35% expecting to use AI within the next five years. For these companies, the primary AI benefits identified were to boost efficiency and improve service. Additionally, the most frequently used words used to describe AI by survey respondents were to enhance, automate, personalize, problem solve, understand data, increase efficiency, save time and costs, and identify patterns and themes, with the expected benefit of allowing human capital to be deployed for more high-value work.

CHALLENGES

The following are the major challenges raised by respondents:

 Security and Data Privacy: All respondents identified the paramount importance of security and data privacy when deploying Al. This was a priority issue pre-Al tools, and newer tools will further increase actions that can put businesses and their customers at risk. Concerns included financial system security, protection of consumer data, patient data privacy, proper vetting of models to ensure safety and privacy, and protection from leaks of proprietary and classified information. Data breaches and cyber threats were highlighted for their significant level of risk.

One respondents' company blocked the use of generative AI by employees due to security concerns related to sensitive, proprietary information. The company will investigate opportunities to use generative AI in a private AI cloud, with the caveat that it be vetted for safety and security and that it complies with other governance directives. Another company initially blocked access but reopened on an individual basis. Training is required and employees must rationalize its use and how it optimizes the business.

- Ethical Considerations: Respondents raised concerns about responsible use of AI, and recognition that the outputs of AI models need to be evaluated for bias and discriminatory practices.
- Quality Control and Verification: Accuracy, quality and reliability of AI output must be tested and verified, especially for critical operations. One respondent noted that it is challenging to ensure the accuracy of AI output, with the significant potential for hazards caused by incorrect data analysis. This respondent further noted that a same AI query may lead to different responses, making it impossible to validate the quality of output. Another respondent indicated that users should not be surprised that large language models such as generative AI "generate" and can be "creative," leading to hallucinations, a phenomenon where the model perceives patterns or objects that are non-existent or imperceptible to humans.
- **Digital Divide and Accessibility:** Respondents recognize that multiple customer support modes are needed to cater to diverse customer preferences, with some customers unable or unwilling to interact with new automated tools.
- High-Performance Computing: There is a need for secure, high-performance computing but challenges exist in balancing the capital cost of developing a company-owned system versus the

security of shared multi-client systems. One respondent indicated that their company is trying to buy hardware to initiate development of AI tools in-house, which would allow for more security and safety, but lack the necessary infrastructure. Their plan was to start small and then scale. However, an effort to obtain seed capital was unsuccessful. One other option for the company was to use a multi-client cloud environment but they are concerned about data breaches and emphasized the need for a completely air-gapped system. Additionally, the company highlighted the challenges of working with the strict rules of the federal government. Another company protects consumer data and avoids use of public domain sources. Instead, they rely on private partners and universities that must be vetted to ensure secure data handling.

• Limited Capacity for AI Use: Smaller companies have limited capacity to fully explore the potential benefits of AI. Survey respondents reported that they were "uncertain, overwhelmed, and don't know how to proceed." Of the survey respondents, 45% indicated that they are not planning to use AI in the next five years.

These challenges collectively underscore the multifaceted nature of AI and emphasize the need for responsible, secure, and ethical AI practices across industries. Security, ethics, data privacy, and quality control emerge as central factors in ensuring the safe and effective deployment of AI technologies.

#### SKILLS NEEDED AND TRAINING FOR EMPLOYEES

Resistance to change is a challenge in adopting AI technologies. Respondents emphasized the need for retraining the workforce to adapt to new roles and highlighted the importance of analytical thinking and openness to change. Respondents shared the following key points:

Skills Needed: Interview respondents identified data analytics as a critical skill, particularly in understanding and mitigating cyber threats. This underscores the importance of data-driven decision-making in AI contexts. However, there is an understanding that digital literacy will become increasingly important for all employees, irrespective of their specific roles, as current workflows change to leverage the efficiencies offered by AI. Respondents recognized the importance of analytical thinking, critical thinking including critical evaluation of AI outputs, problem-based learning, and openness to change as essential skills eventually for employees. One of the most significant skills identified is prompting and learning how to iterate, referred to by many of the respondents as prompt engineering.

**Internal and External Training:** Respondents from large companies are using a multi-faceted approach to training with internal training programs commonly used for non-engineering staff and external courses and boot camps, certification programs, and professional development opportunities for highly technical staff. Several respondents reported that their companies developed training programs in-house, which include extensive training on topics such as model outputs, ethics, and compliance.

Small companies that are using or considering the use of AI are at the initial stages of staff training and are looking at or using more than one approach. The most common training methods considered

or used are consultants (48%), outside workshops (44%), vendor certification (41%), and in-house training (37%). Only about 25% of companies are considering 2-year colleges, 4-year universities, and post-secondary technical schools as training partners.

The small companies surveyed indicated their need for short-term (< 2 years) and longer-term training (3-5 years) in a variety of business and manufacturing functional areas as well as research and development, and information technology. A majority of the respondents indicated that training was needed within the next two years (see Figure 1). The business functional areas where training is most needed are marketing (69%), sales (55%), customer services (55%), management (54%), and human resources (50%); the manufacturing functional areas are operations management (44%), production (36%), and quality control (36%); and information technology (64%). For the business-related functions, about 20% to 30% stated that no training was needed while 10% to 20% were unsure of training requirements. For manufacturing-related functions, training was not expected to be needed by 40% to 50% of the companies and about 20% were unsure.



Figure 1. Training Required within two years by small companies (<100 employees) that are using or intend to use AI Tools (n = 28 companies). CASE/CBIA AI Skills Survey, December 2023.

## RECRUITMENT AND EFFECT ON THE WORKFORCE

**Future Workforce Direction:** Respondents generally are optimistic that AI will have a positive impact on the workforce, making it "smarter." Rather than job displacement, retraining and upskilling are emphasized as necessary for adapting to the new tools and technologies. AI is seen collectively as a tool that can help achieve greater efficiencies and help the workforce to be more productive, with AI assisting with more routine tasks, leaving employees to manage more complex tasks.

Survey respondents from small companies (n=35) indicated that over the next two years they expect no change to a slight increase in the workforce. Over a three to five-year timeframe, 23% expect a substantial increase in the workforce, 13% a small increase, 18% no change, and 28% a small decrease, with 18% uncertain. While the results of this small sample size do not indicate any significant increase or decrease in the size of the workforce, it is interesting to note that on average these same companies are expecting to hire three new employees per company with those new hires having AI skills. The projected areas for the new hires would primarily be in marketing, customer service, information technology, accounting, and quality control.

Large companies highlighted the significance of supporting local universities, colleges, and schools to foster a talent pool. This includes these companies supporting research projects at educational institutions in fields relevant to the company's business.

## SUGGESTIONS FOR STATE POLICY

Respondents identified the following areas where the state can assist companies with the adoption of AI, support innovation, and implement guardrails that protect company and consumer information. Of note, some of these companies are under federal regulation and are concerned about the policies at that level, as well.

- **Governance and Al Guidance:** The larger companies interviewed indicated that governance structures that support their decision-making generally, and specifically are used for decision-making related to the rapidly evolving and changing Al environment, were helpful to their change process for Al adoption. Smaller companies with less capacity may benefit from additional resources to support the improvement of existing or development of new governance structures within their companies that may facilitate change in this disruptive environment. Additionally, best practices for the adoption and use of Al technology would be helpful to small businesses with limited resources and knowledge on how to incorporate Al tools into their business practices.
- Educating the Public on Data Privacy: Some respondents suggested that the state might consider a campaign to alert the public about issues of data privacy, including educating the public on a person's right to data privacy, protecting their data, safely using generative AI, identifying AI misinformation, disinformation, and deepfakes, recognizing that private information is used by public large learning models, and adapting to evolving data usage practices.

## • Possible State Investments:

- **High-Performance Computing:** There may be value in subsidizing high-performance computing that provides lower costs for computing and storage to Connecticut companies, start-up companies, and IHEs.
- Al Research and Student Preparation: Connecticut's businesses and industries will benefit from IHEs adequately resourced to prepare students with the technical AI training needed in the workforce and for conducting AI research that will support innovation. This includes access to upto-date computing power.



APPENDICES

Connecticut Academy of Science and Engineering, 2024

## APPENDIX A

CASE – Connecticut Business and Industry Association: Artificial Intelligence Skills Survey

#### EMAIL

Dear (insert member first name),

The age of artificial intelligence is upon us, and it has become increasingly important that Connecticut stay competitive and engaged in the emerging technology.

Is your business actively using AI? What types of training do you need for your workforce now and in the future?

CBIA is conducting a brief survey on behalf of the <u>Connecticut Academy of Science and Engineering</u> to learn about the ways businesses are investing and developing AI skills an technology.

The results of this survey will be used to help inform public policy. CASE will present its findings to the General Assembly's <u>Artificial Intelligence Working Group</u> at the start of the new year.

We expect the survey will take 15 minutes to complete. CBIA will report the results in aggregate to ensure all answers are kept anonymous.

#### Take the survey here — [LINK]

Please complete the survey by Dec. 15. If you have general questions about this project, please <u>email</u> <u>CASE's Terri Clark</u>.

- 1. Which best describes your company's industry sector?
  - □ Automotive/transportation
  - □ Construction
  - □ Education/childcare
  - □ Finance
  - Hospitality and tourism
  - □ Insurance
  - Manufacturing
  - Medical
  - Nonprofit
  - Professional services
  - □ Real estate
  - $\Box$  Research and development
  - 🖾 Retail
  - □ Software/technology
  - Utilities
  - □ Wholesale distribution
  - Other (please specify): \_\_\_\_\_

- 2. How many employees do you currently have?
  - □ Less than 10
  - □ 11-20
  - □ 21-50
  - □ 51-99
  - □ More than 100
- 3. Do you expect your business to use or continue to use artificial intelligence in the next five years?
  - □ Yes
  - □ No
  - $\Box$  If no is selected, skip to the end of the survey.
  - □ Unsure
- 4. How is your business benefiting from using artificial intelligence? Select all that apply.
  - □ Boosting efficiency through process automation
  - □ Improving the speed or consistency of service
  - □ Using customer insights to inform decision-making
  - □ Enhancing and/or uncovering opportunities for new products and services
  - □ Cybersecurity, fraud management, and debt analytics
  - □ We're not currently using AI
  - □ Other (please specify): \_\_\_\_\_
- 5. Do you have written policies about the use of artificial intelligence?
  - □ Yes
  - $\hfill\square$  We are in the process of developing written policies
  - $\hfill\square$  No. We are not currently developing written policies
- 6. Are there state of Connecticut regulations and/or policies that make it more challenging for your business to use artificial intelligence?
  - □ Yes
  - 🗆 No
  - □ If yes is selected, please explain: \_\_\_\_\_
- 7. Are there any policies that the state could implement that would help your business use artificial intelligence?
  - □ Yes
  - □ If yes is selected, please explain: \_\_\_\_\_
  - D No

8. Rate your use of artificial intelligence for the following:

	No Use	Exploring Use	Low Use	Moderate Use	High Use
Internal Business Functions					
External business functions (i.e., customers, suppliers, contractors, regulators, etc.)					

- 9. What impact does artificial intelligence have on your current workforce?
  - Substantial decrease
  - □ Small decrease
  - $\Box$  No change
  - □ Small increase
  - □ Substantial increase
  - □ Unsure
- 10. What impact do you expect artificial intelligence will have on your workforce in the next one to two vears?
  - □ Substantial decrease
  - □ Small decrease
  - $\Box$  No change
  - □ Small increase
  - $\hfill\square$  Substantial increase
  - □ Unsure
- 11. What impact do you expect artificial intelligence will have on your workforce in the next three to five years?
  - Substantial decrease
  - $\hfill \mbox{ Generate} \hfill \hfill \mbox{ Generate} \hfill \hfill \mbox{ Generate} \hfill \hfill \mbox{ Generate} \hfill \hfi$
  - $\hfill\square$  No change
  - Small increase
  - Substantial increase
  - Unsure Unsure

12. For each of the following areas, indicate if your business is hiring or plans to hire staff with skills in artificial intelligence.

	No; we have not hired and do not plan to hire staff.	Yes; We have hired staff.	Yes; we plan to hire within the next two years.	Yes; we plan to hire within the next three to five years.	Unsure
Accounting					
Customer Service					
Distribution					
Facility Management					
Finance					
Human Resources					
Information Technology					
Management					
Manufacturing					
Marketing					
Operations Management					
Production					
Quality Control					
Research and Development					
Sales					
Other (please specify):					

13. For each of the following areas, indicate how your business plans to train staff in the use of artificial intelligence.

	Currently implementing	Considering	Not being considered
In-house trainers			
Consultants			
Outside workshops			
Partnering with two-year colleges			
Partnering with four-year colleges/universities			
Partnering with post- secondary technical schools			
Partnering with vendors to provide certifications (e.g., Microsoft, Meta, Google, Amazon, Coursera, LinkedIn Learning, etc.)			

- 14. Have you received external funding to assist you with training to implement artificial intelligence in your business?
  - □ Yes
    - □ If yes is selected: Describe the source: \_\_\_\_\_
  - □ No
  - □ Seeking funding

# 15. For each of the following areas, indicate if your company would benefit from skills training for your employees to implement artificial intelligence.

	No training needed.	Training needed within the next two years.	Training needed in three to five years.	Unsure
Accounting				
Customer Service				
Distribution				
Facility Management				
Finance				
Human Resources				
Information Technology				
Management				
Manufacturing				
Marketing				
Operations Management				
Production				
Quality Control				
Research and Development				
Sales				
Other (please specify):				

16. Identify the skills needed for training employees with little to no experience with artificial intelligence.

	Low Priority	Medium Priority	High Priority	Unsure	Not applicable
AI delegation (prompts)					
AI-Enhanced Creativity					
Analytical Judgment					
Bias Detection and Handling					
Collaboration					
Creative Evaluation					
Critical Thinking					
Data Literacy					
Digital Literacy			/		
Emotional Intelligence					
Ethics					
Flexibility					
Intellectual Curiosity					
Linguistic Literacy					
Personalization					
Voice-Text Interaction					
Other (please specify):					

17. Identify the skills needed for training employees with artificial intelligence experience.

	Low Priority	Medium Priority	High Priority	Unsure	Not applicable
AI Ethics and Bias					
AI Frameworks and Libraries					
Cloud Computing					
Collaboration and Communication					
Computer Vision					
Data Manipulations and Analysis					
Deployment and Scaling					
Machine Learning					
Mathematics			/		
Model Evaluation and Hyperparameter Tuning					
Natural Language Processing					
Neural Networks and Deep Learning					
Ongoing Learning					
Problem-Solving and Creativity					
Programming languages					
Reinforcement Learning					
Version Control					
Other (please specify):					

- 18. How would you define artificial intelligence in the context of your business?
- 19. Would you be willing to be contacted in the future by CBIA or CASE about your use of artificial intelligence?
  - □ Yes
    - □ If yes is selected: Please provide your name, company name, and contact information.
  - □ No

Thank you for participating in this survey.

## APPENDIX B

## Business and Industry Artificial Intelligence Skills: Core Interview Questions

Thank you for your willingness to participate in an interview as part of a project Connecticut Academy of Science and Engineering (CASE; <u>www.ctcase.org</u>) is conducting on behalf of the Joint General Law Committee of the Connecticut General Assembly: Artificial Intelligence Working Group (for more information, see <u>Public Act 16-23</u>).

The purpose of the interview is to provide an initial picture of who in Connecticut is doing what as it relates to investing in and/or developing artificial intelligence skills within their businesses. The interview will take place via Zoom and is expected to require one hour. Meeting summary notes and/ or transcripts will be available following the interview to provide you with the opportunity to adjust your responses within a couple days of the interview.

Please note that we plan to interview 5-6 large companies in Connecticut, as well as conduct a survey of smaller companies. The survey is being administered in partnership with the Connecticut Business and Industry Association (CBIA). Additionally, CASE will interview 5-6 school districts, and 5-6 colleges and universities. We expect to complete the interviews by Dec. 15, 2023, and then prepare and deliver a briefing to the working group on Jan. 10, 2024, followed by delivery of a briefing document on Jan. 15, 2024.

The information you provide to us will be reported in aggregate and individual company, business, organization responses will be kept anonymous.

If you have questions about this project, please contact Terri Clark, CASE, tclark@ctcase.org.

Thank you.

#### **Core Questions**

**Question 1:** Oxford Languages defines artificial intelligence as the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making and translation between languages. How would you define artificial intelligence in the context of your business?

Question 2: Name 2-3 ways your business is or may benefit from using artificial intelligence.

Question 3: Rate your use of artificial intelligence for your business's internal functions.

[response scale: 1=fully use; 2=moderately use; 3=some use; 4=exploring use; 5=not using or exploring use]

**Question 4:** Rate your use of artificial intelligence for your business's interactions with other parties (i.e., customers, suppliers, contractors, regulators, etc.).

[response scale: 1=fully use; 2=moderately use; 3=some use; 4=exploring use; 5=not using or exploring use]

Question 5: What major concerns do you have about the use of artificial intelligence for your business.

**Question 6:** Talk about the skills/training your business is doing or planning for non-technical employees who are using artificial intelligence. Of these skills, which are the highest priority.

**Question 7:** Talk about the skills/training your business is doing or planning for technical employees who are using artificial intelligence. Of these skills, which are the highest priority.

**Question 8:** Talk about the major functional areas of your business that would be the focus of training for your employees.

**Question 9:** Which areas of your business/organization are you currently hiring staff with artificial intelligence skills? In the next 2 years? 3-5 years?

**Question 10:** Talk about the approaches being used, or planning to be used, to provide training for your staff.

**Question 11:** Have you received external funding to assist you with training to implement artificial intelligence in your business. If so, from what source?

**Question 12:** If possible, estimate the impact of artificial intelligence on your workforce today? In 1-2 years? in 3-5 years?

**Question 13:** Does your business have written policies for the acceptable use of artificial intelligence? If not, are these policies in the planning process?

**Question 14:** Talk about any state of Connecticut regulations and/or policies that make it more challenging for your business to use artificial intelligence?

**Question 15:** Talk about any state of Connecticut regulations and/or policies that would help your business to use artificial intelligence?

**Question 16:** Do you have additional comments to share with us?

**Question 17:** Connecticut Academy of Science and Engineering conducted this interview on behalf of the CT General Assembly's Artificial Intelligence Working Group. CASE will not share individual responses; the briefing will report responses in aggregate. However, please advise if you wish us to add your business to the briefing appendix that will list businesses and organizations that assisted us with the research.

## APPENDIX C

## Institutions of Higher Education Artificial Intelligence Skills: Core Interview Questions

Thank you for being interviewed as part of a project Connecticut Academy of Science and Engineering (CASE; <u>www.ctcase.org</u>) is conducting on behalf of the Joint General Law Committee of the Connecticut General Assembly: Artificial Intelligence Working Group (for more information, see <u>Public Act 16-23</u>).

The purpose of the interview is to provide an initial picture of who in Connecticut is doing what as it relates to artificial intelligence skills.

The interview will take place via Zoom and is expected to require one hour. Meeting summary notes and/ or transcripts will be available following the interview to provide you with the opportunity to adjust any of your responses within a couple days of the interview. CASE recognizes that there are more questions than time for response during the interview. Additionally, we expect that your comments may lead to other questions and further discussion. You will have an opportunity at the end of the interview to raise any items you feel should be raised but were not discussed.

Please note that we plan to interview 5-6, 2- and 4-year colleges and universities in Connecticut. Additionally, CASE will interview 5-6 large businesses and industries, a survey of smaller companies, and 5-6 school districts. We expect to complete the interviews by Dec. 15, 2023, and then prepare and deliver a presentation to the working group in early January 2024, followed by delivery of a briefing document in mid-January.

The information you provide to us will be reported in aggregate and individual/institution responses will be kept anonymous.

If you have questions about this project, please contact Terri Clark, CASE, tclark@ctcase.org.

**Question 1:** Oxford Languages defines artificial intelligence as the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making and translation between languages. How would you define artificial intelligence in the context of your institution?

**Question 2:** Does your institution have a system-wide approach to artificial intelligence access and use? Please describe.

**Question 3:** Are you implementing or planning to implement an artificial intelligence steering committee or task force? If so, what will guide decisions on who will participate?

**Question 4:** Do you have written policies for the acceptable use of artificial intelligence? If not, are these policies in the planning process?

**Question 5:** What are the challenges artificial intelligence presents to your institution? Your students? Your faculty?

**Question 6:** What are the opportunities artificial intelligence presents for your institution? Your students? Your faculty?

**Question 7:** Describe artificial intelligence courses or programs in the planning stages or currently available to students.

**Question 8:** Has your institution identified artificial intelligence skills that would be important for all students to acquire? Skills for students seeking an AI specialization?

**Question 9:** Describe artificial intelligence skills incorporated in current courses/programs.

**Question 10:** Do you offer non-traditional coursework in artificial intelligence, such as an artificial intelligence certification, boot camps? If yes, please describe.

**Question 11:** Generally, what AI skills do faculty members have? Will professional development opportunities be available to them?

**Question 12:** Have external partners, such as businesses, industries, healthcare, and foundations, collaborated with you on course/program development, offerings, and/or research? If yes, please describe.

**Question 13:** Have external partners reached out to request help with employee/staff training and skill development for their business? If yes, please describe.

Question 14: What ethical implications should be considered?

**Question 15:** Do you have P-12 educators looking to partner with you on teacher professional development in artificial intelligence? For students?

**Question 16:** Describe any state of Connecticut regulations and/or policies that make it challenging to use or access artificial intelligence.

**Question 17:** Describe any state of Connecticut regulations and/or policies that would help your institution to innovate using artificial intelligence.

Question 18: Do you have funding available to support artificial intelligence planning or implementation?

Question 19: Do you have additional comments to share with us?

**Question 20:** Connecticut Academy of Science and Engineering conducted this interview on behalf of the CT General Assembly's Artificial Intelligence Working Group. CASE will not share individual responses;

the briefing will report responses in aggregate. However, please advise if you wish us to add your business to the briefing appendix that will list businesses and organizations that assisted us with the research.

## APPENDIX D

## PreK-12 Artificial Intelligence Skills: Core Interview Questions

Thank you for being interviewed as part of a project Connecticut Academy of Science and Engineering (CASE; <u>www.ctcase.org</u>) is conducting on behalf of the Joint General Law Committee of the Connecticut General Assembly: Artificial Intelligence Working Group (for more information, see <u>Public Act 16-23</u>).

The purpose of the interview is to provide an initial picture of who in Connecticut is doing what as it relates to artificial intelligence skills.

The interview will take place via Zoom and is expected to require one hour. Meeting summary notes and/ or transcripts will be available following the interview to provide you with the opportunity to adjust any of your responses within a couple days of the interview. We apologize in advance for the short period (2-3 days) to return any corrections/clarifications to us following the interview.

CASE recognizes that there are more questions than time for response during the interview. Additionally, we expect that your comments may lead to other questions and further discussion. You will have an opportunity at the end of the interview to raise any items you feel should be raised but were not discussed.

Please note that we plan to interview 5-6, 2- and 4-year colleges and universities in Connecticut. Additionally, CASE will interview 5-6 large businesses and industries, a survey of smaller companies, and 5-6 school districts. We expect to complete the interviews by Dec. 15, 2023, and then prepare and deliver a presentation to the working group at the beginning of January, followed by delivery of a briefing document.

The information you provide to us will be reported in aggregate and individual/organization responses will be kept anonymous.

If you have questions about this project, please contact Terri Clark, CASE, tclark@ctcase.org.

**Question 1:** Oxford Languages defines artificial intelligence as the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making and translation between languages. How would you define artificial intelligence in the context of your institution?

**Question 2:** Does your school/district have a system-wide approach to artificial intelligence access and use? If you are planning or implementing artificial intelligence, are you thinking about using it across the curriculum or for selected grades/courses? Please describe.

**Question 3:** Are you implementing or planning to implement an artificial intelligence steering committee or task force? If so, what will guide decisions on who will participate?

**Question 4:** Do you have written policies for the acceptable use of artificial intelligence? If not, are these policies in the planning process?

**Question 5:** What are the challenges artificial intelligence presents to your school/district? Your students? Your faculty?

**Question 6:** What are the opportunities artificial intelligence presents for your school/district? Your students? Your faculty?

**Question 7:** Describe artificial intelligence coursework in the planning stages or currently available to students.

**Question 8:** Has your school/district identified artificial intelligence skills that would be important for all students to acquire? Teachers? Administration? By grades? By discipline?

**Question 9:** Generally, what AI skills do students/teachers/administrators have? Will professional development opportunities be available to teachers/administrators?

**Question 10:** Do you offer non-traditional coursework in artificial intelligence, such as an artificial intelligence certification, boot camps, robotics, coding? If yes, please describe.

**Question 11:** Do you see AI as a topic to be taught and/or AI as tools to support teaching and learning? If using as tools, what are you using?

**Question 12:** Have external partners, such as businesses, industries, healthcare, and foundations, collaborated with you on course/program development, offerings, and/or research? If yes, please describe.

Question 13: What ethical implications should be considered?

**Question 14:** Describe any state of Connecticut regulations and/or policies that make it challenging to use or access artificial intelligence.

**Question 15:** Describe any state of Connecticut regulations and/or policies that would help your institution to innovate using artificial intelligence.

Question 16: Do you have funding available to support artificial intelligence planning or implementation?

**Question 17:** Do you have additional comments to share with us?

**Question 18:** Connecticut Academy of Science and Engineering conducted this interview on behalf of the CT General Assembly's Artificial Intelligence Working Group. CASE will not share individual responses; the briefing will report responses in aggregate. However, please advise if you wish us to add your business to the briefing appendix that will list businesses and organizations that assisted us with the research.

#### The Connecticut Academy of Science and Engineering

The purpose of the Academy is to "provide guidance to the people and the government of the State of Connecticut... in the application of science and engineering to the economic and social welfare."

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