**We Affirm, Resolved: In the United States, the benefits of the use of generative artificial intelligence in education outweigh the harms**

**C1) Accessibility**

**Students of disability struggle in learning**

Anne M. Hayes and Jennae **Bulat. 17** Research Triangle Park (NC): RTI Press; 2017 Jul. / no quasl / Disabilities Inclusive Education Systems and Policies Guide for Low- and Middle-Income Countries / <https://www.ncbi.nlm.nih.gov/books/NBK554622/#:~:text=Having%20a%20disability%20can%20be,countries%20with%20severely%20limited%20resources>.

**Having a disability can be one of the most marginalizing factors in a child’s life. In education, finding ways to meet the learning needs of students with disabilities can be challenging,** especially in schools, districts, regions, and countries with severely limited resources. Inclusive education—which fully engages all students, including students with disabilities or other learning challenges, in quality education—has proven particularly effective in helping all students learn, even **while challenges to implementing inclusive education systems remain.**

**Ai allows for better education and needs to be met**

By: Steve **Letizia**, Lead Client Solutions Specialist 20**25** The Role of AI in Special Education: Enhancing Support for Diverse Learners / Marquette University. Bachelor of Business Administration - BBA Marketing.

Marquette University. Business Administration and Management, General.

<https://www.gosolutions.com/resources/the-role-of-ai-in-special-education/#:~:text=Tailoring%20content%20delivery%3A%20For%20students,help%20bridge%20gaps%20in%20comprehension>.

**AI** certainly **offers** a range of tools and technologies that have the potential to transform how students learn and how teachers **support** them. **For special education specifically, where personalized learning and tailored interventions are critical, AI** **can provide significant** **benefits by streamlining processes, enhancing accessibility, and improving outcomes for students with diverse learning needs**. However, while AI brings promising advancements, it should be implemented carefully to ensure that human relationships, empathy, and professional judgment remain central to the educational process. This article explores the role of AI in special education, outlining its key contributions while discussing the need for a balanced, human-centered approach.

Customizing instruction: **AI-driven educational** platforms **can modify lessons and activities to align with a student’s specific learning style, pace, and abilities**. **For example, if a student with a learning disability struggles with a certain concept in math, the platform can provide additional practice at varying difficulty levels or deliver the material through a different medium, such as video or interactive simulations. Tailoring content delivery: For students with disabilities like dyslexia, ADHD, or autism**, **AI tools can present information in ways that accommodate their needs.** **Text-to-speech programs, visual aids, or interactive simulations can help bridge gaps in comprehension. The flexibility of AI allows educators to adjust how information is delivered based on the student’s preferred mode of learning. These AI-driven customizations create**

**I: Inclusivity**

**Gen ai is included within the IDEA act**

By Alan **Iny**  / March 06, 20**24** / MBA, management and social enterprise, Columbia Business School BS, honors, McGill University / To Drive Innovation with GenAI, Start by Questioning Your Assumptions / <https://www.bcg.com/publications/2024/driving-innovation-with-genai-and-doubt#:~:text=On%20the%20quest%20for%20innovation,member%E2%80%9D%20of%20an%20innovation%20team>.

**On the quest for innovation,** **Gen**erative **AI'**s most obvious **contribution is in idea generation**. Yet it can **play an** even more **important role in helping** organizations question their strategic assumptions. By bringing an outsider's perspective free of human biases, GenAI can be a valuable “member” of an innovation team.

**With ai in education, 7.5 million students with disabilities are currently helped**

Anna **Merod**  / dual bachelor's degree in Newspaper and Online Journalism at Syracuse / Published Jan. 15, 20**25** /Dive Brief Student, teacher AI use continued to climb in 2023-24 school year Some 39% of teachers reported regularly using detection tech to spot AI-related plagiarism, according to the Center for Democracy & Technology. Published Jan. 15, 2025 <https://nces.ed.gov/programs/coe/indicator/cgg/students-with-disabilities#:~:text=In%202022%E2%80%9323%2C%20the%20number,of%20all%20public%20school%20students.>.

**In 2022–23, the number of students ages 3–21 who received special education and/or related services under the Individuals with Disabilities Education Act (IDEA) was 7.5 million, or the equivalent of 15 percent of all public school students. Among students receiving special education and/or related services, the most common category of disability was specific learning disabilities (32 percent).**

**C2) Medical education**

**Surgical and medical errors are one of the leading deaths in the nation**

Gregory **Santos**; Mark W. **Jones** Last Update: May 29, 20**23.** Mark W. Jones is a Harvard University Graduate School of Education Graduated summa cum laude, with a major in Political Science and minors in Writing and Management. Gregory Santos is affiliated with Michigan State University .<https://www.ncbi.nlm.nih.gov/books/NBK592394/>)

**A surgical error is an unintentional, preventable injury** occurring in the perioperative period **that** is not considered a known acceptable risk of surgery and **could have been avoided by following appropriate** procedure-specific **training** **protocols**. Surgical errors are a type of medical error and include retained foreign bodies, mislabeled surgical specimens, and wrong-site, wrong-procedure, and wrong-patient errors (WSPEs). An analysis of these errors over the last few decades has revealed their cause is often multifactorial. However, miscommunication, unnecessary or emergent procedures, insufficient training, and provider burnout represent common causes of surgical error. **Medical errors pose a substantial challenge** to public health. The significance of medical errors first came to light in 1999. The Institute of Medicine published a report demonstrating nearly 100,000 deaths annually due to medical errors.[1] A 2013 literature review using **more recent evidence found** an alarming incidence of **up to 400,000 annual deaths from medical errors** in hospitalized patients.[2] In 2021, the Centers for Disease Control and Prevention (CDC) **recognized** medical error **as** the **fourth most common cause of death** based on reported mortality when including system errors in the analysis. While some human error is inevitable, the creation of modern healthcare systems designed to decrease the frequency and mitigate the adverse outcomes of these errors continues to evolve. Knowledge of medical errors and their associated definitions and principles promotes understanding of surgical errors.

**This is because due to poor education and training resources**

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**Gen Ai is being used as a solution**

David I. **Hindin** MD 20**25** Division of General Surgery, Department of Surgery, Stanford University, Stanford, CA, Center.<https://www.sciencedirect.com/science/article/pii/S0011384024002624>)

Generative AI for surgical videos Although the **development of gen**erative **AI based on surgical videos** has yet to be significantly explored, it could serve multiple purposes for surgical learners through several modalities. Similar to generative models for literature-based learning, AI tools with text-based output could see the seek to answer questions from learners. For example, an algorithm could utilize the database of surgical videos to answer, “In laparoscopic cholecystectomy, what is the next step after reaching the critical view of safety?” It could also provide captions for videos passed as input. Trends and common deviations from surgical procedures could also be identified to provide learners with the most relevant and up-to-date techniques. AI tools that produce video-based content could also create surgical videos with overlays catered to the learner's prompt. Querying the AI tool with “lateral pelvic lymph node dissection” could produce a video of the surgery with labels for learners to study. This type of algorithm could help learners find a video resource for surgeries more efficiently, without the need to search through multiple videos and resources. Virtual simulation tools Beyond the traditional apprenticeship model of training, **surgical education has begun to increasingly leverage simulation to build technical skills**.47 The various simulation types include bench-top models utilizing synthetic material or nonliving animal tissue, low-fidelity laparoscopic trainers like peg transfer, virtual reality laparoscopic trainers, virtual reality robotic trainers, and standardized patients.47 In a 2018 study, a laparoscopic box trainer was developed using an HD webcam, low-cost microprocessor, and an AI algorithm. The medical students and surgical residents who were recruited to regularly use the box trainer showed improvement of surgical dexterity, with 90% agreeing with its utility to increase confidence in practice and 95% finding the anatomy replication useful.48 However, the lack of head-to-head comparison with non-AI powered box trainers was a notable weakness of this study, and an opportunity for further research. **Potential AI tools could use real-world data to create realistic virtual surgical environments to simulate procedures**. Variations to the simulated scenario could be generated to the prompter's preferences: anatomical variations or tissue friability, among other factors. Based on the trainee's actions in the simulation, the **algorithm could provide real-time feedback through comparison with the gold-standard technique.** Additionally, identification of weaknesses **could lead to generated simulations tailored to the students’ needs.** If trained on high-quality data, AI has the potential to accelerate independent technical learning with surgical simulation. A set of training modules using the AI algorithms for learners to complete prior to upcoming surgeries could help ensure foundational technical knowledge prior to the OR.

**These benefits have been proven true with empirics**

Edward **Dominguez** **15** M.D., specializes in general and transplant-related infectious diseases. In his role as Medical Director, Organ Transplant Infectious Disease, Center..<https://pubmed.ncbi.nlm.nih.gov/25911460/>)

Objective: Failures in nontechnical skills (NTS) rather than technical expertise are frequently at the root of medical errors in the operating room (OR). NTS are the cognitive (decision making and situation awareness) and interpersonal (communication and teamwork) skills that are recognized but are not formally addressed in surgical training. The **purpose of the study was to examine** the **effect of simulation-based training** **(SBT) on NTS performance of surgical residents** during simulated laparoscopic cholecystectomy (LC). Setting: The study was performed in a simulated OR at the Center for Medical Education and Innovation at Riverside Methodist Hospital, Columbus, OH. The simulated OR was arranged with standard equipment for LC, a high-fidelity patient simulator, and a real OR team. Design: General surgical residents completed 2 identical SBT sessions. For each session, residents were briefed on the LC case, completed the case in the simulated OR, and debriefed their videotaped simulation performance with a content expert. The video recordings were reviewed and the residents' NTS were scored using a perioperative time-out checklist and an intraoperative checklist for LC by 4 raters who were blinded to both the residents' postgraduate year level and the order of the videotaped simulation sessions. Results: **Residents** **showed a significant improvement in completeness** of the perioperative time-out checklist from session 1 (mean score = 1.27 ± 1.00) to session 2 (mean score = 5.00 ± 1.28), p < 0.001. Residents' scores on the intraoperative checklist also improved from session 1 to session 2, p < 0.05. **Overall, residents felt that the simulation was a valuable teaching and training tool and recommend that it be incorporated into residency training.** Conclusion: **SBT appears to be an effective technique for improving NTS of surgical residents** during the perioperative and intraoperative phases of surgery. As surgical proficiency is 75% nontechnical and 25% technical, it could be **reasonably argued that improved NTS of surgeons could improve surgical outcomes.**

**I: Surgical errors wreck havoc**

Gregory **Santos**; Mark W. **Jones** Last Update: May 29, 20**23.** Mark W. Jones is a Harvard University Graduate School of Education Graduated summa cum laude, with a major in Political Science and minors in Writing and Management. Gregory Santos is affiliated with Michigan State University .<https://www.ncbi.nlm.nih.gov/books/NBK592394/>)

**Surgical errors** can **have** several **negative consequences for patients, including lengthier hospital stays, increased healthcare costs, and a higher risk of complications and mortality.** In addition to the direct impact on patients, surgical errors can also take a significant emotional and psychological toll on patients and their families. A rarely discussed aspect of surgical error is its effect on the clinician. For example, surgical errors that cause permanent disability or death of a patient can significantly harm the mental health, work performance, and interpersonal relationships of the clinician.[13]

**The rates are alarming**

**Gismondi n.d.** Study: Surgical errors may be profitable for hospitals Gismondi and associates .<https://www.gislaw.com/firm-articles/study-surgical-errors-may-be-profitable-for-hospitals/>)

Unfortunately, patients throughout Pennsylvania and elsewhere sometimes fall victim to medical mistakes. **According to American Medical News, preventable surgical errors occur** approximately **80 times per week.** This may seem like a source of pain for patients and embarrassment for health care providers and facilities. However, based on one study, surgical mistakes may also be a source of income for many hospitals.

**C3) Heart Disease**

**Hundreds of people die from cardiovascular health every year**

**NY DOH 24** Heart Disease and Stroke Prevention .<https://www.health.ny.gov/diseases/cardiovascular/heart_disease/#:~:text=About%20695%2C000%20people%20die%20of,1%20in%20every%205%20deaths.>) //Bellaire MC // Ben Williamson, Alex Molnar, and Faith Boninger March 5, 2024

About **695,000 people die of heart disease in the United States every year–that's 1 in every 5 deaths.**

**Low education attainment is linked with increased heart mortality rates**

**Quyyumi 19** (MD, Emory Clinical Cardiovascular Research Institute, Emory University School of Medicine Low Educational Attainment is a Predictor of Adverse Outcomes in Patients With Coronary Artery Disease PubMed Central.[https://pmc.ncbi.nlm.nih.gov/articles/PMC6755831/#:~:text=Clinical%20Perspective%20\*%20Low%20educational%20attainment%20is,angiography%20for%20evaluation%20of%20coronary%20artery%20disease.](https://pmc.ncbi.nlm.nih.gov/articles/PMC6755831/#:~:text=Clinical%20Perspective%20*%20Low%20educational%20attainment%20is,angiography%20for%20evaluation%20of%20coronary%20artery%20disease.)) //Bellaire MC // Arshed A Quyyumi ,2019 Sep 3

Adverse Cardiovascular Outcomes Patients who did not experience the primary outcome within 30 days of enrollment and had adjudicated outcomes data available for analysis were followed for a median duration of 4.2 [1.8–6.8] years. There were 1066 all‐cause deaths, 812 cardiovascular deaths/non‐fatal MI and 276 non‐fatal MI events. Older age, smoking, diabetes mellitus, hypertension, history of CAD, and Gensini score were directly associated; while BMI, left ventricular ejection fraction, eGFR, and estimated annual income were inversely associated with all‐cause mortality in study patients (Table S2).**Educational** **Attainment Level** and Adverse Outcomes Kaplan–Meier survival **curves** for the **association between EAL and all‐cause mortality** are shown in Figure 1 (Central Illustration). The **cumulative** survival for study participants decreased across categories of graduate, college, high school, and elementary/middle school education. A similar trend was observed for the secondary outcomes of cardiovascular death/non‐fatal MI and non‐fatal MI events (Figure 2A and 2B). In unadjusted Cox proportional hazards regression analyses, **patients with elementary/middle school, high school, or college education had a 104%, 57%, and 24% higher risk of all‐cause mortality** compared with those with graduate education, respectively. **Similar**ly, there was a **significantly higher hazard for** the secondary outcomes of **cardiovascular death**/non‐fatal MI and non‐fatal MI among those with elementary/middle school and high school education compared with graduate education level (Table 2).

**AI increases education attainment**

Isnaini Amirotun **Hanifah 24** recipient of the LPDP scholarship and Master of Educational Leadership at Monash University Williamson, (2024). “Evaluating the Impact of Artificial Intelligence-Based Learning Methods on Students' Motivation and Academic Achievement” Boulder, CO: National Education Policy Center.<https://journal.amorfati.id/index.php/postaxial/article/view/279/122>) //international Journal of Post Axial //Rizkyana Wahyu Laras Pertiwi1a\*, Laeli Umi Kulsum2b, Isnaini Amirotun Hanifah 09-01-2024

Moreover, the **results indicate that AI**-based  **learning methods have a demonstrable impact on students' academic achievement.** Analysis of standardized test scores and  **academic performance metrics showed improvements among students who participated in AI-enhanced learning activities** compared to their counterparts in traditional instructional settings. These findings suggest that AI technologies have the potential to facilitate deeper conceptual understanding, retention of information, and mastery of academic content, thereby enhancing overall learning outcomes.

**I: ai saves**

**Heightened Academic achievement leads to better graduation rates**

**Allensworth Clarke 24** Elaine Allensworth is the Lewis-Sebring Executive Director of the UChicago Consortium, where she has conducted research on educational policy and practice . Kallie Clark-Uribe is currently a doctoral student, and Institute of Educational Sciences Pre-doctoral Fellow at the University of Chicago' High School GPAs and ACT Scores as Predictors of College Completion: Examining Assumptions of College Completion: Examining AssumptionsFeature Articles<https://www.luminafoundation.org/wp-content/uploads/2020/01/high-school-gpas.pdf>) //Bellaire MC // Ben Williamson, Alex Molnar, and Faith Boninger March 5, 2024

We begin by simply showing college graduation rates by students’ ACT scores and HSGPA without additional control variables. As shown in Table 2, both show a relationship with college graduation controlling for the other; within any given row or column, the **graduation rate increases as the other metric of achievement goes up.** However, the incremental value of additional ACT points flattens out above scores of about 22 to 23 students with the same HSGPA.Table 3 displays coefficients from models predicting college graduation rates with HSGPAs. The odds ratios show the likelihood of graduating from college; students with a 3.0 to 3.25 HSGPA have fairly even odds (0.91), which gives them just under a 50–50 chance (48% probability), whereas **students with a HSGPA of 3.5 to 3.75** **are 3.6 times more likely to graduate as to not graduate** (odds of 3.65, or about 78% graduating and 22% not graduating). HSGPA has a strong relationship with college graduation in both the unconditional model and the model that controls for students’ backgrounds and college institutional variables, although the relationship is smaller once the control variables are introduced. The coefficients from the full model were converted into percentages and displayed graphically as the thick black line in the left panel of Figure 1. Across the range of HSGPAs, the probability of graduating from college ranges from 20% for students with HSGPAs less than 1.5 to about 80% for students with HSGPAs of 3.75 or higher after controlling for student backgrounds and college characteristics.

**Significant improvements are already being seen**

**Barron 23** I write the New York Today newsletter, a morning roundup of what’s happening in the city, for The New York Times.I’ve worked for The Times since a week after I graduated from college. I spent a year in the bureau in Albany, N.Y., and two as a national correspondent in Detroit. I wrote the moment-to-moment stories about the Sept. 11 attacks for NYTimes.com in 2001 and the lead stories on the Northeast blackout in 2003, Hurricane Irene in 2011 and Hurricane Sandy in 2012. I wrote the Coronavirus Update column for the print newspaper from 2020-21. .<https://www.nytimes.com/2023/09/20/nyregion/ai-john-jay-college.html>) Sept. 20, 2023 How A.I. Increased the Graduation Rate at John Jay College by 32 Points Software identified at-risk students, who were given extra help. Also, New London, Conn., hasn’t forgotten the traitor Benedict Arnold, 242 years later.

Dara Byrne was so surprised by the numbers on graduation rates that she triple-checked them. **In two years, the graduation rate among students** at John Jay College with enough credits to get their diplomas after one more year of study **had jumped 32 percentage points,** to 86 percent. “It was jaw-dropping,” she said. Byrne, then the associate provost, **credits** artificial intelligence — specifically, **A.I.-powered software** that analyzed things like whether students’ grades were slipping and whether they had signed up for courses that would give them enough credit hours to graduate.

**These increased education levels decrease risk of Cardiovascular Disease**

**VCU 15** Why Education Matters to Health: Exploring the Causes Center on Society and Health Center. / no quals <https://societyhealth.vcu.edu/work/the-projects/why-education-matters-to-health-exploring-the-causes.html#gsc.tab=0>) February 13, 2015

**Americans with more education live** longer, **healthier lives than those with fewer years of schooling** (see Issue Brief #1). But why does education matter so much to health? The links are complex—and tied closely to income and to the skills and opportunities that people have to lead healthy lives in their communities. How are health and education linked? There are three main connections:1 Education can create opportunities for better health Poor health can put educational attainment at risk (reverse causality) Conditions throughout people’s lives—beginning in early childhood—can affect both health and education This issue brief, created with support from the Robert Wood Johnson Foundation, provides an overview of what research shows about the links between education and health alongside the perspectives of residents of a disadvantaged urban community in Richmond, Virginia. These community researchers, members of our partnership, collaborate regularly with the Center on Society and Health’s research and policy activities to help us more fully understand the “real life” connections between community life and health outcomes. 1. The Health Benefits of Education Income and Resources “Being educated now means getting better employment, teaching our kids to be successful and just making a difference in, just in everyday life.” —Brenda Better jobs: In today’s knowledge economy, **an applicant with more education is more likely to** be employed and **land a job that provides health-promoting benefits** such as **health** **insurance**, paid leave, and retirement.5 Conversely, people with less education are more likely to work in high-risk occupations with few benefits. Higher earnings: Income has a major effect on health and **workers with more education tend to earn more money.**2 In 2012, the median wage for college graduates was more than twice that of high school dropouts and more than one and a half times higher than that of high school graduates.6 “Definitely having a good education and a good paying job can relieve a lot of mental stress.” —Chimere Resources for good health: **Families with higher incomes can more easily purchase healthy foods, have time to exercise regularly, and pay for health services** and transportation. Conversely, the job insecurity, low wages, and lack of assets associated with less education can make individuals and families more vulnerable during hard times—which can lead to poor nutrition, unstable housing, and unmet medical needs. Social and Psychological Benefits “So through school, we learn how to socially engage with other classmates. We learn how to engage with our teachers. How we speak to others and how we allow that to grow as we get older allows us to learn how to ask those questions when we're working within the healthcare system, when we're working with our doctor to understand what is going on with us.” —Chanel Reduced stress: People with more education—and thus higher incomes—are often spared the health-harming stresses that accompany prolonged social and economic hardship. **Those with less education often have fewer resources** (e.g., social support, sense of control over life, and high self-esteem) to buffer the effects of stress. Social and psychological skills: Education in school and other learning opportunities outside the classroom build skills and foster traits that are important throughout life and may be important to health, such as conscientiousness, perseverance, a sense of personal control, flexibility, the capacity for negotiation, and the ability to form relationships and establish social networks. These skills can help with a variety of life’s challenges—from work to family life—and with managing one’s health and navigating the health care system. Social networks: Educated adults tend to have larger social networks—and these connections bring access to financial, psychological, and emotional resources that may help reduce hardship and stress and improve health. “Being able to advocate and ask for what you want, helps to facilitate a healthier lifestyle. … If it's needing your community to have green spaces, have a park, a playground, have better trails within the community, advocating for that will help.” —Chanel Health Behavior Knowledge and skills: **In addition** to being prepared for better jobs, **people with more education are more likely to learn about healthy behaviors.** Educated patients may be more able to understand their health needs, follow instructions, advocate for themselves and their families, and communicate effectively with health providers.21

**Thus we affirm**

**C1**

**AI increases education attainment**

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**C2**

### **Answer: Students that want to cheat will, it doesn’t matter how.**

**Boudreau, Emily. “The Questionable Ethics of College Students.” Harvard GraduateSchool of Education, April 5, 2022, https://www.gse.harvard.edu/ideas/usable-knowledge/22/04/questionable-ethics-college-students. Accessed February 15,**

**2025. [Harvard graduate ]**

**Discuss the purpose and value of college. Recognize that students and faculty havedifferent “mental models” for the college experience. Faculty could help students reflecton the purpose of college and to think about how college can play an important role intheir lifetime, not just for getting that first job. Additionally, through these discussions,it’s possible that faculty will begin to understand the pressures students might feel,which could lead them to develop new and more relevant approaches to assessmentand instruction. Encourage ethical and responsible decision-making instead ofimposing limitations. “No matter what rules and regulations are put into place [to monitor cheating], students will always find a way around it,” says Fischman. Instead, the focus should be to encourage students to think through dilemmas and make the right choices independently. Cultivate a sense of belonging on campus. For manyschools, the necessary shift to remote and online learning was also coupled with a risein cheating. This may be, in part, because students lack a concrete tie to a community.**

**To cultivate a sense of responsibility towards a community — and a desire to actethically — students must first feel like they’re a part of it.**

### **Answer: The incidence of cheating hasn’t increased.**

**Prothero, Arianna. “New Data Reveal How Many Students Are Using AI to Cheat.”Education Week, April 25, 2024, https://www.edweek.org/technology/new-data-reveal-how-many-students-are-using-ai-to-cheat/2024/04. Accessed February15, 2025. / Texas-based reporter for Education Week covering technology and student health and well-being**

**These numbers have not changed much from when Turnitin released data in August of2023 about the first three months of the use of its detection tool, said the company’schief product officer, Annie Chechitelli. “We hit a steady state, and it hasn’t changeddramatically since then,” she said. “There are students who are leaning on AI too much.But it’s not pervasive. It wasn’t this, ‘the sky is falling.’” The fact that the number ofstudents using AI to complete their schoolwork hasn’t skyrocketed in the past yeardovetails with survey findings from Stanford University that were released inDecember. Researchers there polled students in 40 different high schools and found that the percentage of students who admitted to cheating has remained flat since the advent of ChatGPT and other readily available generative AI tools. For years before the release of ChatGPT, between 60 and 70 percent of students admitted to cheating, andthat remained the same in the 2023 surveys, the researchers said. Turnitin’s latest datarelease shows that in 11 percent of assignments run through its AI detection tool that atleast 20 percent of each assignment had evidence of AI use in the writing. In 3 percentof the assignments, each assignment was made up of 80 percent or more of AI writing,which tracks closely with what the company was seeing just 3 months after it launchedits AI detection tool.**

### **Turn: AI will help develop better students.**

**Karandish, David. “7 Benefits of AI in Education.” THE Journal, June 23, 2021,https://thejournal.com/Articles/2021/06/23/7-Benefits-of-AI-in-Education.aspx?Page=2. Accessed February 15, 2025. / worked in the tech sector for over 20 years, Founder & CEO of Capacity – an enterprise artificial intelligence SaaS company headquartered in St. Louis, MO. Capacity's secure, AI-native support automation platform helps teams do their best work. Prior to starting Capacity, David was the CEO of Answers Corp./**

**Personalization: Personalization is one of the biggest trends in education. With the use of AI, students now have a personalized approach to learning programs based on their own unique experiences and preferences. AI can adapt to each student’s level ofknowledge, speed of learning and desired goals so they’re getting the most out of theireducation. Plus, AI-powered solutions can analyze students’ previous learning histories,identify weaknesses and offer courses best suited for improvement, providing manyopportunities for a personalized learning experience. Tutoring: While it’s not uncommon for students to require extra help outside of the classroom, many teachers don’t have the free time for students after hours. AI tutors and chatbots are a perfect solution in these scenarios. While no chatbot can truly replace an educator, AI tools canhelp students sharpen their skills and improve weak spots outside of the classroom.They provide a one-on-one learning experience without having the teacher there toanswer questions at all hours of the day. In fact, an AI-powered chatbot can answer student questions at a response rate of 2.7 seconds. Quick responses: There is nothingmore frustrating than asking a question only to have it answered three days later.**

**Teachers and faculty are often bombarded with repetitive questions on a daily basis. AIcan help students find answers to their most commonly asked questions in secondsthrough support automation and conversational intelligence. Not only does this free up**

**a lot of time for educators, but it also helps students spend less time tracking downanswers or waiting for a response to their questions.**

**C3**

### **Answer: A new generative AI called Deep Seek uses a lot less energy.**

**Marshall, Christa. “‘Game changer’? What ‘DeepSeek’ AI means for electricity.” E&ENews by POLITICO, January 29, 2025, https://www.eenews.net/articles/game-changer-what-deepseek-ai-means-for-electricity/. Accessed February 14, 2025. / no quals, couldn't find the correct author online /**

**DeepSeek, which is owned by the Chinese stock trading firm High-Flyer, upended thetech world after releasing an app that rose to the top of the download charts of theApple store. It appeared to have similar functionality as OpenAI’s ChatGPT chatbot,which can do things like write poetry when queried. DeepSeek says its model uses roughly 10 to 40 times less energy than similar U.S. AI technology — a reduction that seemingly would sharply cut the need for energy-gobbling data centers. A Naturepaper this month also reported that DeepSeek required about 11 times less computingresources than a similar one from Meta. That indicates “it may be an order ofmagnitude more efficient,” said Jenkins.**

### **Answer: AI only uses a fraction of 2% of electricity production.**

**Garrison, Anna. “How Much Does AI Use Water and Energy? Unpacking the NegativeImpact of Chatbots.” Green Matters, January 10, 2025,https://www.greenmatters.com/big-impact/how-much-water-does-ai-use.Accessed February 14, 2025. / Anna is a staff writer based in the Hudson Valley. She enjoys comic books, vegetarianism, and thrifted denim jackets. /**

**A research study quantifying the carbon footprint of BLOOM determined that training aGenerative Pre-trained Transformer 3 (GPT-3) uses just under 1,300 megawatt hours(MWh) of electricity, which is the equivalent of energy for 130 homes, per the U.S.Energy Information Administration. Training a Generative Pre-trained Transformer 4(GPT-4), like ChatGPT, however, uses 50 times more electricity. Data from 2022 shows that the data center industry represents 2-3 percent of total global emissions, perElectronics Hub. However, it's anticipated this could dramatically increase in the future**

**— a report from January 2025 by the International Energy Agency (IEA) reveals that should demand for AI systems double in 2026, it would equal roughly the amount of electricity used by Japan.**

#### **Only a fraction of these data centers operate AI The Week UK 24**

UK, The Week. “The Data Centres That Power the Internet.” Theweek, The Week, 8 Sept. 2024, [theweek.com/tech/the-data-centres-that-power-the-internet](http://theweek.com/tech/the-data-centres-that-power-the-internet). Accessed 3 Mar. 2025.

[The Week UK: A weekly British news magazine founded in 1995 by Jolyon Connell, formerly of the right-of center Sunday Telegraph. Its main focus is news and commentary pertaining to important world events, as well as science, business and the arts]

**Data centres are the backbone of the internet and of much modern IT. They store, process, send and receive the data we produce and use. Each new development in IT** – such as the growth of social media, TV and music streaming, online gaming, online banking and cloud computing – **has led to the need for more data centres.**

### **Answer: China has already won the AI race**

**Kumar**, Bhaswar. “DeepSeek: Has China Won “AI War” against the US or Just the First Battle?” @Bsindia, Business Standard, 28 Jan. 20**25**, www.business-standard.com/external-affairs-defence-security/news/deepseek-has-china-won-ai-war-against-the-us-or-just-the-first-battle-125012800747\_1.html. [Bhaswar Kumar has over seven years of experience in journalism. He has written on India Inc, corporate governance, government policy, and economic data. Currently, he covers defence, security and geopolitics, focusing on defence procurement policies, defence and aerospace majors, and developments in India’s neighbourhood.] Accessed 5 Mar. 2025.IL

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According to the SCMP, Zhou Hongyi, co-founder, chairman, and chief executive of Chinese cybersecurity firm Qihoo 360, commended DeepSeek for having “upended the world” in a recent video posted on his Weibo account. This remark followed the start-up’s release of two advanced AI models, which were developed at a lower cost and with fewer computing resources compared to what major tech firms typically require for LLM development. In another widely circulated Weibo post, Feng Ji, founder and chief executive of Black Myth: Wukong developer Game Science, highlighted DeepSeek’s potential to reshape China’s “national fate” amid the ongoing tech rivalry with the US. Referring to the global attention garnered by DeepSeek, Zhou stated in his social media post: “**We should have confidence that China will** eventually **win the AI war with the US.” DeepSeek’s ability to develop powerful models at a fraction of the cost incurred by larger tech companies highlights the significant strides made by Chinese AI firms, even in the face of US sanctions that restrict access to advanced semiconductors crucial for training** LLMs, according to the SCMP report. LLMs are the foundational technology behind generative AI platforms like OpenAI’s ChatGPT. DeepSeek's breakthrough fuels market disruption and sparks US concerns "China is the only market that pursues LLM efficiency owing to chip constraints," Jefferies equity analyst Edison Lee reportedly wrote in a research note on Monday. He highlighted that the Trump administration is likely to recognise that imposing further restrictions could "force China to innovate faster". DeepSeek’s AI model breakthrough over the weekend triggered significant turbulence in the stock market on Monday, raising doubts about the US' technological dominance. Shares of major US AI and semiconductor companies plummeted amid fears that Chinese firms might surpass them in the high-stakes race for supremacy. For example, American semiconductor giant Nvidia saw its stock price plunge by as much as 25 per cent on Monday before closing at $118.58, marking a 16.8 per cent drop and wiping out nearly $600 billion in market value. Similarly, in Europe, tech stocks led market losses, with shares of chip equipment maker ASML Holding falling by more than 8 per cent.

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### **Answer: Education is essential to prevent climate change.**

**“Education is key to addressing climate change. “ United Nations, July 14, 2020,https://www.un.org/en/climatechange/climate-solutions/education-key-addressing-climate-change. Accessed February 14, 2025. / no quals /**

**Education is a critical agent in addressing the issue of climate change. The UNFramework Convention on Climate Change (UNFCCC) assigns responsibility to Parties of the Convention to undertake educational and public awareness campaigns on climate change, and to ensure public participation in programmes and information access onthe issue. Education can encourage people to change their attitudes and behavior; it also helps them to make informed decisions. In the classroom, young people can be taught the impact of global warming and learn how to adapt to climate change. Education empowers all people, but especially motivates the young to take action.Knowing the facts helps eliminate the fear of an issue which is frequently colored by doom and gloom in the public arena. In this context, UNICEF has tapped into the minds**

**and imaginations of children around the world to capture what it means to be a child growing up in the age of rapid climate change.**

### **Answer: Specifically, AI can help with climate change literacy.**

Atkins, Carmen, Gina Girgente, Manoochehr Shirzaei, & Junghwan Kim. “Generative AItools can enhance climate literacy but must be checked for biases andinaccuracies.” Communications Earth & Environment, April 30, 2024,https://www.nature.com/articles/s43247-024-01392-w. Accessed February 14,2025. / Virginia Tech, Department of Geosciences, Blacksburg, VA, USA

Virginia Tech, Virginia Tech National Security Institute, Blacksburg, USA /

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In the face of climate change, climate literacy is becoming increasingly important. With wide access to generative AI tools, such as OpenAI’s ChatGPT, we explore the potential of AI platforms for ordinary citizens asking climate literacy questions. Here,we focus on a global scale and collect responses from ChatGPT (GPT-3.5 and GPT-4) on climate change-related hazard prompts over multiple iterations by utilizing the OpenAI’sAPI and comparing the results with credible hazard risk indices. We find a general sense of agreement in comparisons and consistency in ChatGPT over the iterations. GPT-4 displayed fewer errors than GPT-3.5. Generative AI tools may be used in climate literacy, a timely topic of importance, but must be scrutinized for potential biases and inaccuracies moving forward and considered in a social context. Future work should identify and disseminate best practices for optimal use across various generative AI

tools.

**Our Case:**

**C1:**

### **Answer: AI bias is being solved for now**

**Zewe**, Adam. “Researchers Reduce Bias in AI Models While Preserving or Improving Accuracy.” MIT News | Massachusetts Institute of Technology, Dec. 20**24,** news.mit.edu/2024/researchers-reduce-bias-ai-models-while-preserving-improving-accuracy-1211. Accessed 20 Mar. 2025. / Adam Zewe is a writer for Massachusetts Institute of Technology, covering the electrical engineering and computer science beat in the MIT News Office. /

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To improve outcomes, engineers can try balancing the training dataset by removing data points until all subgroups are represented equally. While dataset balancing is promising, it often requires removing large amount of data, hurting the model’s overall performance. **MIT researchers developed a new technique that identifies and removes specific points in a training dataset that contribute most to a model’s failures on minority subgroups.** By removing far fewer datapoints than other approaches, **this technique maintains the overall accuracy of the model while improving its performance regarding underrepresented groups.** In addition, the technique can identify hidden sources of bias in a training dataset that lacks labels. Unlabeled data are far more prevalent than labeled data for many applications.

### **Answer: AI incorporates a toolbox of bias detection capabilities.**

**Barnes, Emily and James Huston. “Navigating the ethical terrain of AI in highereducation: Strategies for mitigating bias and promoting futures.” LindenwoodUniversity Digital Commons. June 2024.https://digitalcommons.lindenwood.edu/cgi/viewcontent.cgi?article=1655&context=faculty-research-papers. Accessed February 14, 2025.**

**Expanding on his previous research, Steven Umbrello, in collaboration with Ibo van dePoel [58], discusses the unique challenges that AI, especially machine learning, presentsto value sensitive design (VSD). They suggest a revised version of the VSD methodology,**

**one that incorporates a well-established set of principles to serve as design norms.From these norms, more detailed design requirements can be developed. This approachis designed to guarantee that the outcomes of AI development are not only harmlessbut also positively contribute to the greater good. Moreover, they advocate for anexpansion of the VSD process to cover the entire lifecycle of AI technology, ensuringthat ethical considerations are integrated from inception through deployment andbeyond. This comprehensive approach aims to address the specific complexities anddemands of AI and machine learning within the framework of value-sensitive design.These discussions and findings underscore the critical importance of VSD as a strategy**

**for mitigating bias and promoting fairness in AI within higher education. As thesestudies have demonstrated, addressing bias in AI within higher education involves a multi-layered strategy incorporating both technical and conceptual approaches to ensure fairness and equity. Kasif [58] introduces the concept of an “intelligent system**

**quotient” as a measure to reflect the societal impact of AI systems. This quotientsuggests a structured approach to understanding and mitigating AI bias through a multi-tier architecture, offering a quantifiable method to assess and address bias in AI,datasets, and algorithms.**

**C2:**