GENERATIVE AI AND THE FUTURE OF TEACHING AND LEARNING

California Community Colleges

REPORT TO BOARD OF GOVERNORS
JULY 2024
CHANCELLOR SONYA CHRISTIAN

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ACKNOWLEDGEMENTS

When Chancellor Sonya Christian started her new position on July 1, 2023, she was clear that the California Community Colleges must be at the forefront in shaping policy and practice as we embark on a journey to reimaging the future of teaching and learning in an artificial intelligence-enabled world. *"We must engage in this work fully… Standing on the sidelines and having others determine the direction is not an option."*[1] Vision 2030, adopted by the Board of Governors of California Community Colleges in September 2023, calls out Generative AI and the Future of Teaching and Learning as one of the three strategic directions.

The Board of Governors has engaged deeply with AI this past year and at their retreat on April 29-30, they provided clear guidance as to their priorities for this powerful new technology, directing the Chancellor's Office to investigate and establish leadership in the application of AI and predictive analytics to enrollment management, personalized learning and support, student pathway optimization, and data infrastructure.

The Chancellor's Artificial Intelligence (AI) Council, under the leadership of Visiting Executive for Strategic Research and Innovative Design Craig Hayward, spent the past several months in a comprehensive phase of discovery, impact assessment and identification of professional development needs related to Generative Artificial Intelligence on the Future of Teaching and Learning. They conducted research, participated in state and national events, discussed key topics and engaged with an array of thought leaders. In their thinking and writing, they explored several key areas, including: the history and evolution of AI; the impact of AI on industry; the transformative effects of AI on teaching and learning; and the implications for equity for students and for the entire community college workforce, all centered and grounded by a clear exposition of our values and principles for engaging with generative AI. By bringing a wide range of perspectives, the AI Council has generated a comprehensive understanding of AI's potential and challenges, ensuring that the evaluation and integration of AI in the community college system is both strategic and beneficial for employees and students served. The goal is to ensure robust and equitable outcomes for all involved, fostering a forward-thinking and inclusive educational environment.

The members of the AI Council include Alison Gurganus, Andra Hoffman, Carlie McCarthy, Cassandra Flandre-Nguyen, Cheryl Aschenbach, Claire Fisher, Craig Hayward, Danny Kelley, Deborah Knowles, Don Daves-Rougeaux, Eric Kaljumägi, Gary Moser, Ian Duckles, James Todd, Jorge Saucedo-Daniel, Julianna Barnes, Lee Lambert, Lisa Neeley, Manuel Payan, Michelle Smith, Nancy Morgan, Rock Pfotenhauer, Rupa Saran, Sally Montemayor Lenz, Sarah Hawkins, and Wendy Brill-Wynkoop.

1 Chancellor Christian, MacFarlane Lecture, March 2024

EXECUTIVE SUMMARY

The report uses recent research and survey results to understand potential impacts and concerns for various disciplines and workforce segment, defines a set of human-centered AI guiding principles, and details areas of priority focus including investing in and providing sufficient time and resources for faculty and staff professional development; address the pedagogical and policy implications for incorporating AI and Gen AI; and rethink curriculum and pathways to position current and future students and returning learners for the AI-enabled workforce of the future. The report then focused on a set of key enablers including the need for foundational investments in data and technology infrastructure; standing up a new Digital Center for Innovation, Transformation and Equity; building out a robust innovation and partnership ecosystem; initiating a series of demonstration projects and defining pathways to scale for enterprise use. The report includes a set of recommended actions and includes appendices that provide additional reference materials on selected topics. Finally, the report underscores the critical importance of nurturing human qualities. Chancellor Christian asserts that we must double down in *"deepening human qualities of cooperation, ethical decision making, and emotional intelligence in a world of rapidly developing machine learning."*

Professional Development is a key investment that creates a space for collaboration and capacity building for our entire system. Through collaborative design and planning with constituent groups, as well as partnerships, we will provide a systemwide approach to integrate AI in our teaching and learning environments, to support our college workforce in a rapidly changing world, and to help our students experience economic mobility in an evolving job market.

An AI-integrated workplace is driving concerns of job displacement. Rather than eliminating jobs, we are committed to using AI to shift workers toward higher-skill tasks, enhancing efficiency and creating new opportunities. Enhancing technology literacy and imparting AI-specific skills to the workforce is critical to success.

Faculty and Student Awareness. Understanding AI's impact is crucial for both faculty and students. Integrating AI concepts into the curriculum and providing professional development for faculty ensures students are prepared for industry changes and can effectively chart their career paths.

Support for Educators. AI tools streamline routine tasks for educators, allowing more time for student engagement. Empowering educators to design and customize AI tools for classroom use enhances the teaching and learning experience. AI education should encompass both technical and soft skills, preparing students for an AI-driven landscape. Developing a discipline-specific framework to map AI's implications is essential for comprehensive readiness.

Efficiency and productivity will be profoundly enhanced by the integration of artificial intelligence (AI) into the workforce and economic sectors. In the key industries of **manufacturing, healthcare, agriculture and finance**, stakes are especially high - and immediate changes are needed.

The impact of generative AI on underserved communities and small businesses must remain a core consideration to remain accountable to the significant pitfalls of an AI strategy that is not stakeholder-driven, as well as the incredible possibilities of a thoughtful approach in dismantling long-standing barriers to economic mobility.

Ensuring equitable distribution. Higher education institutions, particularly California's community colleges, will play a critical role in preventing a long-term AI digital divide, granting us the opportunity and the challenge to define changes in the workforce development pipeline that will stand the test of time.

Innovation and Equity. Committed to engaging in true partnerships in innovation that will help us solve problems that we have not been able to resolve, particularly around equity. Collaboration between businesses, governments, and academia is vital to support displaced workers through reskilling and ensure AI-relevant skills are provided. This helps prevent an AI digital divide and promotes societal advancement.

Equitable Pathways and Individualized Training. AI can transform education by providing equitable pathways for learners through streamlined processes and individualized training. This technology supports remote learning and helps close opportunity gaps across different colleges and communities.

System-Level Engagement. The AI Council and system webinars facilitate professional development. The Vision Resource Center provides access to AI training modules and communities, with future webinars focusing on foundational AI learning, ethical uses, and policy development.

Workforce Development and Curricular Design. Partnerships and initiatives aim to expand AI and Data Analytics course offerings and support workforce entry, ensuring students are prepared for an AI-integrated job market. The California Community Colleges AI Consortium (CCCAIC) focuses on innovative AI curricula.

INTRODUCTION

In September 2023, the chancellor of the California Community Colleges unveiled "Vision 2030: A Roadmap for California Community Colleges," including a description of the critical importance of engaging with AI in Strategic Direction 3, *The Future of Learning*.[1] This roadmap focuses on integrating AI and Generative AI to elevate teaching and learning. Key areas of investment include professional development, data infrastructure, evaluation and partnership capacity and demonstration projects. This semi-annual update, following the April 2024 Board of Governors Retreat, documents progress and outlines next steps.

From October 2023 to July 2024, we conducted extensive research to integrate AI and Generative AI into our ecosystem. Methods included literature surveys, workforce surveys, expert engagements, external conferences and briefings with Academic Senates. We launched webinars, developed an AI Glossary of Terms[2] and initiated demonstration projects to share knowledge and gain hands-on experience. Interim progress reports were shared with the Board of Governors, and the AI Council was formed.

This report provides an overview of work in the past year and in future years on generative AI, discussing its impact on industry, the campus workforce, and the future of teaching and learning. It describes ongoing professional development efforts and underscores the need for ongoing training and AI literacy for all. The report also defines a framework of values and principles for the California community colleges engagement with AI and ties these initiatives to the strategic objectives of Vision 2030.

Professional Development and Data Infrastructure as AI Essentials

To leverage AI effectively, we must invest in professional development and data infrastructure. Critical investments include a Common Cloud Data Platform (CCDP) and a Statewide Common Technology Platform (SCTP), both essential for standardized data management and evidence-based decision-making. These platforms enable equitable and actionable insights while safeguarding sensitive data.

The establishment of a Digital Center for Innovation, Transformation, and Equity to accelerate digital transformation projects, drive AI adoption, and support colleges in implementing digital initiatives. By fostering public-private partnerships, the Digital Center aims to reduce barriers and scale capabilities across the California Community Colleges.

Committed to Ethical AI

Our survey research and stakeholder input indicate the critical importance that AI must meet standards for delivering trustworthy, unbiased results in order to be useful and accepted in the California community colleges. Cathy O'Neil, a renowned scholar on algorithmic bias, highlights the need for transparency and ethical considerations in AI development. *"Algorithms don't make things fair. If you have systemic discrimination, it won't be solved by math. Instead, algorithms can reproduce and even exacerbate existing inequalities under the guise of objectivity,"* O'Neil asserts.

California community colleges are committed to leading in the application of generative AI to enhance teaching and learning. Reflecting the governor's vision from the GenAI Executive Order of September 6, 2023, we aim to shape the future of ethical, transparent and trustworthy AI. Our investments in professional development, data infrastructure, and innovation will ensure a brilliant future for our students, faculty and staff across the California Community Colleges.

Engaging with AI is essential for the California Community Colleges to enhance equity and student success. AI can personalize learning experiences, identify at-risk students for timely interventions, and mitigate biases in educational content and assessments. Advising systems and AI-powered analytics can complement existing processes to provide real-time, personalized guidance and track student progress, ensuring consistent support and proactive measures to address challenges.

1 Strategic Directions. (2023 September 26). Vision 2023. California Community Colleges. Retrieved from webpage. https://www.cccco.edu/About-Us/Vision-2030/strategic-directions

2 See Appendix I

Additionally, continuous AI training will enable us to integrate advanced technologies into our teaching and services, enriching the educational experience and allowing for a greater degree of focus on personal engagement with students.

The establishment of a Digital Center for Innovation, Transformation, and Equity will drive the adoption of cutting-edge AI technologies, fostering innovation in teaching and learning while improving operational efficiency. AI can streamline administrative functions, reduce costs, and enhance resource allocation, making the educational system more effective and responsive. Preparing students for an AI-integrated workforce will enhance their employability and readiness for future job markets. Embracing AI now will allow the California Community Colleges to set ethical standards, ensuring responsible and equitable use of AI technologies and positioning the system as a leader in the evolving educational landscape.

California community colleges need to be leaders in the application of generative AI to teaching and learning. We are committed to staying ahead of the curve on the evolving landscape of learning and support for our students.

BEYOND FEAR: THE INSPIRING IMPACT OF AI ON INDUSTRY ADVANCEMENT AND WORKFORCE DEVELOPMENT

The California Community College Chancellor's Office Workforce and Economic Development (WED) Division emphasizes career education to prepare learners for the workforce. Our goal is to create equitable pathways for underserved learners, enabling them to remain in their communities and leverage their existing skills. Advanced AI tools offer opportunities to streamline processes, enhance skill-matching, provide individualized training, and support remote learners through immersive technology. These tools can help close the opportunity gap between different colleges and communities by identifying individual learner needs and supporting targeted interventions.

It is essential to acknowledge anxieties surrounding potential job displacement and to ground the discussion in a pragmatic consideration of specific jobs and skills that will be changing and in demand. AI is generally regarded as a means to shift workers toward higher-skill tasks, enhancing efficiency and creating new opportunities. By identifying and addressing impacts on specific industries and occupations, we can foster a mindset that embraces and amplifies the positive possibilities of AI.

Ensuring that both faculty and students across all disciplines understand the impact of AI on their fields is crucial. Students must be aware of how AI may transform their fields of interest and career paths, allowing them to chart their own journeys, select necessary courses, and potentially adjust their career trajectories accordingly. Vision 2030 has prioritized returning learners and working adults who need or wish to upskill to remain competitive in the workforce.

Providing faculty with the tools and professional development needed to integrate AI concepts into their curriculum is paramount. This should include an interdisciplinary approach that not only covers AI fundamentals but also demonstrates how AI will be integrated into various fields, ensuring a comprehensive understanding of its applications across disciplines. Faculty should consider both technical and soft skills (e.g., critical thinking, creativity, communication) to fully equip students for the evolving landscape. A key objective of the proposed "Regions at Work - Generative AI Edition" is to convene faculty and workforce leaders to develop a discipline/sector-specific framework that maps AI's implications. Through partnerships with those who share our values and vision, we can foster policies and practices that create an environment where AI enhances educational practices, prepares students for success, and meets evolving workforce demands. Collaborating with industry and union leadership to place students in internships and jobs while aligning curriculum with the latest industry trends is crucial.

By addressing these areas, the California Community Colleges aims to create an environment where AI enhances educational practices and

prepares students for the future. It is imperative to identify AI's specific impacts on California's top industries and recognize the crucial role of California community colleges in preparing the workforce to thrive in an AI-driven environment. Programs fostering digital and data literacy, developing AI-specific skills, and addressing AI-impacted occupations are essential. The faculty and staff of California's 116 community colleges are at the forefront of this transformation, leading efforts to democratize and expand access to California's AI ecosystem. This ensures that AI's benefits are widely shared, inclusive, and centered on student success

Vision 2030 Aligned Industry Sectors

Healthcare - #1 Fastest Rising CA Industry Sector: Artificial intelligence, along with machine learning and robotic process automation, will fundamentally change how most employees in hospitals and health systems perform their jobs. AI has emerged as a powerful catalyst for innovation, unlocking new healthcare products and services that were once beyond imagination. AI-driven diagnostics have significantly improved patient outcomes and streamlined operations, marking a new era in medical care.[1] AI can improve patient outcomes and enhance community health by streamlining administrative tasks such as data entry, appointment scheduling, and medical coding. This allows healthcare workers to focus more on patient care.[2] This benefit extends across various roles, including nurses, certified nursing assistants (CNAs), and other frontline staff.

From virtual reality simulations that adapt in real-time to augmented reality applications that blend digital and physical worlds, AI is revolutionizing the immersive technology landscape of healthcare. In nursing education, simulation provides highly accurate representations of care situations. These simulations allow students to develop clinical judgment skills in a safe virtual environment, preparing them for real clinical settings.[3] This approach increases the availability of clinical placements and helps address the critical nursing shortage in California.

The Vision 2030 Associate Degree in Nursing (ADN) Expansion demonstration project aims to utilize successful AI models to significantly increase the number of ADN graduates at California community colleges. Central to this initiative are investments in simulation labs. The project will establish a statewide blueprint to boost ADN degree production by emphasizing collaboration with regulatory and employer partners and implementing key strategies designed to enhance ADN program capacities. The Workforce Development Division is currently in discussions with several prominent simulation development firms to understand the specific needs of colleges in the healthcare sector. An early adopter is Cabrillo College's nursing program, which has secured a California Apprenticeship Initiative (CAI) grant to launch their immersive technology pilot.

Mental healthcare professionals employ AI-driven client engagement strategies to guide the recovery journey for individuals with mental health issues. AI can connect individuals facing similar challenges through online support groups and communities, where they can share experiences and strategies. AI-based applications that track progress over time and provide feedback can promote sustained motivation for enhanced recovery.[4] Furthermore, AI-powered tools can enhance diagnostic accuracy, assist in developing personalized treatment plans, and support remote monitoring, which can improve efficiency and effectiveness in patient care. These advancements allow healthcare professionals to dedicate more time to building meaningful patient relationships, crucial for patient satisfaction and recovery.

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1 Angela Spatharou, Solveigh Hieronimus, and Jonathan Jenkins. (2024 March 10). Transforming healthcare with AI: The impact on the workforce and organizations. Executive Briefing. McKinsey. Retrieved from https://www.mckinsey.com/industries/healthcare/our-insights/transforming-healthcare-with-ai

2 Angela Spatharou, Solveigh Hieronimus, and Jonathan Jenkins. (2024 March 10). Transforming healthcare with AI: The impact on the workforce and organizations. Executive Briefing. McKinsey. Retrieved from https://www.mckinsey.com/industries/healthcare/our-insights/transforming-healthcare-with-ai

3 Francisco A. Jimenez, PhD, CHSE (2022 April) Can Virtual Patient Simulation Be Used in Substitution of Traditional Clinical Hours in Undergraduate Nursing Education? A Review of the Evidence. White Paper Elsevier Education. Retrieved from https://evolve.elsevier.com/education/expertise/dei/the-value-of-virtual-patient-scenarios/

4 Anoushka Thakkar, Ankita Gupta, Avinash De Sousa (2024 March 18). Artificial intelligence in positive mental health: a narrative review. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10982476/

Agriculture: The agricultural AI market, valued at around $519 million in 2019, is projected to grow to $2.6 billion by 2025[1] AI is transforming our food systems, from agriculture to nutrition. According to Ilias Tagkopoulos, director of the Artificial Intelligence Institute for Next Generation Food Systems (AIFS) at UC Davis, AI can make agriculture more efficient and sustainable, improve food quality, and reduce environmental impact. For instance, AI is used to reduce tomato losses during transport, develop new tomato varieties, and enhance plant breeding. AI also plays a crucial role in precision agriculture, minimizing waste and optimizing resource use. In canneries, AI automates processes and improves efficiency. Furthermore, AI can predict health outcomes from food photos, aiding nutrition and diet research. Integrating AI across the food supply chain promises significant advancements in efficiency and sustainability.[2]

Over a decade ago, John Deere recognized the potential of real-time data for farming efficiency. Since then, the company's products have evolved from pure hardware into integrated hardware and software platforms, creating an "Internet of Farming Things." Today, over 130,000 interconnected farming systems collect more than 15 million measurements every second, all uploaded to a cloud platform. These capabilities allow for precise management of agricultural tasks, enhancing efficiency by enabling equipment to identify weeds and accurately apply herbicides, reducing waste and doubling crop yields.

The Vision 2030 Ag Tech project is focused on developing and implementing a cutting-edge competency-based education (CBE) certificate. By integrating an AI literacy curriculum, this initiative will have a transformative impact. It will upskill California farm workers, empowering them to excel and equipping them to thrive in this highly AI-driven sector.

Education, child development and family services: AI is playing an increasingly significant role in California's education, child development and family services sectors, particularly in enhancing teaching and learning experiences. AI technologies support teachers by providing personalized feedback, aiding in lesson planning, and simulating student interactions to help new teachers gain experience. These AI tools optimize teaching methods and improve student engagement by offering real-time feedback and generating post-lesson reports to enhance classroom dynamics.[3]

AI addresses a broad spectrum of student needs, including learning differences and the development of critical thinking and problem-solving skills. Using AI as a teaching assistant allows instructors to spend more time interacting with students, improving educational outcomes and fostering meaningful connections. Integrating AI in education also prepares students for future workforce demands by fostering critical thinking and creativity. AI is not just a tool for automation but a support system that enhances the educational process and prepares students for modern career complexities.[4]

Isabelle Hau, executive director of Stanford Accelerator for Learning, highlights both the potential benefits and challenges of AI in early learning, whose application is still emerging. AI innovations address assessment challenges and improve efficiency in analyzing child-adult interactions. Technologies help children recognize emotions, and language support tools aid multilingual learners in classrooms and through distance learning. Hau stresses the importance of addressing privacy, bias and equity issues associated with AI in early childhood and notes the need for better technology solutions to connect parents with care providers.[5] (For additional insights on sector impacts see Appendix G)

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1 Artificial Intelligence in Agriculture Market Size, Industry Research Report, Trends & Growth Drivers. (2023 February). Market Research Report. Markets and Markets. Retrieved from https://www.marketsandmarkets.com/Market-Reports/ai-in-agriculture-market-159957009.html?gclid=Cj0KCQiA7aPyBRChARIsAJfWCgJDCiWL0OB1Bojg8sgeeCEZr_vskSN5cnlAAd_jZLoLgFW5O5D71icaArzAEALw_wcB

2 Andy Fell. (2024 May 2) Big Data Comes to Dinner. UC Davis College of Agricultural and Environmental Sciences. Retrieved from https://caes.ucdavis.edu/news/big-data-comes-dinner

3 Claire Chen. (2023 March 9). AI Will Transform Teaching and Learning. Let's Get it Right. Stanford University, Human-Centered Artificial Intelligence. Retrieved from https://hai.stanford.edu/news/ai-will-transform-teaching-and-learning-lets-get-it-right

4 Elizabeth Mann Levesque. (2018 October 18). The role of AI in education and the changing US workforce. Brookings Institution. Retrieved from https://www.brookings.edu/articles/the-role-of-ai-in-education-and-the-changing-u-s-workforce/

5 AI Is Entering Early Childhood Education. (2024 April 7). Hechinger Report interview with Isabelle Hau, the executive director of Stanford Accelerator for Learning Retrieved from https://

Ensuring Equitable AI Integration: Workforce Development, Ethical Use and Education

The transition to an AI-integrated workplace requires comprehensive strategies focused on reskilling, ethical AI deployment, and proactive workforce planning. This approach ensures AI contributes positively to economic growth and workforce development, enhancing human capabilities across all sectors. As AI becomes integrated into various fields, upskilling the workforce is imperative. Programs that enhance digital and data literacy and impart AI-specific skills are crucial. Personalized learning approaches, like those highlighted by Sal Khan[1], demonstrate AI's potential to tailor education to individual needs and mitigate AI literacy gaps in many communities.

Underrepresented groups often face disenfranchisement during economic transitions. The Charter Innovation Research Center's playbook, "Using AI in Ways That Enhance Worker Dignity and Inclusion."[2] addresses concerns about these workers. Charter's research suggests that women, workers of color and those over 55 could be disproportionately disadvantaged by AI and automation. A Charter Works survey found that 53% of Black respondents were concerned about AI replacing their jobs, compared to 39% of White respondents.[3] These insights underscore the need to implement AI in ways that enhance worker dignity and inclusion.

Addressing these challenges requires proactive policy interventions, ethical AI development and enhanced cooperation to ensure benefits are shared equitably. Educational systems must evolve to provide AI-relevant skills, promoting continuous learning and adaptability. Collaboration between businesses, governments, and academia is crucial to mitigate the adverse effects of automation by supporting displaced workers through reskilling and establishing robust social safety nets. The goal is to leverage AI's transformative potential for broad societal advancement, ensuring technological progress enriches California's most vulnerable communities and addresses pressing state challenges such as workforce shortages in the fields of healthcare, behavioral mental health and education.

Higher education institutions play a critical role in preventing a long-term AI digital divide. It is essential, therefore, to create the technical preconditions for using AI effectively and to support users in building the digital literacy and fluency needed to use AI safely and responsibly. Generative AI presents specific challenges and opportunities in the workforce, particularly in reshaping high-mobility jobs. These jobs, which offer livable wages and potential for career advancement without necessarily requiring a four-year degree, are critical for economic mobility. "Gateway" jobs, which provide salaries above $42,000 based on experience rather than degrees, and "Target" jobs, which offer higher salaries and stable positions, are particularly crucial.

The widespread deployment of Credit for Prior Learning (CPL) can increase the number of workers on path to gateway jobs. Two Vision 2030 projects, the MAPP (Mapping Articulated Pathways Project) and Streamlining Pathways to Economic Mobility Through CPL, propose using AI to handle the most time-intensive work—comparing learning outcomes. These projects enable faculty to validate or refine the results and make decisions about credit awards. MAPP has developed a draft framework for utilizing AI in CPL, focusing on industry sector and region-specific pathways by using an AI routine to match industry certificates and college courses; the process can create recommended articulations for colleges. These results are categorized by job sector, level, region, demand, outlook, and local college alignment, making it easy to identify pathways from low to mid and mid to high levels such as moving from a CNA to a phlebotomist. Similarly, the Streamlining Pathways to Economic Mobility project will match learning outcomes by analyzing documented curricula in military training, workforce training, and industry certifications, paving the way to gateway jobs via a more efficient and student-centered CPL process.

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givingcompass.org/article/ai-is-entering-early-childhood-education

1 Sal Khan's 2024 San Francisco Commonwealth Club interview: How AI will Revolutionize Education. (2024 May 21). Retrieved from https://www.youtube.com/watch?v=pHvEQ2quhiY

2 Emily Goligoski, Jacob Clemente, Kevin Delaney, Daniel Lee. (2023). Using AI in ways that enhance worker dignity and inclusion. Charter, Innovation Resource Center for Human Resources. Retrieved from https://www.charterworks.com/content/files/2023/10/Charter_Playbook_AI_Worker_Inclusion-6.pdf

3 Jan Shelly Brown, Matthew Finney, Natasha Korgaonkar, Mark McMillan, and Chris Perkins. (2023 December 19). The impact of generative AI on Black communities. McKinsey & Company. Retrieved from https://www.mckinsey.com/bem/our-insights/the-impact-of-generative-ai-on-black-communities

TEACHING AND LEARNING IN THE ERA OF INFORMATION LITERACY AND GENERATIVE AI

Generative AI presents us with numerous areas of opportunity to transform the learning and achievement of students, including but not limited to:

- Personalized and adaptive teaching and learning. AI promises to create a customized — and therefore highly engaging — learning experience by adapting to a student's background and learning process in real time.
- Increasing the timeliness and frequency of contextualized feedback, giving students more opportunities to learn and improve their skills.
- Empowering educators to customize and design additional tools that utilize AI to improve the speed with which they accomplish routine tasks, freeing up time to engage and support their students.

The Vision 2030 for the California Community Colleges contains three strategic directions, one of those three strategic directions concerns generative AI and the Future of Learning.[1] More specifically the plan details actions which will actively engage the field in the work of applying generative AI to realizing the future of teaching and learning:

A. Improve the student experience with the use of generative AI as well as smart analytics applied to the "big data" systems (e.g. Student Information System, Learning Management System)

B. Modernize system technology infrastructure to support online education delivery and faculty.

C. Develop an analysis of the impact of generative AI technology and its potential implications for teaching and learning, and take the necessary action in policy reform, systems development, and practices to advance success, access and support for our students.

In 2023-24 the Chancellor's Office led a number of initiatives to engage the field in dialogue, thinking, and experimentation with AI. Key activities included the following:

- Providing access for over 1,800 participants to the **2023-24 AI webinar** series in partnership with ASCCC and FACCC.
  - The series will have six more webinars in 2024-25.
- Forming the **AI Council** with 25 members representing a diverse set of system stakeholders.
- Establishing an **AI community of practice on the Vision Resource Center.**
- Creating an **AI listserv** and Glossary of **AI Terms** to facilitate sharing relevant information on AI.
- Developing a **Generative AI and the Future of Learning website** for a fall 2024 launch.
- Engaging in **AI conferences and events**, making critical connections between Chancellor's Office staff, partners and AI leaders across the state and nation.
- Conducting five **live polls** conducted during webinars (with over 800 responses).
- Partnering with the Workforce and Economic Development Regional Consortium in the development and promotion of a **statewide AI survey (2,000+ responses)**.
- Partnering with Foothill-De Anza and the Foundation to hold the

1 Strategic Directions. (2023). Vision 2023. California Community Colleges. Retrieved from webpage. (Note: The other two strategic directions in Vision 2030 are equitable baccalaureate attainment and equitable workforce and economic development)

system's first **Futures Summit** in September 2024: "Futures Summit 2024 | AI: Powering Tomorrow's Workforce".

Higher education is still in an early stage of assessment and adoption of AI tools, services, and platforms. An April 2024 survey of 278 higher education members of EDUCAUSE community groups found that most respondents (55%) do not currently provide access to any of the most common AI tools or services to students, faculty or staff. Nor are most training AI tools with institutional data (just 9%) or integrating AI products (just 6%). While only a third of institutions provide licenses for AI tools, such as a ChatGPT, this is still the most common type of AI resource provided. When contemplating the cost of providing licenses to all staff, faculty, and students in the California Community Colleges, it is worth bearing in mind that the going retail rate for access to the premium features of ChatGPT (for example) is twenty dollars per user, per month. To provide licenses for all active students and employees across the California community colleges to ChatGPT Plus would cost approximately forty million dollars per month at the retail rate. As of May 2024, OpenAI has developed nonprofit pricing models that we are currently exploring as an option for equitable access to premium generative AI tools and models at scale.[1] We must do more to increase access to high quality AI tools for all faculty, staff, and students.

Designing the Future of Teaching and Learning

The rapid pace of technological innovation, particularly in the areas of artificial intelligence, machine learning, and generative AI, has the potential to fundamentally transform how we think about teaching and learning across the California community colleges.

It is of critical importance that we respond to the challenges and opportunities of AI for teaching and learning in real time across the following six domains:

Provide foundational learning and professional development centered on AI for everyone in the California community colleges ecosystem, including Board members across all districts. In spring 2024 the AI Council developed an outline of Potential Foundational Learning Topics in AI (See Appendix A).

Initiate and support a fundamental rethinking of teaching and learning to incorporate AI, information literacy, and AI awareness. This work must be faculty-centered and driven by the interest of faculty and support staff. Efforts in this domain include preparing and supporting AI-ready students so that they learn how to use AI appropriately to succeed in college and as members of an AI-powered workforce. One way to do this is by sharing and promoting ASCCC guidelines on incorporating AI into the syllabus (see Appendix B). Part of the transformation will include building information literacy and AI learning objectives and assignments into course objectives, syllabi, and lesson plans. We need to work together in partnership across the system to evaluate the potential of new technologies to enhance teaching and learning, including technologies such as: AI class assistants for assessment and feedback; Personalized, proactive, support that complements case management, educational planning/scheduling, and accessing financial aid; AI that manages degree and transfer pathways, optimizing schedules based on students' progress through their programs of study; Accessing AI-enhanced analytics to provide feedback and guidance on how to reach goals of increasing learning, completion, access, and equity; Coordinating and sharing options for discipline-specific use of AI for teaching and learning; and Making informed decisions and "being architects" in an evolving world of AI, technology landscapes and regulations.

Develop a communications strategy to accelerate AI integration. The Chancellor's Office and ASCCC will develop a phased communications strategy for AI implications for Teaching and Learning.

Coordinate with other AI activities and work streams, such as the development of guidance principles and policies, the analysis and selection of vendors, and the adoption of AI on industry segments. Teaching and learning cannot be re-imagined in a vacuum. The identification of key partners to develop pilots, as well as the fostering of demonstration projects to prove concepts, will be important as we begin transforming teaching and learning in an AI-enabled world. Key coordination strategies include Involving students in planning, executing and evaluating pilots; Identifying how AI and other emergent technologies are impacting industries; Authorizing and expanding the new disciplines, expertise, and programs needed to support industry and provide our students pathways to growth careers and well-paying jobs; and

1 Introducing OpenAI for Nonprofits. (2024 May 30). Open AI. https://openai.com/index/introducing-openai-for-nonprofits/

Strategizing on the best techniques to bring everyone along.

Support and focus on cultural and institutional change, including how to build participation, collaboration, and buy-in with various internal and external stakeholders and partners.

Invest in and enable a high-quality, equitable learning environment. We must design a modern data infrastructure that is efficient, capable, secure, and reliable. Our system will identify strategies for providing access to premier AI tools for students, faculty, administrators and classified professionals.

We have an opportunity and a collective responsibility to re-imagine the art of the possible to fundamentally rethink the pedagogy of instruction; to redefine student support; develop new or update existing growth models; and optimize outcomes for our students, faculty, administrators, and staff.

SUPPORTING THE COMMUNITY COLLEGE WORKFORCE

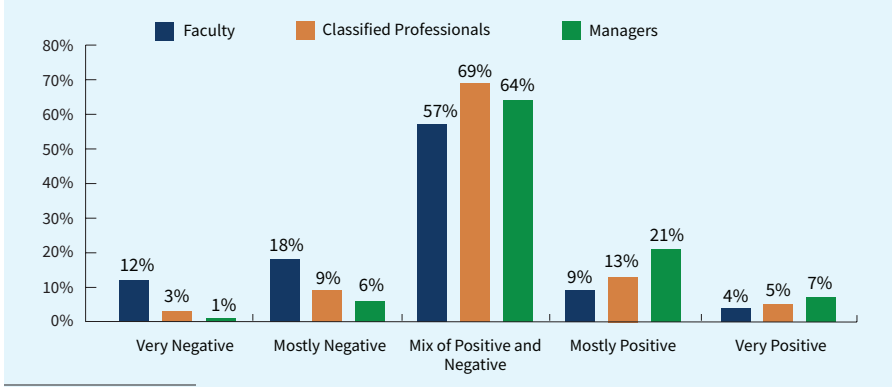
In this section we consider the impact of AI and Generative AI on the California community college workforce, drawing from listening sessions with AI Council members representing their respective constituency groups, the results of the February 26, 2024 survey of classified professionals, and the results from the statewide survey developed and administered by the Workforce and Economic Development Regional Consortia with the support of the Chancellor's Office in spring 2024. A summary of this information is presented here.[1]

The statewide survey yielded a substantial response, with nearly 2,800 participants representing 125 institutions as of July 1, 2024. The respondents comprised a diverse group, with 52% being faculty members, 16% administrators and managers, and 30% classified professionals. This extensive and varied participation underscores the widespread interest and engagement across different roles within the educational community. (See Appendix D - Exploration of Statewide Survey)

Key Findings

The listening sessions and survey responses revealed cautious optimism but also shared concerns among administrators, classified professionals and faculty. While many are enthusiastic and optimistic about the promise and potential of generative AI, just as many express concerns, as shown in the figure below.

Figure 2. Expected Impact of AI on Education



1 For additional information see Appendix D.

Top areas of concern

In the spring 2024 survey, the top area of concern for faculty regarding AI was academic integrity, 62% of faculty were extremely concerned about students using AI to cheat or violate academic integrity. The top concern for administrators and classified professionals was the trustworthiness of AI models and tools with 42% and 49%, respectively, indicating that they were extremely concerned about the trustworthiness of AI. Trustworthiness was the second highest area of concern for faculty with 57% indicating that they were extremely concerned about this issue.

Listening sessions and open text responses on surveys provided additional nuance to the concerns held about the impact of AI on the campus workforce. Many expressed a concern that generative AI could be used to replace faculty and other employees. The energy intensive nature of generative AI spurred concerns that while AI may offer some environmental benefits, it also presents significant challenges that necessitate cautious consideration. Participants also indicated a need for clear, informed policy guidance including consideration of how AI may change working conditions, job duties and descriptions. There was a call for iterative review of the impacts of AI to thoughtfully adjust implementation and use moving forward. Finally, there was a clear need expressed for ongoing professional development around how to use AI tools as well as ongoing discovery and evolution of practice and policy to ensure fidelity to our values and principles.

To obtain a finer-grained understanding of professional development needs, we further disaggregated the data from the statewide AI survey by respondent role: faculty (n = 1,380); classified professionals (n = 791); and administrators/managers (n = 429). Of note, all three groups have highlighted "Instruction on ethical, safe uses of AI", "Using AI tools", and "Long-term impacts of AI on society" as among their top five areas of interest (see Appendix D for figures and additional survey details).

PROFESSIONAL DEVELOPMENT AND AI

The Chancellor's Office is significantly supporting our commitment to Artificial Intelligence Professional Development (AI PD). Through collaborative design and planning with constituent groups, as well as partnerships with state-level and public agencies, a comprehensive approach is underway to meet system needs to further student equity, success, and economic mobility in our rapidly changing world and evolving job market. Based on the needs identified in our statewide professional development survey, as well as emergent partnerships with state agencies and industry, the key areas of focus for AI PD include System-Level Engagement, Faculty-Led Teaching and Learning Support, Intersegmental and National Education Partnerships, Workforce Development, and State Agency, Industry and Vendor Partnerships.

System-Level Engagement

Throughout 2023-2024, the Chancellor's Office has supported system-wide professional development and an active community of practice through the AI Council, system webinars, an AI listserv, an emergent Chancellor's Office website, conference and event presentations, and a variety of programming available in the Vision Resource Center (VRC). In 2024-2025, we will continue building on these efforts, and our system webinars and VRC will continue to support California community college employees.

In partnership with FACCC and ASCCC, the 2023-2024 **System Webinar AI series** included the following presentations: Introduction to Generative AI, Generative AI as a Tool for Teaching and Learning, Generative AI as a General Productivity Booster, AI-Enhanced Analytics and Learning Platforms. Future foundational learning webinars will be supported in 2024-2025, with a continued focus on providing meaningful, foundational AI learning, which may include topics such as AI basics and tool utilization, the ethical and safe uses of AI, the long-term impacts of AI on work and society, the development of AI policies, and the design of AI-enabled learning environments.

The **Vision Resource Center (VRC)** is an online education platform available to all system employees, and it provides access to thousands of asynchronous training modules, webinar series, and topic-based communities that facilitate meaningful connections and conversations. Several high-quality AI training and professional development opportunities meet the current interests of the statewide survey. System employees can access a playlist of AI modules in the VRC, which include six courses and a webinar series introducing foundational concepts of Generative AI.

Faculty-Led Teaching and Learning Support

Collaboration with and support of faculty leadership to develop, promote, and offer high-quality AI PD is a central focus–especially in preparing and enabling faculty to effectively utilize and incorporate AI into teaching and learning environments. The ASCCC and Chancellor's Office have formed an AI-centered **Faculty Professional Development Working Group** to inform the development of an AI professional development plan for 2024-2025 and 2025-2026. Meetings began in July 2024, and the group is addressing the needs identified from the AI Council and statewide survey related to faculty AI practices.

One other notable system-level faculty partnership aiming to provide tailored, system-specific professional development is with CVC@One. With system faculty leading and developing the content, **CVC@ONE** is providing system-wide teaching and learning AI PD for faculty. In spring 2024, two webinars provided space for faculty engagement, including "Course Mapping with AI: Leveraging Tools for Alignment" and "Artificial Intelligence (AI) as a Partner in the Learning Process."[1] CVC@One faculty is creating a self-paced course—based on the aforementioned webinars–for a Fall 2024 rollout. A facilitated course on AI will be launched in 2025.[2]

1 See the CVC@ONE Spring 2024 Webinar Series Schedule, as well as the webinar resources: "Course Mapping with AI: Leveraging Tools for Alignment" (recording) and "Artificial Intelligence (AI) as a Partner in the Learning Process" (recording).

2 CVC@One course materials will be open-licensed, meaning they can be modified and tailored to specifically address needs across our colleges for faculty, classified professionals, and administrators, as well as inform college policies and college operations. A current course list is here: https://onlinenetworkofeducators.org/course-cards/.

Intersegmental and National Education Partnerships

Several intersegmental and national teaching and learning professional development partnership projects are emerging, including the **Carnegie Mellon University's Open Learning Initiative Cross-System AI Faculty Learning Partnership (Demonstration Project)**. This national project aims to establish a free, scaled pathway on Carnegie Mellon University's Open Learning Initiative for faculty learning about AI and effective educational practices. Instructors from 2-year institutions (California Community Colleges; State University of New York; and HBCU member institutions of the United Negro College Fund) will engage in knowledge sharing and co-design instructional materials. Efforts will also include developing Courseware Modules on AI in collaboration with subject matter experts, launching a digital Professional Development Credential aligned with partner requirements, and conducting evaluation efforts to assess impact and offer recommendations for future planning. The modules will be open-licensed and free to system-wide faculty when completed. This project is primarily funded by Axim Collaborative (Harvard and MIT), with faculty-specific funding by the Chancellor's Office.[1]

Beginning in spring 2024, the California Community Colleges, California State University (CSU) and University of California (UC) systems began meeting to establish an **Intersegmental Teaching and Learning Center (TLC)**. This group of intersegmental faculty and administrators is working through design, planning, and concept sessions for a joint initiative to grow capacity for DEIA and enhance the professionalization of teaching and learning across systems.

California Learning Labs is incentivizing faculty from California's public higher education institutions to lead in the constructive development of AI use, understanding, and capability to enhance teaching and learning and close equity gaps among students via their **AI Fast Challenge, Grand Challenge, and AI Faculty Innovators-in-Residence Strategic Teams (AI FIRST)** programs. The AI Grand Challenge supports large-scale, faculty-led AI teaching and learning innovations that foster intersegmental collaboration among institutions across California higher education systems. The AI FAST Challenge supports nimble, innovative research and development of AI teaching and learning projects by individual faculty or institutions.[2] The Faculty Innovators-in-Residence Strategy Team (FIRST) supports UC, CSU and California Community Colleges faculty members to develop AI-related resources, facilitate thought-provoking and relevant commentary about AI, lead the development and facilitation of AI Learning Communities, form working groups that will help develop AI-related policy guidance and recommendations, and provide grants assistance.

UC San Diego is developing the **SmartLearning Hub**, a system that enables instructors to generate AI-based tutors based on a specification of content, learning activities and assessments. These AI-based tutors can offer rich, interactive and personalized learning experiences—especially for students in large, lecture-based courses that characterize early STEM coursework. The UC San Diego team is partnering with faculty at Palomar College, El Camino College, San Diego City College, and UC Santa Cruz that traverse biology, computer science and the science of learning to deploy and provide feedback throughout the development, piloting and evaluation phases.

Workforce Development and Curricular Design

Our system AI PD efforts are also focused on empowering educators with knowledge and skills to integrate AI into the curriculum effectively and to design AI-informed educational pathways that translate into student employment and integrate into workforce needs. One notable space where this work is emerging is the **California Community Colleges AI Consortium (CCCAIC)**, which includes 17 member colleges, is a statewide initiative created by faculty to connect across California community colleges and to collaboratively develop innovative AI curricula by sharing resources, expertise, experiences, and professional development in the fast-advanced fields of artificial intelligence in education. The CCCAIC aims to collaborate with state education agencies, academic institutions, and industry partners to support the thriving AI activities at California community colleges and to bring an interdisciplinary, inclusive and equitable AI education to students.

1 The goals of Carnegie Mellon University's Open Learning Initiative (OLI) are the application of learning science for evidence-based instruction, improved student outcomes from nonprofit higher education, and improved learning and teaching through science.

2 For more information on Learning Lab's AI Challenge, see https://calearninglab.org/ai-challenge/.

Our **Regions at Work** series is also workforce development and professional development focused. The series has proposed an "**AI Edition: Mapping Implications Across Industry Sectors.**" In 2024-2025, a three-day working institute will enable faculty and administrative staff to develop networks within their respective industry sectors and academic disciplines–as well as to establish a baseline understanding of AI, its implications, and future opportunities. Participants will identify the current and future impacts of AI on their industries and disciplines and develop a framework across multiple colleges and regions. Teams will establish ongoing professional development plans for faculty and staff, and they will address the key question: "What structures can we put in place now to support, maintain and prepare us for an iterative and equitable approach to AI over time?"[1]

State Agency, Industry and Vendor Partnerships

Partnerships are at the center of our AI PD work. The California Community Colleges Chancellor's Office is currently collaborating with the Labor and Workforce Development Agency, in partnership with the Governor's Office, to identify ways to support AI Professional Development across the state's workforce and economic development ecosystem. For example, the Chancellor's Office is collaborating with California Government Operations to support the offering of an **AI 101 Literacy course** as part of California's Generative AI training, entitled "**Responsible AI for Public Professionals.**" The course is designed to provide individuals with a comprehensive foundation in Artificial Intelligence concepts and terminology, including understanding machine learning terminology, AI capabilities, appropriate use cases, limitations, potential biases, different AI types, maintaining data quality and the importance of data-centric AI. The Chancellor's Office has been included in the beta testing phase with our employees in early July, and the planned launch date for the course is slated for late July.

Other emergent opportunities include partnerships with industry and vendors. A **Google Data Analytics Certification Project**, which is built through a **partnership with Stanford and the Bay Area Community Colleges Consortium**. San Jose City College has launched an innovative Business Data Analytics Certificate program, enabling students to complete certificate requirements in a single semester, efficiently preparing them for rapid workforce entry. The curriculum comprises four 3-unit courses, with the initial two courses—Fundamentals of Business and Data Analytics (CIS-120) and SQL for Data Analytics (CIS-122)—leveraging Google's Data Analytics courses hosted on Coursera. This strategic collaboration ensures students receive industry-relevant education aligned with current market demands. Next steps include supporting a dramatic expansion of Data Analytics and AI course offerings across the system, working with other tech companies to include industry-recognized certifications, and building strategic partnerships with employers to increase apprenticeships and job placement.

A key effort in healthcare will be the establishment of a **Nursing Immersive Technology pilot**. To address the critical nursing shortage in the state, the Vision 2030 Associate Degree in Nursing (ADN) Expansion demonstration project aims to scale successful models that significantly increase the number of ADN graduates at California community colleges. The project will establish a statewide blueprint to boost ADN degree production, emphasizing collaboration with regulatory and employer partners and implementing a multifaceted set of key strategies designed to expand ADN program capacities. Central to this initiative are investments in simulation labs and the use of immersive technology. The Workforce and Economic Development Division is currently in discussions with several prominent simulation development firms to understand the specific needs of colleges in the healthcare space. This includes initial discussions with Cabrillo College's nursing program, which has secured a California Apprenticeship Initiative (CAI) grant to launch their immersive technology pilot.

1 A proposed agenda can be found here for the Regions at Work - AI Edition https://docs.google.com/document/d/1xmyX_HMbKoZ76VfHqACYC8AgVJvX2sla1XiHJVI2Nmk/.

SUMMARY OF HUMANS PRINCIPLES

A **HUMANS-centered approach to adopting and using AI and GenAI** will allow us to guard against the negative and undesirable aspects of AI and GenAI while building out and supporting the positive uses of AI and GenAI that improve equitable student support, access, and success and drive operational efficiencies. This framework establishes a strong foundation for deploying AI and Generative AI technology in education, emphasizing ethical considerations, student well-being , privacy protection, fairness, transparency and accountability. By adhering to these fundamental values and guiding principles, California community colleges can ensure that AI technology enhances learning experiences and enables student success, while prioritizing the rights and safety of students and those supporting them.

The HUMANS framework for assessing the appropriateness of AI and GenAI technology for students is grounded upon a set of fundamental values that speaks to the impact of AI and GenAI on faculty, administrators and staff:

- Provide robust professional development and support for educators and administrators in understanding and integrating AI into educational and operational practices.
- Evaluate the impact of AI and GenAI on faculty and staff positions and develop professional development plans to enable employees to elevate and shift their work to higher-level tasks requiring a person.
- Educate stakeholders on the unique aspects and implications of Generative AI compared to other types of AI.
- Address societal biases and promote equity in AI inputs, outputs, and products.
- Foster public-private partnerships to ensure equitable access to AI tools, training and resources.
- Integrate under-resourced districts and colleges into core decision making, pilot testing, and implementation to close rather than widen the digital divide.
- Establish guidelines and standards for the ethical and responsible use of AI in educational contexts.
- Encourage ongoing research and evaluation to understand the impacts of AI on education and workforce dynamics.
- Faculty, staff, administrators and students should receive training and professional development in media and information literacy to enable them to identify and better evaluate and assess materials developed by AI and GenAI.

The fundamental values listed above guide provide the framework for the guiding principles below:[1]

Human-Centered Approach – Students, faculty, staff and administrators should be able to opt out, where appropriate, and have access to a person who can quickly consider and remedy problems they encounter. Ensure there are humans in the loop when capabilities are designed, tested and used to achieve successful outcomes.

Universal Support – Students, faculty, staff and administrators should have equitable access to tools, training and solutions that minimize bias and improve outcomes.

Managed Privacy Controls – Empower students, faculty, staff and administrators to have agency over how data about them is collected and used and set parameters that shield them from abusive data practices via built-in protections.

Algorithmic Discrimination Protections – Students, faculty, staff and administrators should not face discrimination by algorithms and systems

1 The HUMANS principles align well with the five principles identified in the recent report from the National Education Association's AI task force (Educators Must Remain at the Center of Education; Evidence-based AI Technology Must Enhance the Educational Experience; Ethical Development and Use of AI Technology and Strong Data Protection Practices; Equitable Access to and Use of AI tools is Ensured; and AI Literacy and Agency). V. Five Principles for the Use of Artificial Intelligence in Education | NEA (See Appendix C)

should be designed and used in an equitable way.

Notice and Explanation – Students, faculty, staff and administrators should know that an automated system is being used and understand how and why it contributes to outcomes that impact them.

Safety and Security – Students, faculty, staff and administrators should be protected from unsafe or ineffective systems.

STRATEGIC TECHNOLOGY PARTNERSHIPS, RESEARCH, AND DEVELOPMENT

Application of the HUMANS principles to vendor vetting is an important element of selecting tools, projects, and programs for piloting and evaluation. The principles have been embedded in a vetting rubric (see Appendix E). In this section we take a closer look at four examples of promising AI projects that are in various stages of development.

UC Santa Cruz Partnership: Technology + Humanities Integrated Knowledge (THINK). Faculty from UC Santa Cruz have proposed to develop, launch, and evaluate "Technology + Humanities Integrated Knowledge (THINK)," a new curriculum designed to equip undergraduate and early graduate students with the practical skills and critical perspectives needed to engage with AI technologies in transformative ways and to critically navigate an AI-driven future. Participants will become proficient in using AI for cutting-edge research methods like data mining, classification, simulation and translation, while developing a deep understanding of the social and historical dimensions of these tools. This dual training will empower them to both identify new pitfalls and potentials of AI, and to effectively communicate these issues to technologists and policymakers. The modules will be shared with partners at the Bay Area Community College Consortium (BACCC), who will pilot and critique the modules so that we can refine them for wider distribution. Their aim is to reach 10 to 20 community college instructors and at least 1,000 students, and then deploy their modules and learning at scale. See the History Lens Prompt Guide for an excellent example of the work UCSC is doing and sharing in this area.[1]

Cali/Mainstay Financial Aid/California Dream Act Application Demonstration Project. The California Student Aid Commission, in partnership with Mainstay, is launching an innovative chatbot pilot, dubbed "Cali,"[2] to support students in completing financial aid applications and navigating basic needs resources at California community colleges. This AI-powered coach will be available to students starting in the fall 2024 term at three participating colleges: Cosumnes River College, a Los Angeles Community College District institution and a San Bernardino Community College District college.

These colleges were selected due to their strong leadership, diverse student bodies, and geographic distribution across the state. The pilot will focus on a cohort of first-time, first-year students who will work with Cali to navigate the financial aid process and access basic needs resources. The chatbot assists students with:

- Completing the Free Application for Federal Student Aid (FAFSA) or California Dream Act Application (CADAA)
- Filing for CalFresh benefits
- Accessing local campus resources for basic needs, such as food pantries, transportation vouchers, and other support services.

The chatbot will be available 24/7 for student communication. Funding for this community college pilot has been secured through a grant from the College Futures Foundation, ensuring that students can access these services at no cost.

Application Fraud Demonstration Project. Foothill-De Anza Community College District and West Valley–Mission Community College District are currently in a beta partnership with N2N Services to deploy the Lightleap.ai platform, an AI/Machine Learning based approach to identifying fraudulent CCCApply admissions applications, course registrations, and financial aid activities. This AI-powered intelligent and technology-driven solution integrates with N2N's Illuminateapp.com and aims to distinguish between genuine applicants and fraudulent ones using an iterative analysis model that analyzes key data and behavioral elements

1 History Lens Prompt Guide: https://docs.google.com/document/d/1tyC5EKN22-86Vz9TEDyGuMuyP-tYi7duatQOuK7aEEU/edit#heading=h.x13iji742wyz

2 https://www.csac.ca.gov/cali

through supervised learning, clustering, and predictive analytics. For both districts, the promise is to enhance security and operational efficiencies that allow them to provide application, enrollment, and financial aid integrity, safeguarding against potential financial and reputational risks. The Lightleap.ai fraudulent detection application programming interface (API) will be in production for fall 2024 registration as part of the beta project. This partnership brings the potential for a scalable AI-based fraud detection solution for the California Community Colleges.

DIGITAL CENTER FOR INNOVATION, TRANSFORMATION, AND EQUITY

The rapid development of advanced technologies such as AI is changing educational content, delivery, and administration. Given that the pace of innovation is only likely to accelerate, the California community colleges must develop greater capacity to innovate and adapt to prepare students for success in the 21st Century economy. To accomplish this, the Chancellor proposes the establishment of a Digital Center for Innovation, Transformation and Equity for the benefit of all students, faculty, staff and administrators within the community college system by advancing the objectives and actions of Vision 2030.

The Digital Center for Innovation, Transformation and Equity (DCITE or Digital Center) will allow the system to be nimble in its pursuit of innovation and excellence. A core element of DCITE is prototyping, piloting, and evaluating technological innovation for the purpose of implementing and scaling effective partnerships, strategies, technologies and practices across California community colleges. The Digital Center will ensure timely and equitable student, faculty, staff and administrative access to technological supports that eliminate barriers and advance opportunities for student success.

The Digital Center will provide a nexus for the work of evaluating new technologies and technology partners for their impact on student learning, cost-effectiveness, and congruence with the values and principles of the California community colleges. By leveraging economies of scale, we will be able to build system-wide data sharing capacity with attention to data integrity, privacy, and security. The Digital Center will be at the forefront of evaluating artificial intelligence and other advanced technologies so that we can act ethically and in accordance with our principles, giving due consideration to potential impacts on academic freedom and integrity, pedagogy, workforce opportunity, privacy, energy and water consumption, labor dislocation and cost.

CONCLUSION: THE PATH TO AI EMPOWERMENT

To realize the Vision 2030's strategic pathway to an AI empowered future for the California Community Colleges, we must invest in foundational capabilities that ensure we have timely access to high quality, well-documented data. Currently, the California Community Colleges have invested in a demonstration project that is developing those capabilities via the **Common Cloud Data Platform (CCDP)**. Additional investments as outlined in the 2022 and 2023 California Community Colleges State Budget Priorities will bring the benefits of the CCDP to additional districts as well as further expanding its capabilities. The CCDP lays the groundwork for the more comprehensive and ultimately more sustainable vision of the **Statewide Common Technology Project (SCTP)**, which will allow us to foster innovation, leverage advances in technology, address changes in regulatory frameworks, and most importantly create better outcomes for our students and our workforce.

The initial investment in demonstration projects is not enough. Every student in our state deserves secure, privacy-protected high-quality AI tools that support equity (Case for Change: California Community Colleges Common ERP, January 2024). To achieve this vision, we need to unify our technology "... to build institutional resilience, provide a uniform experience and equitably support all students statewide in reaching their learning goals." An essential building block is focusing on our data – the data we create, the data we collect, and the data we rely on. Good, equitable decisions start with data integrity, meaning the accuracy, completeness, and quality of data maintained over time.

The case for investing in improved data infrastructure, data management, data security and data governance can be summarized as follows:

Data is an Asset. Our data is a valuable enterprise asset that can help us meaningfully advance our mission. We need to organize and optimize our data to provide a cohesive and coherent student and staff experience, to establish strong data governance and data management practices, and to prevent bias, be diverse, and be inclusive in everyday data management and governance.

Improved Data Infrastructure Can Lead to Economic Mobility. Our data infrastructure can increase educational access for low-income learners to enhance their socioeconomic mobility by developing a high-tech/high-touch system that can proactively take customized educational and training opportunities to them, including apprenticeships, work-based learning and incorporating Learning-Aligned Employment Programs.

An AI-Ready Technology Platform will Unlock New Possibilities in Teaching and Learning Environments and Experiences. AI-ready technology will open doors to an ever-growing suite of accessibility tools for educators and students alike—increasing adaptive teaching and learning, expanding the ability to provide crucial feedback to learners, and enhancing opportunities for students to learn and improve their skills.

Agility is Crucial. A modern, flexible data infrastructure will be responsive to technology developments, avoid vendor "lock in," and be able to meet evolving compliance requirements in data, privacy and AI legislation and regulations. It will also provide opportunities to influence policy on how best to incorporate data and AI technologies, as well as improve operations and service delivery.

Enabling AI at Scale: Good Data Management Enables More Reliable Outputs. AI models are only as good as the data they are trained on. Proper data management ensures that data are accurate, clean, and devoid of inconsistencies or anomalies that could mislead the models. With high-quality data, AI predictions, classifications, or other outputs are more likely to be reliable and actionable.

Investments in the Common Cloud Data Platform and the Statewide Common Technology Platform are investments that benefit each of our colleges, our workforce, and our students. These investments bring our data systems into the 21st century and position us for a promising tomorrow.

Conclusion

The integration of AI into various industries offers a unique opportunity not just to advance technology but to enhance workforce capabilities, making industries more efficient, innovative, and inclusive. By focusing on the positive impacts and proactively addressing potential challenges, the narrative surrounding AI can shift from one of apprehension to one of optimism. Embracing AI's potential allows for a future where technology and humanity collaborate to create a world that is not only more efficient but also more equitable and opportunity-rich for all. Like our private sector counterparts, our time is now for the entire California community colleges ecosystem to actively assess how, when and where to incorporate AI to shape the Future of Learning; maximize educational outcomes; improve student access, success and support; improve equity, reduce burdens for faculty, staff and administrators; and drive operational efficiencies.