Challenges and Opportunities in AI-Driven Education:

AI – "Not So Fast"[1] or Faster

INTRODUCTION

The University plays a key role in ensuring that students acquire real skills or knowledge beyond their diplomas. Generative artificial intelligence (GenAI), particularly through popular tools like ChatGPT, has generated both skepticism and enthusiasm among educational stakeholders. There are two sides Artificial Intelligence (AI) in the education debate: "not so fast" or faster. As we are on the verge of giving AI many more responsibilities in the educational sphere, as well as in other spheres of our work and culture, Ted Chiang, a computer scientist writing science-fiction, reminds us, "Not so fast." There are no shortcuts in education, as we need time and care before we give AI to educate our own young. Chiang has observed that "meta-cognition," or thinking about one's own thinking, is something that most humans can do but that neither animals nor current Artificial Intelligence are capable of. Adapting our curricula to harness the power of these tools is critical if we are to better prepare students for the workplace of the future. We must reconsider the essential evolution of assessment methods, and the improvement of the learning experience to ensure the quality of the degrees awarded and raise numerous ethical questions.

The "Artificial Intelligence & the Future of Work" Initiative is a collaboration between Columbia University's Center for Sustainable Development and Future Investment Initiative Institute. It is bringing together key stakeholders, spanning the private and public sectors, government, and educational institutions. Its goal is to envision the evolution of each profession by 2050, considering the current and anticipated capabilities of AI. Several Task Forces have been created to look into specific key topics, including a Task Force on AI & Education. One of the goals of the project is to help develop tailored curricula for universities, ensuring that students today are equipped with skills relevant to the evolving job market. The emphasis is on preventing the emergence of workers in 2024/2025 who could become obsolete by 2030, necessitating significant retraining.

The AI & Education Task Force comprises Academia from across the globe to ensure that there is global representation. This currently includes South and North America, North and sub-Saharan Africa, the Middle East, South Asia and Europe. As Task Force members have observed in their discussions, certain tasks taught to students/learners can be delegated to AI in certain learning situations (such as translation, synthesis, production, etc.). These tasks, which AI tools can perform adequately and at low cost, are more likely to be routinized and executed by AI tools. While these basic skills should be still acquired by students and learners, they are nonetheless transferable to AI and raise the question of their acquisition and assessment.

As Artificial Intelligence, Generative AI more specifically, becomes more ingrained in teaching methodologies and curricula, the AI & Education Task Force will continuously monitor evolutions and suggest recommendations for educators worldwide.

The two topics that the AI & Education Task Force is deliberating on as an initial mandate are (1) key competencies in the "Future of Education", and (2) a "Humanly improved" AI learning experience. This Report summarizes the Task Force discussions and lays the foundation for the Task Force to collectively engage the topics for further detailed treatment.

SPOTLIGHT

1. Initiative brings together key stakeholders, spanning the private and public sectors, government, and educational institutions
2. Its goal is to envision the evolution of each profession by 2050, considering the current and anticipated capabilities of AI
3. Several Task Forces have been created to look into specific key topics, including a Task Force on AI & Education.

[1] "Chiang, T (2010) The Lifecycle of Software Objects. Burton, Michigan: Subterranean Press."

Topic 1: Key competencies for the future of Education

Numerous reports are regularly published regarding the skills expected in the professional world. Apart from job-specific skills, the expected competencies remain relatively stable. These generally include: reading, writing, and research, digital literacy, adaptability, ethics, communication and teamwork, information management, problem-solving and creativity, autonomy, personal skill development and self-awareness, and consideration of social (e.g., inclusion) and environmental issues.

Consequently, some key and strategic competencies to take into account for the "Future of Education" are the ones that are pedagogically and ethically challenging to transfer to AI. These skills should be added to a list of "non-negotiable" skills that all students and learners must continue to master, regardless of the advancements in AI. For example, literacy skills (research, reading, and comprehension) are crucial, as are skills related to AI outputs: discernment, decision-making, critical thinking development, creativity, intercultural interpretation of content, teamwork, problem-solving, and oral expression.

Certain key future competencies (human skills) remain unchanged and become even more crucial. It remains imperative to develop those human skills, often relegated to the background, which will become differentiating factors in a world where technology will play an increasingly prominent role: empathy, active listening, conflict management, self-awareness, and emotional intelligence. The objective of the AI & Education Task Force is to identify these key and strategic competencies for education and to conceive devices (activities, programs, experiences) that prioritize these key competencies, including inter-regional and intercultural contexts.

Topic 2: "Humanly improved" AI learning experience

The acquisition of some key skills should not necessarily require the use of AI.

Education based on learning experiences, proper emotional and relational management, and metacognitive skills (critical thinking, perspective-taking, creativity) becomes essential to sustainably support technological progress, compensating for the adverse effects of excessive screen use on relational and social skills.

As previously observed with the emergence of technology in education, the introduction of AI will necessitate educators to innovate pedagogically by drawing inspiration from active learning methods in authentic situations. However, the challenge with these approaches lies in addressing the affective and volitional aspects crucial for cognitive engagement. These aspects delve into the learner's personality, the learning activity as an embodied experience, the meaning of learning, motivation (in terms of commitment and persistence), and sometimes a spiritual dimension (arts, inspiration, values, etc.)

Moreover, they involve reflecting on these experiences to enhance metacognition and enrich the learning experience in all dimensions. The task for the international group of educators and AI experts comprising the Task Force is to theoretically explore these key dimensions to create conditions for active learning but, more importantly, to conceive learning experiences that are "humanly improved," integrating the use of AI.

Before getting into deeper discussions on the topics, it is important to note down the AI's capabilities collected from the literature and used in this report.

Artificial Intelligence (AI): one branch of AI - the one relevant to the topics discussed in this report - is composed of Large Language Models (LLMs), such as ChatGPT. When they were first generated, the output of LLMs was unknown as the hope was that the artificial (not human) "intelligence" would produce knowledge. The older models produced language, from surfacing patterns in vast quantities of text, texts they had scanned. These grammatical errors, the kinds of logical errors that were typical of GPT-2 and even GPT-3 have disappeared as the models have scaled up to newer GPT-4o versions.

ChatGPT has no problem understanding linguistic models because it has been trained on enough different contexts that it recognizes what linguistic world it is in. It both understands and generates text. When using Google to find definitions, in many cases the very first one was generated by AI. Image generators also became far more powerful when combined with large language models, as is the case with DALL-E2 and Midjourney. Language turns out to be intricately tied to knowledge, performing tasks including learning, reasoning, problem solving, perception, language understanding, and decision making which are intended to parallel such thoughts by intellectuals and students.

AI tasks can be promoted to produce a wide range of domains. The most common types of AI tasks are, classification, clustering, anomaly detection based on Machine Learning (ML), sentiment analysis, topic modeling, translation, text generation text classification, information extraction, speech recognition based on Natural Language Processing (NLP), and image classification, object detection, facial recognition, image segmentation based on Computer Vision (CV). Additional tasks involve robotics and automation tasks.

See the Appendix for a proposed syllabus in which college students can learn to use Chat-GPT, including skills like prompt engineering and result analysis and compare their outputs to other AI LLMs, such as Claude, Meta AI, Google Gemini. Integrating AI into such syllabi can increase real-world skills for students and advance their understanding of the application of Artificial Intelligence to fields like profile creation and comparison.

SPOTLIGHT

AI tasks can be promoted to produce a wide range of domains. The most common types of AI tasks are, classification, clustering, anomaly detection based on Machine Learning (ML), sentiment analysis, topic modeling, translation, text generation, text classification, information extraction, speech recognition based on Natural Language Processing (NLP), and image classification, object detection, facial recognition, image segmentation based on Computer Vision (CV). Additional tasks involve robotics and automation tasks.

1. Tensions in AI: Challenges of using AI in education

1.1. From the Educator/University Perspective

For educators and universities, the introduction of AI into education presents several key challenges. While AI can streamline administrative tasks such as grading and lesson planning, concerns have been raised about how these tools may impact the quality of student learning. AI-assisted grading systems, for example, may prioritize structured, formulaic responses over creative and critical thinking. As a result, some worry that these systems could inadvertently encourage surface-level learning rather than deep cognitive engagement. Moreover, educators are grappling with the ethical implications of AI, particularly regarding student data privacy. AI tools often collect vast amounts of personal data, raising serious concerns about how that data is stored, used, and protected. Ensuring the ethical use of AI in education has become a major consideration for institutions. Additionally, the risk of algorithmic bias is another challenge, as AI systems trained on biased data sets can perpetuate inequities, especially for minority students or those with diverse learning needs. This presents a significant challenge in ensuring that AI tools are both fair and transparent.

[9] https://fortune.com/2024/03/18/mpw-summit-guild-ai-future-of-work/

A specific type of AI, generative AI—such as ChatGPT—has brought new complexities. Among the key issues with the use of ChatGPT in education are accuracy, reliability, and plagiarism. Studies have identified that ChatGPT's reliance on potentially biased or outdated data, limited to 2021, can lead to inaccuracies and the generation of false information, such as fictitious references , . Furthermore, educators express concern that overreliance on tools like ChatGPT may diminish students' critical thinking and problem-solving skills, as they might rely on the AI to produce answers without engaging deeply with the material . The challenge of maintaining academic integrity is another concern, as evidence suggests that essays generated by ChatGPT can bypass conventional plagiarism detectors, raising ethical dilemmas in academic assessments.

1.2. From the Student Perspective

From the perspective of students, AI can offer benefits like personalized learning paths and immediate feedback, but it also comes with potential pitfalls. One major concern is the risk of over-reliance on AI. When students use AI tools to assist with tasks such as writing or problem-solving, there is a danger that they may rely too heavily on these tools, potentially reducing their engagement in critical thinking and independent learning. Research has suggested that students using AI-driven tutoring systems may skip foundational learning steps, which can undermine their overall understanding and retention of material. Additionally, the widespread use of AI raises questions about academic integrity. With AI able to generate answers or complete assignments, there is a growing concern about increased instances of plagiarism or unethical behavior. This could have serious consequences for the value of education, as students might miss opportunities to fully develop essential skills like research, writing, and analysis.

Generative AI tools like ChatGPT have heightened these concerns. While they provide instant feedback and aid in completing tasks, students may become too dependent on them. For instance, there are risks that students will use AI to bypass learning processes, leading to a reduction in critical thinking and problem-solving capabilities. Moreover, the ability of ChatGPT to pass graduate-level exams raises concerns about the future relevance of traditional assessments, as these AI-generated responses can sometimes evade plagiarism detection. This makes it more difficult for educators to ensure that students are genuinely learning and engaging with their coursework. This clearly leads to a decline in “Academic Integrity,” as a majority of students are aware of or actively use Artificial Intelligence-based models to aid their academic journeys . This leads to a lack of necessary effort in learning ventures, as students can transfer a lot of the necessary work and critical thought to responses from Artificial Models instead. This is not only detrimental to the learning experience of a student, who loses the experience typically gained from working through higher-level questions, this also builds a pattern of overdependence on the work done by the models rather than students doing the work themselves .

1.3. Challenges of education without AI.

The absence of AI in education brings distinct challenges for both educators and students. From the educator's perspective, one of the main difficulties is the inability to offer personalized learning at scale. Without AI tools, it becomes increasingly challenging to cater to diverse learning needs, particularly in large classrooms where individual attention is limited.

Michel-Villarreal, R., Vilalta-Perdomo, E., Salinas-Navarro, D. E., Thierry-Aguilera, R., & Gerardou, F. S. (2023). Challenges and opportunities of generative AI for higher education as explained by ChatGPT. Education Sciences, 13(9), 856.

Johnston, H., Wells, R.F., Shanks, E.M. et al. Student perspectives on the use of generative artificial intelligence technologies in higher education. Int J Educ Integr 20, 2 (2024). https://doi.org/10.1007/s40979-024-00149-4

Vasconcelos H, Jörke M, Grunde-McLaughlin M, Gerstenberg T, Bernstein MS, Krishna R. Explanations can reduce overreliance on ai systems during decision-making. Proceedings of the ACM on Human-Computer Interaction. 2023 Apr 16;7(CSCW1):1-38.

Traditional methods of grading, providing feedback, and monitoring student progress are often time-consuming, leaving educators with less time for interactive and meaningful teaching strategies. These methods of learning are often extremely standardized, which prevents potential personalized growth for students and are often not adaptive to new technologies or worldviews. Furthermore, without AI's assistance in analyzing student data, identifying at-risk learners and providing timely interventions becomes more complex, leading to missed opportunities for support and growth. Additionally, without generative AI tools like ChatGPT, educators miss out on opportunities to streamline tasks such as creating lesson plans, developing customized resources, and evaluating assessment methods . ChatGPT could also challenge educators to develop AI-proof assessments that authentically measure students' learning achievements .

For students, the lack of access to AI tools limits the tailored learning experiences that could help them better grasp complex concepts at their own pace. They must rely on standardized instruction, which may not address their unique learning styles or difficulties. AI could make education more inclusive and help students receive interactive and engaging learning experiences. Generative AI tools like ChatGPT, for example, can be used to generate initial ideas for essays and provide formative feedback that stimulates critical thinking and debate among students3, . The capacity of AI to perform many menial tasks in education allow students to accelerate their learning journeys for the best and focus on critical-thinking tasks that foster development and learning. Its language editing and translation capabilities also level the playing field for non-English-speaking students, promoting equity in education1. Additionally, without the on-time feedback and adaptive learning pathways that AI offers, students miss opportunities to track their progress and focus on areas that need improvement. As the demand for digital literacy and AI-related skills increases in the workforce, students may also find themselves underprepared for future careers without exposure to AI tools during their education.

1.4 The Digital Gap Between the Global North and the Global South in AI-Driven Education

The rapid growth of AI technologies in education has transformed the learning experience in many parts of the world, particularly in the Global North, where digital infrastructure and resources are more developed. However, this progress has also highlighted a widening digital gap between the Global North and the Global South, where many students and learners do not have equal access to the benefits of AI-driven education.

In High Income countries, AI is being used to personalize learning, provide on-time feedback, optimize teaching strategies, and enhance learning outcomes through adaptive systems that cater to individual needs. These AI-powered tools are integrated into education systems with advanced infrastructure, high internet penetration rates, and widespread availability of digital devices. As a result, learners in these regions are often equipped with the tools to succeed in an increasingly AI-dependent educational landscape.

In contrast, the Emerging Markets and Developing Economies (EMDEs) face significant challenges in accessing AI-driven education. Limited internet access, outdated hardware, and a lack of investment in digital infrastructure restrict the adoption and use of AI technologies. In many low-income countries, only a fraction of students has reliable access to computers or the internet, let alone AI-powered educational platforms. This unequal access creates a significant divide in the quality of education available, perpetuating existing inequalities and hindering socio-economic mobility for students in these regions.

The disparity in AI-driven educational access raises several ethical concerns. First, there is the issue of equity—students in the Global South are systematically disadvantaged due to their lack of access to the same tools and resources that benefit their peers in the Global North. This inequity not only affects individual learning outcomes but also impacts future opportunities in higher education and the job market, where familiarity with AI and other digital tools is becoming increasingly important.

Informed consent and data privacy also pose ethical challenges. In some EMDEs, even where AI-driven tools are introduced, there may be less awareness or understanding of how students' data is collected, used, or protected. The use of AI in education often relies on vast amounts of personal data to tailor learning experiences, and without stringent data privacy laws or transparency in data use, learners in these regions may be more vulnerable to exploitation or data breaches.

Moreover, the AI tools themselves may be biased, reflecting cultural or linguistic assumptions from the Global North that do not align with the learning contexts in the Global South. This can lead to inappropriate educational content or teaching methods, further alienating students from under-resourced environments. The lack of locally developed AI educational tools means that students are often exposed to technology that is not adapted to their specific needs, exacerbating educational inequalities.

Addressing these issues requires a concerted global effort to bridge the digital divide. Governments, educational institutions, and technology companies must work together to ensure that AI-driven educational innovations are not limited to wealthy nations but are accessible to all. Investments in digital infrastructure, affordable internet access, and context-appropriate AI tools can help democratize the benefits of AI in education and mitigate the ethical issues raised by the current divide. Moreover, fostering local talent and innovation in AI development can create tools tailored to the unique needs of the Global South, ensuring that all learners, regardless of their geographic location, can thrive in an AI-enhanced educational environment.

These points are further developed in a companion report entitled “Closing the AI gap between High Income Countries and Emerging Markets and Developing Economies”.

KEY COMPETENCIES

Competencies can be defined as a combination of knowledge, skills, abilities and behaviors mobilized by a person to act in an appropriate manner in a professional situation. Numerous reports are regularly published regarding the competencies expected in the professional world. Apart from job-specific skills, the expected competencies remain relatively stable.

Basic skills (literacy, numeracy), and digital skills (such a prompt designing), cognitive skills (critical thinking, creativity and problem-solving skills), and social or self-management skills (autonomy, teamwork, motivation, flexibility, self-awareness, empathy, emotional intelligence).

Some skills (writing, translating, summarizing), which form a learning block, would most probably be transferred to AI, and sometimes against our will/the will of the educators.

One first step would be to ensure that students learn how AI started, works and how to use it in an appropriate academic context. A next step would be future reflection on the advantages and disadvantages of the risks of these transfers.

Since generative models (GM) possess limited reasoning capabilities, users with Chain of Thought (CoT) prompting skills can guide the GMs through a structured thought process to produce useful outputs. A good prompt structure should have task definition, context, exemplar, persona, tone and desired output format (Watson, 2024, p. 50).

Related to CoT is problem solving competencies. The ability to break down a problem into smaller logical parts and conceptualize its solution in a structured manner is an important competency that enables one to use AI productively.

Virtual learning is an important competence in this era of AI. The virtual worlds in the form of metaverse are not just about entertainment, they are powerful tools that can be used to provide training for both humans and machines.

Situational analysis

Assessments

The use of AI in university student assessments poses several significant challenges and issues. There are integrity and authenticity concerns. It has become increasingly difficult to determine whether an assessment artifact was created by a student or by AI . This threatens the integrity of assessments and raises questions about whether graduates have truly learned what they need to be competent professionals. A study found that 94% of AI-generated submissions went undetected when injected into a real university examination system . This indicates current detection methods are largely ineffective. These practices impact student learning and quality. If AI can produce high-quality answers in seconds, it undermines the purpose of assessments in evaluating students' knowledge, critical thinking, and other key skills11. Many traditional assessment formats, like essays without personalized application or questions requiring closed answers, are easily addressed by AI tools .

Thus, there is a need to change the pedagogical designs currently used in the university settings. There is a pressing need to redesign assessment regimes to be less vulnerable to AI misuse while still maintaining pedagogical value. It must be noted that transitioning to more holistic, AI-resistant assessment practices often entails an increased workload for faculty in terms of communication, implementation, and documentation . AI could be effectively used in formative assessments which will aid in immediate and continuous feedback on the assignments. It could also help to provide explanations of difficult concepts tailored to individual learning styles. AI could also assist in suggestions for additional resources based on identified knowledge gaps. AI aids in the learning process through identifying gaps using formative assessments. In addition, summative assessments can be enhanced using AI for more interactivity and skill development.

Across institutions, the unreliability of assessment data due to AI use has implications beyond individual classrooms, affecting program-level and institutional assessment practices is crucial for accreditation. The rise of AI necessitates a reevaluation of what students need to learn and how to measure that learning in the AI era. Addressing these issues requires a comprehensive approach, including redesigning assessments,clearly communicating AI policies to students, and potentially reconsidering the fundamental goals and methods of higher education assessment in light of AI advancements.

Writing

Writing skills can, at the same time, be both strengthened and weakened by AI. On the one hand, students are increasingly using AI as an assistant tool in writing assignments, which can, undoubtedly, raise sensitive ethical issues regarding transparency and plagiarism. In this sense, AI could be seen as a real threat to learning skills and abilities that could be lost by those students who start delegating all their tasks to AI assistants. As a result, it has been noted by some experts in the group, that some teachers are now preferring to avoid assigning written tasks home, given the fact that, without live monitoring, it is very likely that most of the students will use, partially or entirely, AI tools to assist or even replace them. Nevertheless, teachers could seize this opportunity to assign tasks which demand the explicit use (solely or combined) of AI, thus fostering the development of new skills, which are compatible with the tasks that these new generations will have to face and need to cope with in the future of work. Other alternative writing instructors have suggested is to assign a writing task in class and a home assignment for AI to rewrite the same task, so the students can compare and improve

It has been argued in the group, for instance, that professions that depend heavily on writing skills, such as the legal ones, and medical reports, are now being transformed by AI, which can help increase efficiency. However, there is a real danger that legal students might lose or diminish their legal reasoning skills due to the overreliance on AI tools, turning these skills into one of the “endangered” ones by AI. In this sense, it would be of paramount importance that students develop these skills properly before being introduced to these technologies.

On the other hand, AI tools are also being used to improve writing skills, notably when students interact with said tools to receive instant feedback on their pieces, which can be truly relevant, for instance, when writing in foreign languages. In this regard, AI tools could be seen as a real ally to the learning process, enabling students to augment their writing skills. They could as well be used by students in their clerical activities, allowing them to focus on more demanding tasks.

In conclusion, it might be argued that AI cannot be demonized: if properly (and ethically) used and harnessed, after due consideration, it can be an ally in promoting writing skills. Nonetheless, without reflection, it could endanger or significantly harm those skills.

Review of Current Syllabi

This Task Force has taken a hands-on approach investigating AI enhanced curricular models. It has taken the current syllabi of professors and is collectively improving the AI aspects of the syllabi. Please see an AI enhanced syllabi in the Appendix.

AI can significantly enhance course syllabi in several ways. AI can be used to generate new content and update the existing one including course descriptions, learning objectives, weekly topic outlines, assignment descriptions and grading policies.

AI-powered syllabi can incorporate interactive elements like chatbots to answer student questions, adaptive learning paths that adjust based on student progress, multimedia content suggestions to support different learning styles. AI can aid in developing: varied assessment types to evaluate different skills, rubrics for assignments and projects, formative assessment opportunities throughout the course By leveraging AI in these ways, instructors can create more comprehensive, engaging, and student-centered syllabi that adapt to the evolving landscape of higher education.

SPOTLIGHT

1. AI-powered syllabi can incorporate interactive elements like chatbots to answer student questions, adaptive learning paths that adjust based on student progress, multimedia content suggestions to support different learning styles.

2. It can also enhance students' experiences in understanding AI inputs and outputs, enabling them to effectively learn about the different uses of these models through their education

AI-Powered syllabi can also improve students' skills in prompt engineering, allowing them to make the most out of prompts given to LLMs to achieve a variety of tasks. As seen in the proposed syllabus below, students can compare their responses to that of different AI models, not only to understand generalizations in how AI models craft responses, but also are able to experiment with different kinds of prompts and models to understand which ones perform best at the task at hand. It is syllabi like these that enable students to be more capable in using Artificial Intelligence in a modern world, by learning how Artificial Intelligence can enhance their learning experience in a variety of learning fields. Students doing in-depth analyses of the prompts and responses involved in obtaining a satisfactory result can improve their learning experience in an education experience that is becoming increasingly AI-driven.

AI-powered syllabi can also enhance students' experiences in understanding AI inputs and outputs, enabling them to effectively learn about the different uses of these models through their education, a key skill to be applied to all facets of life. Skills like "Prompt and Tone Analysis", considerations of how prompts cause outputs, and "Comparison of AI Models" in the proposed syllabus (Appendix) allow students not only to use AI to expedite certain parts of their learning experiences but also allow students to understand prompt engineering in order to achieve desired responses.

Further Considerations

A lot of the concerns of university Humanities teaching has to do with questions of originality, authorship, creativity, and freedom that have long occupied education at all levels. Of course, many are thinking creatively how to use ChatGPT as an opportunity to re-rethink the idea of authorship. In this regard the research that is interesting is giving students the opportunity to write what we call a "college essay" and then ask them to prompt ChatGPT to produce one, on the same topic and desired features, then compare the texts. The leap from correlation studies to causality offers significant advances, suggesting that GPT-4 complexity over GPT-3 has passed the threshold for students to be able to accomplish a college essay using AI (Hayles, 2024, see note 14). The impulse to ban students from using AI only means a race to recognize, and try to find out if it is plagiarism, i.e. written by AI. There are already programs (Quillbot and others) that change AI words so it does not sound/ look like it is written by AI.

One other factor to remember is that "all AI models will be biased by their training data. Many leading models show a strong bias for Western values. They can also exhibit new biases created by the attempt to align their outputs using human feedback". Elkins, a literary scholar, learned from students in her university lab, where students are "training" AI. The hardest task is to write correct "prompts" for the AI, otherwise you get "text" but no ideas or an acceptable essay. See Appendix for comparison of AI models which "use the exact same prompt sequence."

Our Stance moving forward

In its current form AI has information, but does not generate knowledge. Therefore, we should be able to make rational decisions on its use. To integrate the use of AI into university programs it may require us to maintain control over its application and ensure that the university remains a center of knowledge, free and independent from any influence (preserving its academic freedom). A starting point is to train students to understand how different types of AI work, the advantages and limitations of its use. Subsequently, AI should be integrated into educational activities where its use is relevant. In order to integrate AI into education or to make an informed decision not to do so, educators have a basic obligation to be informed about implications and applications of AI before making such a decision in their ventures.

Traditional methods should therefore complement more technical innovations in the service of student learning. They continue to hold value in knowledge acquisition, what AI can and cannot do, this is a learning process, which requires time, repetition, and formation in itself. AI's potential for teachers is quite remarkable (content creation, design of pedagogical activities, quizzes, etc.), as they typically have prior mastery of the subject they teach. These new ways of designing pedagogical scenarios could help motivate students by personalizing learning and using real-world problems.

For most future skills, the use of AI is a complementary tool in the service of education and raises questions about both student and teacher practices. However, digital literacy and AI skills remain crucial challenges for future careers and should be encouraged, with ethical guidelines in place to prevent widening inequalities (knowledge gap) and to serve just causes, considering the carbon impact that widespread use might generate. As such, digital skills should be developed to serve just causes: reducing job hardship, improving health, and adapting to climate change (energy, agriculture, biodiversity, etc.) within an education policy that universities (and governments) must define.

The university plays a key role in ensuring that students, and future teachers acquire skills or knowledge beyond their diplomas. This requires an unfolding of different assessments to keep credentials it awards in high regard in the marketplace, and to better guide recruiters, administrators, instructors and alumni. However, these assessments must respect constructive alignment (learning objectives, learning activities, learning assessment) to remain relevant.

Mapping of these issues and categorized systematically:

- Identify “non-negotiable” skills for education and defining tools including some specific AI (EdGPT) could train students to strengthen the acquisition of essential skills (math skills for example) with selected and reliable data, for fair use, with local-used less energy, and in order to avoid ethical bias. Other IA devices could train students to exercise them and to question them rather than give them answers.

- The future of professions, managers and leaders requires a base of key competencies that responds to the market. Identify key competencies (differentiating factors) for the future in the AI era (critical thinking, decision making, problem solving, teamwork) and conceive programs (curricula) for this purpose.

- Identify principles and recommendations for pedagogical innovation to train students with key competencies excluding the use of AI or mixing the use of relevant IA devices.

- Identify some relevant assessment methods to prove the acquisition of competencies.

- Define active learning methods to train students with key competencies excluding the use of AI or mixing the use of relevant IA devices. Some mixed methods can be used with AI to improve students' learning (e.g. flipped classroom) but with strongly selected, smart data.

- Define pedagogical innovations to boost active learning and engagement (service learning, real cases, real time project, roleplay, experiences review).

Appendix

Acknowledgments:

The Center for Sustainable Development would like to thank the following authors for their contributions to the report:

Alexander Cooley – Barnard College, Columbia University, USA

Antoine Blondelle – Université Catholique de Lille, France

Asma Chaibi – South Mediterranean University, Tunisia

Aseel Shawareb – University of Petra, Jordan

Ayan Dalmia – Millburn High School, Millburn School District, USA

Bhavani Rao R – Ammachi Labs India, Amrita Vishwa VidyaPeetham, India

Erik Voss – Teachers College, Columbia University, USA

Esther E. Gottlieb – Ohio State University, USA

Fengchun Miao – UNESCO, France

Filipe Medon – Center for Technology and Society, FGV Direito Rio, Brazil

João Paulo Candia Veiga – University of São Paulo, Brazil

John Otieno Oredo – University of Nairobi, Kenya

Mercedes Vázquez – ESK Holding, Kuwait

Payal Arora – Utrecht University, The Netherlands

Radhika Iyengar – Center for Sustainable Development, Columbia University, USA

Sami Mahfoudhi – South Mediterranean University, Tunisia

Yanis Ben Amor - Center for Sustainable Development, Columbia University, USA

Example of syllabus

Title of CLASS/Module/Unit: **Analyzing profile creation using AI Chatbots**

Topics: Profile Creation and Analysis, AI experience, AI comparison
Subject/Course: After school class/club activity
Grade: High School Level

Timeline: ~2-3 days:

- **Students should write the opinionated essay and explore with Chat-GPT prompts on Day 1, attempting to produce a final response.**
- **On Day 2, students should write the outline and essay comparing the different prompts, but also the different memos.**
  - **On Day 2 or Day 3, students should produce and analyze the output of a different LLM chatbot**

Stage 1 – Desired Results

Established Goals:

- **<u>Summary/Overarching:</u> Students will learn how to craft effective prompts for AI tools to generate specific content, critically analyze the outputs, and compare responses from different AI models. On a political basis, they will deal with the ethical complexities of individuals' actions with comparative analysis.**

Enduring Understandings:	**Essential Questions:**
Students will understand that… • The framing and specificity of prompts impact the quality and tone of AI responses • The portrayal of an individual can be vastly different based on the evidence and tone used to make an argument • Comparing outputs from different AI models and different outputs from the same model reveals the strengths and limitations each AI model	• **How do the framing and specificity of prompts influence the quality and tone of AI-generated responses?** • **How can different AI models interpret the same prompts differently?** • **In what ways can AI tools be effectively used for reputation management, and what are the risks of AI in such tasks?**
Students will know… • **How to critically analyze the benefits and harms of controversial figures.** • **Techniques for crafting effective AI prompts to create desired responses.**	**Students will be able to…** • **Write balanced analyses of individuals** • **Create precise AI prompts** • **Critically compare AI-generated outputs to understand strengths and weaknesses**

Stage 2 – Enhancing Pedagogy with AI

• This assignment allows students to understand how to optimally use AI to perform tasks or produce specific, desires responses. • Students must critically think and analyze, learning to evaluate strengths and weakness of AI, and compare arguments and prompts.
Additional Comments:
•

*Wiggins, G., & McTighe, J. (2005) Understanding by design (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development ASCD

Short Paper #2: "Reputational Risk and Reward: Two Sides of a Donor"

INSTRUCTIONS: You have been hired as an advisor by the development office of a prestigious university to research the background of a potential individual donor who is a politically exposed person (you will have the individual assigned to you). This donor has a controversial past, as she/he has been implicated in corruption and insider dealing scandals, but also maintains a global profile as a well-known cultural patron and philanthropist. Before you begin the generative AI and writing parts of the assignment, please take about 60-90 minutes to conduct some initial research about this individual using university library databases and open sources; make sure to investigate their political/business past, including reports about how they accumulated their wealth, and note any major controversies they have been implicated in. Additionally, note examples of their cultural contributions or philanthropic activities.

Your writing task is in five steps.

STEP 1: BEFORE USING Chat-GPT AT ALL: students will write an 500-word analysis exploring the benefits and harms associated with the individual. The essay should critically analyze the positive contributions their person has made to society, such as cultural patronage and philanthropy, but also the harm they have caused to society, including corruption and scandals. Students are encouraged to form an opinionated stance by comparing the strength of arguments on both sides, deciding which perspective is more compelling based on the evidence available. This essay should not only consider the moral implications of their actions but also the impact of their actions on their validity as a donor.

- Most importantly, students should keep their personal opinion in the back of their head as they explore the AI analysis of the donor.

STEP 2: Use Chat-GPT to construct two distinct 750-word profiles for this donor:

1. The first profile should be in the voice/role of a London-based public relations firm that has been hired to actively manage the global reputation of this individual and present a favorable public portrait. It should note the major international recognitions of this individual, any reported awards or prizes conferred on them by outside organizations, their major achievements as philanthropists or contributions made by their charities or foundations (including to cultural institutions or universities); and any other information about their role as respected global philanthropist that might make them an attractive donor to the university. Whenever possible, provide specific examples of these positive activities, and explain the specific benefits and impacts of their actions.

2. The second profile should be written in the voice/role of an international human rights NGO or anti-corruption watchdog that offers a critical assessment that details the major controversies and/or corruption scandals in the donor's history, any publicly reported attempts to harass or intimidate journalists or researchers investigating their activities; and any other previous attempts at reputation laundering that suggest the donation might harm the reputation of the university. Whenever possible, it should provide specific examples of such activities, and explain the harm caused by their actions.

Please take the time to experiment with multiple prompts for each output until you are satisfied with the output of both profiles; provide as much detail in your prompts as possible. Before each final profile that you submit, make sure to record the exact prompts (and sequence of prompts) that you used for each voice. Along with the final essay, please make clear what the exact prompt was that was used to provide the final output.

STEP 3: Prompt and Tone Analysis of Chat-GPT: In a specific, 1000-word outline:

1) Students will examine the responses created by three different prompts to create each profile. They should analyze the pros and cons of each response, considering how the phrasing and specificity of the prompts influenced the quality of the answers, involving what kind of evidence or points Chat-GPT put into the memo based on the prompts.

a) Specifically, students should understand what goes into an effective prompt, and how to curate a response to obtain exactly what they want Chat-GPT to produce.

2) Students should analyze the tone used by Chat-GPT in the final memos, comparing the positive portrayal of the individual with the negative one. This involves understanding specific word choices or sentence structures used by Chat-GPT that differentiate the two types of profiles. Students should try to find any patterns in how Chat-GPT handles tone based on perspective using word or sentence choices.

STEP 4: Now, write a 1000-word comparative analysis (without using Chat GPT) that assesses the comparative strengths and weaknesses of these two AI-generated memos. Please consider:

- What specific examples did each prompt produce? What sources or evidentiary base did they draw upon?
  - What major examples did each prompt not produce? Why do you think so?
- Compare the examples generated in each profile with what you found in your initial research. What was lacking or missing?
- What stylistic devices, imagery, or detail gave each of the assigned roles its authority or style?
- Is one of the memos more convincing or effective than the other? Why?
  - Did ChatGPT agree with you about which side was more effective?
- Finally, give your own concluding assessment: based on the quality of these two memos, how would you advise the university to proceed? What would be the major reputational concerns and what issues would you recommend be explored in greater depth?

STEP 5: Comparison of AI Models: Students must choose an AI chatbot other than ChatGPT (this includes Claude, Meta AI, Google Gemini, Perplexity, and more) and use the exact same prompt sequence as was used in Chat-GPT to generate one of the profiles, and simply save the final response (students must use the exact prompt sequence as LLM models often base responses off of previous responses that they produced). Students should then write a 500-word comparative analysis on the outputs created by the exact same prompt sequences in Chat-GPT and the chosen Large Language Model (LLM) Chatbot. Use the following guiding questions:

- What specific evidence was similar between the two? Which evidence was different?
- What was similar about the tone and sentence structure between the two? What was different?
- How did both AI models similarly interpret the prompt(s)? How did they do so differently?

Your final submission should include:

1. Your opinionated stance on the strength of the arguments on the individual.
2. The prompts and final text for each of the two profiles.
3. Your prompt and tone analysis of responses from different prompts.
4. Your comparative analysis of these profiles.
5. Your comparative analysis of outputs from different AI models.

All papers are due via Courseworks Assignment Memo #2 by 10:00am Monday, **October 23, 2023**. As with your previous memo, each seminarian will provide a 5-minute overview of their writing experience in class and, time permitting, field a question or two from the other seminar members.

Original Source:
Political Science POLS BC3367 — Professor Cooley
Transnational Kleptocracy — Fall 2023
Barnard College