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The academic industry's response to generative artificial intelligence

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Abstract

This paper aims to highlight how disruptive changes such as generative artificial intelligence (GAI) have led to confusion in the academic industry and created an environment of uncertainty for academic entities. Drawing on institutional theory, it examines the discursive legitimacy and responses of key actors in academia to the introduction of GAI tools, shedding light on the complex dynamics shaping the future of education in the age of GAI. The paper provides details of changing response of the academic industry to GAI as a result of academic institutions' evaluation of value creation potential of GAI, their engagement in isomorphic actions to control and gain resources from key actors, and institutional change agents' actions. It attempts to explain the roles of diverse categories of institutional change agents in creating new institutions around GAI. We discuss how these agents theorize such changes and facilitate the diffusion of new ideas related to GAI.

Keywords: Academic industry; institutional change agent; plagiarism; superstitious learning; theorization; uncertainty

3.1 Introduction

The academic world is going through a major technological upheaval due to the arrival of large language models (LLMs) and generative artificial intelligence (GAI) tools such as ChatGPT.

These tools have been the subject of debates at many different levels. For example, there is a disagreement over whether GAI tools facilitate or hinder learning, critical thinking and short/long term student success. In the middle of this upheaval, a fierce debate has also broken out over whether LLMs such as ChatGPT are a research tool or a plagiarism engine. A philosopher and cognitive scientist considered ChatGPT as “high-tech plagiarism” and “a way of avoiding learning.” Many students, on the other hand, consider ChatGPT just like a research assistant, a spellcheck tool or a calculator. Some are also questioning whether the writing assignments in the current form are even relevant for the future of students, economy and the society.

Overall, GAI is emerging as a disruptive force to challenge the existing institutional configuration that revolves around “grades” and “GPAs” in which the role of academic institutions is to certify students’ learning via assessment. A December 2022 article in *The Atlantic* asserted that “The College Essay Is Dead” and “Nobody is prepared for how AI will transform academia”¹.

GAI tools are being viewed as a disruptive force that will fundamentally change the education sector. Academic institutions and educators are alarmed by GAI’s potential due to three attributes. First, GAI generates responses on-demand. This means that students are able to receive a complete essay that is tailored to their prompt. Second, contents generated by GAI in response to a prompt are not repetitive. Different essays are distinct in terms of arguments and phrasing. Finally, GAI output is not traceable since it is publicly accessible on the open Internet².

The most recent generations of GAI tools are even more powerful and disruptive. Commenting on GPT-4, an improvement over its predecessor GPT-3.5 on which both ChatGPT and the image-generation tool, Dall-E, are built, the founder of Khan Academy, an American nonprofit focused on creating online educational content for students, Salman Khan noted: “The old version from a few months ago could be a solid B student. This one can be an A student in a pretty rigorous program”³.

Disruptive forces have profound consequences on how schools and universities function. Prior researchers have suggested that such a force may lead to the presence of “superstitious learning” among organizations⁴, which may cause them to engage in strategically confused behavior⁵. Due to such features of the environment that they are operating in, academic institutions’ response to GAI tools has been all over the place (Table 3.1). For instance, some have hastily integrated these tools into their curricula without adequate consideration of all the

factors involved. Others are testing and experimenting with GAI in order to understand the effects of these tools on teaching and learning. Many have taken more extreme measures such as banning these tools altogether.

Table 3.1: Some opinions of school and university administrators regarding GAI

| Administrator | Statement |
|---|--|
| Director and head of innovation at Institut auf dem Rosenberg | "We are very determined to ensure that whatever we teach our students is relevant for them – relevant for the world they're going to go into in the future. It would be hypocritical to say 'Don't use AI' and then pretend that we're going to send them ready for their lives as adults" ⁶ . |
| Deputy press secretary for New York City public schools | "While the tool may be able to provide quick and easy answers to questions, it does not build critical-thinking and problem-solving skills, which are essential for academic and lifelong success." ⁷ |
| Chair of Academic Integrity Program, Villanova University, | "Villanova's current academic integrity code will be updated to include language that prohibits the use of these tools to generate text that then students represent as text they generated independently. But I think it's an evolving thing. And what it can do and what we will then need in order to keep an eye on will also be kind of a moving target" ⁸ . |
| Science Po management email sent to students | "Without transparent referencing, students are forbidden to use the software for the production of any written work or presentations, except for specific course purposes, with the supervision of a course leader" ⁹ . |

Drawing on institutional theory, this paper aims to offer an overview of this upheaval. It focuses on how these tools have challenged the rules of the game—also referred to as “institutions” -- in the academic industry.

When students and educators obtain information from GAI tools like ChatGPT, major concerns related to accuracy and bias arise. LLMs such as ChatGPT just put words together in order that corresponds with the data they have been trained on and that they do not understand questions nor do they know that they are answering them correctly. That is, LLMs cannot check whether what they are saying is true or not. For instance, estimates suggest that about 15-20% ChatGPT's results are incomplete, or misleading, which are also called “hallucinations”¹⁰.

LLMs generate entirely inaccurate information in response to a prompt and they do so confidently. There is a lack of built-in mechanism to signal users that the results could be inaccurate or challenge such results¹¹.

3.2 Network of key actors in the academic sector

In order to understand the academic sector’s response to GAI, it is important to look at the interests of and interactions among key actors in this sector. Institutional field is a helpful concept for this purpose.

An institutional field is a dynamic system characterized by the entry and exit of various players and constituencies (e.g., students, educators, academic institutions, technology companies, regulators, academic publishers and interest groups). These constituencies often have competing interests and interaction patterns among them, which may change over time¹².

Table 3.2 provide a brief description of the network of key institutional actors that are likely to shape the academic industry. The actions and responses of these actors have important consequences on how the academic industry adapts to ongoing development in GAI. As noted above, these players often negotiate over issue interpretation. For instance, there is a fundamental disagreement on issues such as whether GAI has positive or negative effects on students’ learning, and whether they should be banned, or their use should be encouraged.

Table 3.2: Network of key actors affecting the academic industry’s response to GAI

| Actors | Sample roles | Effects of GAI |
|-------------------------------------|---|---|
| Academic institutions and educators | To develop skills, foster knowledge, mobilize educational resources and provide learning opportunities for all. | Response to GAI all over the place: some have hastily integrated these tools into their curricula without adequate consideration of all the factors involved. Others are testing and experimenting with GAI in order to understand the effects of these tools on teaching and learning. Many have taken more extreme measures such as banning these tools altogether. |
| Students | To make effective use of AI considering short- and long-term outcomes | Students use GAI for a number of purposes such as completing homework assignments and understanding difficult concepts. |
| Edtech companies | To achieve business goals related to profit, market share and other measurements of performance. | Turnitin launched AI-writing detection tool. |
| National governments | To protect users and to allow the economy to work in the most efficient manner | Laws in countries such as Japan are being specifically aimed at the education sector. Other jurisdictions such as the U.S. have more general regulations that aim to reduce the risks of AI to users |

| | | |
|--|--|--|
| Academic publishers | To promote validation of scientific findings (Schiff, 2017). | The <i>Science</i> family of journals: complete ban on generated text in January 2023 (<i>science</i> , 2023). |
| Professional associations | Advance a scientific domain and promote integrity in research and publications | ACR journal editors and the ACR Committee on Journal Publications: argued that LLM tools cannot be held accountable and thus co-authorship is inappropriate for these tools. |
| Interest groups and non-profit educational organizations | Promote innovation in education | Some are using GAI to facilitate student learning and give ideas for lessons to educators |

Like any economic activity, the academic industry can be viewed as “arenas of power relations”¹³ in which various players with competing interests and disparate purposes negotiate over issue interpretation¹⁴. Dominant field members exert control and influence in the development of structures and practices of the field¹⁵. Prior research indicates that powerful and dominant field members tend to be those with “greater formal authority, resources and discursive legitimacy”¹⁶.

Formal authority is related to an actor’s “legitimately recognized right to make decisions”¹⁷. In most cases, such power lies with the government¹⁸. In the context of this paper, academic institutions are also dominant field members, which can ban and block LLMs in school and university networks and devices.

3.2.1 Evolving nature of institutional field and the academic sector

Prior researchers have noted two elements of institutional fields: a set of institutions, including practices, understandings and rules; and a network of organizations¹⁹. Fields evolve rather than being “static”²⁰.

A central concept here is institutional entrepreneurship. New institutions arise when institutional entrepreneurs “see in them an opportunity to realize interests that they value highly”²¹. Institutional change agents such as institutional entrepreneurs engage in actions to theorize such changes²². Note that theorization or “the development and specification of abstract categories and the elaboration of chains of cause and effect” is an important process through

which institutional change agents facilitate the diffusion of new ideas²³. Theorization helps provide rationales for the practices to be adopted and thus increases the chance of acceptance of the practice²⁴.

Organizational isomorphism, which is “a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions”²⁵, is a related concept. Isomorphism is positively related with legitimacy²⁶. Organizations try to exhibit isomorphism with respect to external institutional pressures by adopting certain structures and processes. If practices of an organization have strong similarities to industry norms, the organization is viewed as more desirable²⁷. Organizations, however, often have multiple constituents and hence different types and sources of legitimacy. Each constituent may evaluate the legitimacy of an organization based on the organizational activity most relevant to the concerns of the constituent²⁸. This is viewed as accumulated results of continuous isomorphic adaptations of organizations.

A key mechanism to understand institutional changes would be to look at the various contradictions and dilemmas that GAI produces with the existing institutional arrangements²⁹. Seo and Creed (2002)³⁰ have proposed four sources of contradictions and “praxis”: “(1) legitimacy that undermines functional inefficiency, (2) adaptation that undermines adaptability, (3) intra-institutional conformity that creates inter-institutional incompatibilities, and (4) isomorphism that conflict with divergent interests”.

3.2.2 Discursive legitimacy to bring changes

Discursive legitimacy concerns speaking legitimately about particular issues and affected organizations³¹. Acquiring discursive legitimacy is especially important for new field members without formal authority or resources to secure a right to voice³². This means that it is important

for actors that oppose the existing norms and order of the academic industry to carefully employ discursive strategies that can bring about changes that are favorable to them.

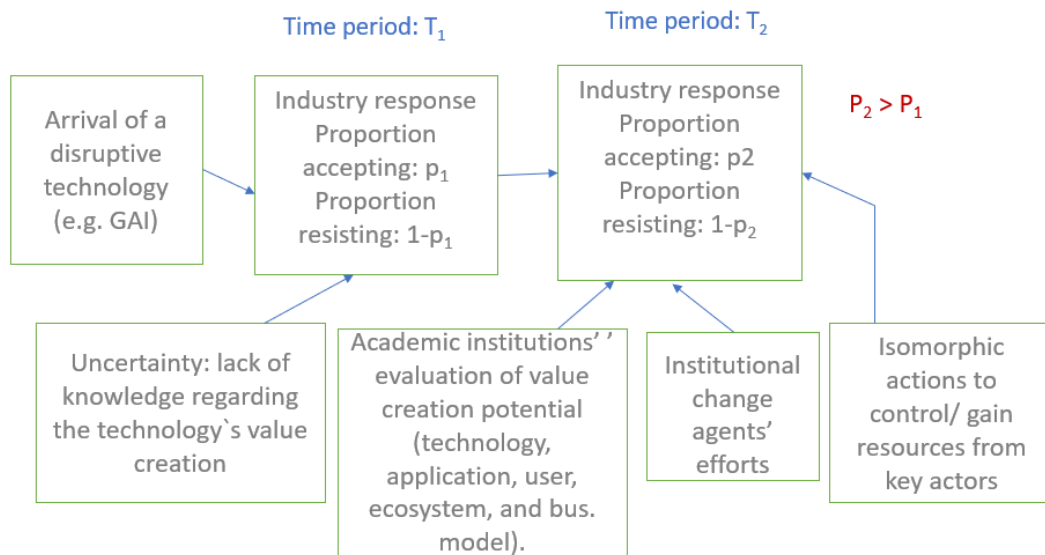
Actors with discursive legitimacy, who have less obvious self-interest, may be more influential than resource-rich actors or formal decision makers in shaping institutional arrangements³³. Non-profit organizations such as Khan Academy are in a better position to bring changes that can favor the use GAI in the academic sector. Other stakeholders such as students have also recognized the value of working together, beyond self-interest.

3.3. The academic industry's response to GAI

Prior researchers have suggested that while some individuals and organizations accept innovations—such as ideas, products, or services— others oppose them³⁴. The environment and characteristics of the adopting organization affect the diffusion pattern of a technology, a strategy or an idea³⁵. For instance, Wicki & Kaufmann³⁶ found that residents' neighborhood types affect how they assess local densification scenarios and whether they accept or oppose densification projects.

For simplicity, we divide the responses to LLMs in the academic industry into two periods of different levels of acceptance of these tools: initial time period (T_1) and subsequent time period (T_2). p_1 and p_2 are proportions of academic institutions accepting these tools in these two periods (Figure 3.1).

Figure 3.1: The academic industry's changing response to GAI



Source: Adapted from Kshetri, N. (2024). "The academic industry's response to generative artificial intelligence: An institutional analysis of large language models", *Telecommunications Policy*, June, 102760

3.3.1 Response to a disruptive technology in the initial time period (T₁)

Disruptive changes often create confusion and uncertainty and produce an environment that lacks norms, templates, and models about appropriate actions³⁷. A significant change creates ambiguity in cause-effect relationships. Such a situation makes learning difficult and inhibits organizations' ability to undertake a rational search for solutions³⁸. Under such conditions, "superstitious learning" may occur³⁹, and organizations engage in strategically confused behavior⁴⁰. During periods of significant institutional change past experience is no longer an appropriate guide for future actions⁴¹.

Academic institutions' heterogeneous response to GAI can be attributed to the disruptive nature of GAI, which leads to confusion and uncertainty. In such cases, the environment lacks norms, and templates⁴². This is because most academic institutions have little experience of innovations such as GAI.

When there are significant institutional changes such as the ones associated with the GAI, existing resources and capabilities of academic institutions as well as educators may become obsolete or insufficient. In such cases, past experience cannot help guide for future actions⁴³. Academic institutions and educators thus do not know what to expect next and how to respond. Educators that are desperate to figure out how they can respond in the best possible way to LLMs' arrival have turned to social media. For instance, as of August 2023, Facebook groups "chatGPT for teachers" had about 300,000 members and "The AI Classroom" had more than 20,000 members⁴⁴.

In a survey of 954 college instructors conducted by market research and publishing company Primary Research Group (PRG) between January 28 and March 8, 2023, a representative sample of faculty responses to the question "If you have successfully integrated use of ChatGPT into your classes, how have you done so?" included: "No." "Nope." "Not at this time." "Not yet!" "Just discussing it now." "I have not." "I will do this in the future." "Yes." "No way." "Not yet, but I have a lot of ideas ...". "It's a little scary," "Desperately interested!" and "I'm thinking of quitting!"⁴⁵. The PRG survey found that compared to older instructors, younger instructors were more likely to have developed ChatGPT policies⁴⁶. The survey found that only 14% of college administrations had developed institutional guidelines for the use of LLMs. Likewise, only 18% of instructors had developed guidelines for their use or of students⁴⁷.

The above observations relate to academic institutions' perceptions of uncertainty regarding the value of GAI. Uncertainty arises from the lack of knowledge about the technology's value creation potential⁴⁸ as reflected in the PRG's survey above.

3.3.2 Response to a disruptive technology in the subsequent time period (T2)

Heaven's (2023)⁴⁹ study based on interviews with a number of educators, which was published in April 2023, found outlook for LLMs less gloomy compared to three months before. This means that $p_2 > p_1$.

3.3.2.1 Isomorphic actions to control/ gain resources from other key actors

Students are most directly affected by academic institutions' response to GAI. In a March 2023 survey conducted by non-profit education marketplace BestColleges among 1,000 U.S. students, 61% believed that GAI tools such as ChatGPT will become the new normal in the long run⁵⁰. LLMs have already found a wide range of uses among students. Students view ChatGPT as a personal tutor for free⁵¹. According to a study conducted by BestColleges, 22% of students used GAI to complete homework assignments⁵². Some students also think that GAIs provide more effective learning results than teachers. One student interviewed by the student newspaper Harvard Crimson said that he used ChatGPT to understand difficult mathematical concepts because "ChatGPT explains them better than his teaching fellow"⁵³.

Likewise, in a May 2023 survey conducted among high school and college students and parents by the education website Intelligent.com, 85% of students said that studying with ChatGPT was more effective method. Even bigger proportion, 96% reported that the use of ChatGPT resulted in improved grades. Among the parents surveyed, 96% noted that they preferred that their children to use ChatGPT to study instead of meeting with a tutor. Likewise, 30% of parent respondents and 39% of student respondents reported that they had fully replaced personal tutoring sessions with ChatGPT. Math and science subjects such as chemistry and biology were the most common subject areas where the GAI tools were employed. The survey respondents commented various benefits of ChatGPT such as its ability to correct mistakes, which makes it an effective learning tool. Other responses included "more relaxed, more

efficient” nature of ChatGPT and the ability to provide timely feedback on students’ learning progress and performance⁵⁴.

A high school senior reported that they discussed their writing “out loud,” with ChatGPT and used the bot as a role-play as an admissions counselor⁵⁵. Another high school student reported that they used ChatGPT to create study guides for college courses that they were taking at a community college⁵⁶. Some use LLMs to compose emails to professors to “get the right tone”⁵⁷.

Many students thus feel that decisions made by powerful actors are unfair (Table 3.3). Institutional actors sometimes engage in non-isomorphic responses⁵⁸. Although isomorphism is positively related with legitimacy⁵⁹, when an actor (e.g., a student) is seeking legitimacy from different sources (e.g., universities, future employers, etc.) with conflicting demands, some of their responses are likely to be non-isomorphic with respect to some of the sources. Instead of complying with control actions such as ban on GAI, students are arguing that those with influence over education systems should implement policy incorporating such tools. A high school senior appealed to “those in power”: “Regardless of the specific policy you choose to employ at your school, unblock and unban”⁶⁰. They are also challengers of the existing paradigms by asking academic institutions to provide clear guidelines, standards and criteria regarding the use of GAI. A high school senior put the issue this way: “The path forward starts by trusting students to experiment with the tool, and guiding them through how, when, and where it can be used”⁶¹.

Pressure and advocacy from external sources such as school and university advisory boards to include LLMs in school and university curricula have also increased. Harold Pardue, interim dean of the School of Computing, and dean of the graduate school and associate vice

president for academic affairs at the University of South Alabama put the issue this way: “We were assaulted by questions about large language models. I was asked point-blank [at an advisory board meeting]: ‘What are you doing in your curriculum? When are you going to put this in your curriculum?’”

The degree of isomorphism/non-isomorphism of a response is a function of organizational perception of gain or loss of control and/or resources associated with the response⁶². This means that for academic institutions that depend on tuition revenues, gaining legitimacy from students is important. Since students are demanding clearer guidelines on the use of LLMs from academic institutions, an isomorphic response would be to develop such guidelines.

Table 3.3: Students’ viewpoints of LLMs

| | |
|--------------------|---|
| College student A | "If students are being assigned essays that can be written by ChatGPT, perhaps it's not a good assignment in the first place" ⁶³ . |
| College student B | "To me, ChatGPT is the research equivalent of [typing assistant] Grammarly. I use it out of practicality and that's really all" ⁶⁴ . |
| College student C | "There's a remarkable disconnect between how those with influence over education systems — teachers, professors, administrators — think students use GAI on written work and how we actually use it. As a student, the assumption I've encountered among authority figures is that if an essay is written with the help of ChatGPT, there will be some sort of evidence — the software has a distinctive "voice," it can't make very complex arguments (yet), and there are programs that claim to detect AI output. This is a dangerous misconception" ⁶⁵ |
| High school senior | "If educators actively engage with students about the technology's capabilities and limitations—and work with them to define new academic standards—ChatGPT, and GAI more broadly, could both democratize and revitalize K–12 education on an unprecedented scale" ⁶⁶ . |

3.3.2.2 Institutional change agents’ efforts

Institutional change agents have emerged from a diverse range of industries and occupations to circumvent or challenge the prevailing institutional order (Table 3.4). Table 3.4 presents the viewpoints of various institutional actors and stakeholders towards GAI.

Table 3.4: Some key institutional change agents and their theorization

| | |
|--|--|
| Hans Stokholm Kjer, a professional project manager and freelance commentator | "We do not want to see graduates who are educated to prepare for 1950. On the contrary, we want graduates who can guide us through the developments safely towards and beyond 2050. So, if exams at universities are meant to give a picture of how good the students are, they can also demonstrate how good they are at choosing the right tools, among these, AI, where it is meaningful" ⁶⁷ . |
| Lucinda McKnight, pedagogy and curriculum researcher Deakin University | "Students today need to be prepared for a future in which writing with AI is already becoming essential" ⁶⁸ . |
| Johanna Payton, director of learning and teaching at City University of London | "Telling people not to touch it [LLM] is almost like saying don't use a calculator, don't use Google, and pretend like the Internet doesn't exist" ⁶⁹ . |
| Sam Altman, OpenAI CEO | "Generative text is something we all need to adapt to." ⁷⁰ . |
| John Tsang Chun-wah, Former Hong Kong financial secretary | "The current education situation in Hong Kong is teachers of the 20th century using a curriculum from the 19th century to train students in the 21st century" ⁷¹ (criticizing universities banning the use of GAI) |
| Kate Darling, research scientist at the MIT Media Lab | "ChatGPT and other AI-based language applications could be, and perhaps should be, integrated into school education. Not indiscriminately, but rather as a very intentional part of the curriculum. If teachers and students use AI tools like ChatGPT in service of specific teaching goals, and also learn about some of their ethical issues and limitations, that would be far better than banning them" ⁷² . |
| Peter Gray, Boston College psychologist | "Students are required to spend way more time than they wish doing work that they did not choose, that bores them, that seems purposeless to them. They are constantly told about the value of high grades. Grades are used as essentially the sole motivator. Everything is done for grades. Advancement through the system, and eventual freedom from it, depends upon grades." |
| Christopher Tang, professor at the University of California, Los Angeles | "Ultimately, AI tools are complements to and not substitutes for humans. Instead of banning the use of AI tools, educational entities should incorporate them into their curriculums so future generations can leverage these new tools to advance performance" ⁷³ . |
| Hong Yang, professor at the University of Reading | "My students will soon be graduating and starting jobs, and their employers might ask them to work with artificial-intelligence models. If they don't know how to use them properly, it could hold them back" ⁷⁴ . |

Inputs from various institutional change agents can help academic institutions fill knowledge gaps related to the benefits of GAI and help develop templates for incorporating these tools in their curricula. The discourses provided by these agents can also help them recognize the drawbacks of the current paradigm. In this way, the states of uncertainty and confusion can reduce.

As noted, there is often a vagueness in cause and effect when significant changes takes place in the environment, which makes learning difficult. In such situation, organizations lack the ability to undertake a rational search for solutions⁷⁵. Institutional change agents' explanations can help make the intertwining cause-effect clearer.

Institutional change agents are challenging the discursive construction emphasizing GPAs and the role of assessment, in which GAI is viewed as a threat. They have argued that the focus should be on employability and job performance rather than GPA. Richard Culatta, CEO of the nonprofit organization International Society for Technology in Education noted: "Kids in school today are going into jobs where not everyone they work with is human"⁷⁶. Likewise, OpenAI CEO Sam Altman said: "We adapted to calculators and changed what we tested for in math class, I imagine. This is a more extreme version of that, no doubt, but also the benefits of it are more extreme, as well"⁷⁷.

Some educators have stressed the importance of changes in the current educational and assessment strategies. Founding Director Emeritus of the Design Lab, University of California, San Diego Donald Norman argued that curricula and examination practices of our school systems "insist on unaided work, arbitrary learning of irrelevant and uninteresting facts"⁷⁸.

Students are also challenging the current paradigm of assessing their knowledge and skills by arguing that assignments that can be done by GAI such as ChatGPT are not good assignments after all (Student A, Table 3.3). Some students also disagree with the proponents of GAI bans arguing that the use of such tools should not be viewed as cheating.

Theorizing changes

As noted above, theorization is a key process through which institutional change agents facilitate the diffusion of new ideas⁷⁹. Two key elements of theorization are framing and justifying. Framing focuses on the need for change and justification is value of the proposed changes for concerned actors⁸⁰.

Framing

Framing focuses on why a change is needed⁸¹. Those criticizing LLMs and advocating their ban consider the possibility of cheating and plagiarism as the main problem associated with these tools. In this regard, one view is that it is important to ask the more fundamental questions: “What is the purpose of an examination; Why do students cheat?”⁸². More specifically, LLMs’ greatest threat is related to the teaching of writing. For instance, a study conducted with marketers, grant writers, managers, and other college-educated professionals found that ChatGPT makes it possible for people with limited writing skills to create higher-quality texts. However, the tool does not make much difference to proficient writers’ work quality⁸³.

Some have attributed cheating as a result of the drawbacks and weaknesses of the current institutional arrangements. In this regard, it is also important to discuss the meaning and significance of cheating in the academic context. In competitive situation such as sports or games, cheating is viewed as morally wrong because of the harm done to others as the cheater gains an unfair advantage over their competitors. In the education sector, cheating can lead to similar unfair advantages, a more important issue is harm done to oneself. Various ways of cheating exist. They include copying answers from fellow students during in-person exams, copying answers from pay-for-answers website such as Chegg, and buying essays from paper mills. ChatGPT is not being treated as yet another way to cheat. The response has been characterized by an unusually high level of fear, panic, and desperation. Students are interested in grades, GPAs, and completing a degree. Some are willing to engage in unethical activities to achieve these. This is due to that fact that education is being gamified. Gamification involves adding game-like elements, such as points, scores, rankings and badges, to make non-game activities interesting. In education, gamification involves metrics such as exam scores, grades, GPA, and the completion of a degree. These metrics make it easy to know the progress one

makes in the pursuit of education's true values. Values associated with a good education are more diverse and complex. They include personal transformation, learning skills, exposure to diverse worldviews and becoming a more informed citizen. Gamification simplifies this complexity by providing metrics for success. Values of some students are replaced by these metrics such as "getting an A" or "graduating with a 4.0". Students that are caught up by gamification and no longer value education for its own sake may not view ChatGPT as morally wrong or problematic⁸⁴. Gamification is appealing because it trades complexity for simplicity. The values and goals become clearer when metrics are quantified for measuring progress and success⁸⁵.

A related point is that those who advocate the need for changes in school and university curricula to incorporate GAIs have questioned the value of the existing institutional arrangements and the old paradigm of teaching and learning that requires students to memorize and summarize a body of knowledge. Under this paradigm, the role of academic institutions is to certify students' learning via assessment. In this situation, ChatGPT is "an existential threat" because the market value of credentials decreases since universities will not be in a position to confidently assert that the texts that they assessed have been created by their students⁸⁶.

Some major drawbacks of the old paradigm have been recognized. Critics have long challenged the paradigm that tests students' ability to "regurgitate" the information presented by their teachers without assistance from others⁸⁷. For instance, the use of meta-analytic techniques to review published research found a weak relationship between GPA and job success. The researchers argued that since other more significant predictors of success exist, GPA should not be used⁸⁸. In general, academic excellence is at best a weak predictor of career excellence⁸⁹.

Across industries, the correlation between grades and job performance is “modest” in the first year after college, which further decreases within a few years⁹⁰.

It is argued that this paradigm is faulty since it ignores the role of higher education in nurturing a transformative relationship to a body of knowledge. If the goal is to enable students to see the world and how they fit into it, assessments have a completely different meaning⁹¹.

Justification

Justification is value of the proposed changes for concerned actors⁹². Institutional change agents are utilizing a variety of strategies to justify the incorporation of LLMs in teaching and learning.

These agents are increasingly questioned the value of the current system of assessment.

Dumitrescu (2023)⁹³ asks "So what is the university paper for? If students can use a chatbot to produce a draft in seconds, why have them write anything at all?".

Maguire et al. (2004)⁹⁴ note: “[L]egitimacy must be broadly based; a narrow set of attributes that resonates with only one group of actors will not mobilize the wider cooperation that is needed to bring about change”. Institutional change agents have emphasized the value of incorporating GAI into their curriculums to a broad range of stakeholders. Some have stressed GAI's potential to improve the educational experience for students as well as teachers. For instance, LLMs are likely to supplement traditional teaching methods⁹⁵.

In a survey, 43% of teachers viewed that ChatGPT would make their jobs more difficult⁹⁶. In an effort to mitigate these concerns, supporters of GAI tools are shifting their emphasis towards elucidating how these tools can be advantageous for teachers. In order to gain broad-based legitimacy, some students who are complaining against the ban on LLMs in schools are arguing that these tools not only benefit students but also teachers. A high school senior argued that teachers can use LLMs to grade essays submitted by students and provide viewpoints

opposing the arguments that students have in their essays. Students can be asked to incorporate those ideas in their future drafts⁹⁷. Teachers often lack the time needed to carefully read and evaluate lengthy written assignments and compose detailed feedback. But a chatbot can do this in a matter of seconds.

Other have emphasized the benefits of incorporating LLMs in school and university curricula to broader society. Such a change allows future generations to leverage these new tools to enhance performance in the workplace, which can be beneficial for the humanity⁹⁸.

3.3.2.3 Academic institutions' evaluation of GAI's value creation potential

Organization' evaluate a disruptive technology's value creation potential by looking at applications, users, ecosystem, and business model⁹⁹. Firms often engage in what Teece (2007)¹⁰⁰ referred to as sensing, which involves the “filtering of technological, market, and competitive information from both inside and outside the enterprise, making sense of it, and figuring out implications for action”. This helps firms to seize the opportunities created by emerging technologies and increase their commitments¹⁰¹.

Heaven (2023)¹⁰² reported that academic institutions were reevaluating what LLMs mean for their teaching and learning activities. Many teachers revised their beliefs after learning about ChatGPT. They viewed LLMs as tools that could help make education better instead of being a “dream machine for cheaters”¹⁰³.

Some institutions, such as the University of Hong Kong, banned ChatGPT as a temporary measure. They noted that they needed time to develop proper policies for their use¹⁰⁴. Likewise, in May 2023, New York City's chancellor noted that the school district had been “caught off guard” initially by ChatGPT and was encouraging schools to use GAI tools to help students understand such tools including their potential, drawbacks, and the societal impact¹⁰⁵. In the same vein, Washington state's Walla Walla School District, which had blocked ChatGPT from

all of the school district's devices, announced plans in April 2023 to incorporate the tool into teaching and learning activities¹⁰⁶. Similarly, according to the federal education minister, the ban on Australia's public school students using GAI tools such as ChatGPT may be reversed in 2024. Students may face changes in how they are tested and graded¹⁰⁷.

3.4. Implications for academic institutions and educators

In response to ChatGPT, new discourses have emerged that could effectively challenge the old paradigm of teaching and learning. GAI is being perceived as disruptive to the existing institutional order of the academic industry. Based on the above analysis, this section discusses implications for educational and assessment strategies.

3.4.1. Pressure to incorporate GAI coming from many fronts

Academic institutions are facing mounting pressure from many fronts to deploy GAI in teaching and learning. Various institutional change agents have proposed new logics that view GAI as a tool to bring a positive change in in the workforce and the economy. These logics could challenge the existing institutional logic that emphasizes on assessments and GPAs. Students, who have argued against the old paradigm and in support of the new paradigm of GAI-based teaching and learning, can be viewed as endogenous institutional entrepreneurs¹⁰⁸. Challengers often are “negatively privileged” compared with the “positively privileged” incumbents who tend to have the formal authority and access to resources¹⁰⁹. Disruptive technologies may amplify the value of some resources. Students' knowledge and experience related to GAI are a key resource.

The value of this resource has been greatly enhanced by a rapid diffusion of GAI, which has helped students to strengthen their position as a challenger. This article demonstrates how the meaning and significance of resources change with the evolution of technologies. For instance, GAI has made resources of educators and educational entities less valuable.

Technology startups such as OpenAI, on the other hand, are exogenous institutional entrepreneurs. The combined voices of these endogenous and exogenous institutional entrepreneurs are likely to shape the curricula of schools and universities to incorporate GAI.

Students have also challenged the meaning of cheating. There is no real cheating in the sense of harming others to gain an unfair advantage. The argument of depriving students of needed GAI skills and knowledge by banning these tools to deter cheating is weak. The measures to ban GAI are not likely to obtain legitimacy from a broad variety of audiences.

Educators thus should start experimenting with GAI tools in order to get an idea of how helpful the tools could be. It is important to assess the quality of GAI's output in terms of relevance, reliability, accuracy, level of details, and the level that is right for the students. It is also important to evaluate whether the content generated by AI would be interesting to students and whether a variety of perspectives are applied to explain the concept. Moreover, the content must connect the concept, which is abstract, to real-life application. It is crucial to vet AI-generated content carefully. The instructor must be able to fact-check and edit the content and hence the knowledge as an expert is critical¹¹⁰.

3.4.2. Importance of making adaptation to the GAI

Equipping students for the future labor market is a key responsibility of academic institutions.

The labor market is changing drastically due to a rapid diffusion of AI among organizations.

Most of today's students are likely to work in organizations where they do not necessarily work with humans. Being successful in many careers will require working with LLM/GAI programs effectively.

Especially augmented intelligence or AI augmentation, which is “a human-centered partnership model of people and AI working together to enhance cognitive performance”¹¹¹ is

the future of the workplace. Such an approach can increase efficiency and has the potential to produce complementary and synergistic effect with a human touch, feeling, relatedness, and common sense to reduce the risks associated with automation of decisions. Students that lack skills to use LLMs will be at a disadvantage when they enter the workforce. To remain competitive in the workforce, students must learn how to effectively use LLMs to get a good output, and how to assess quality, accuracy and originality of the output. It is important for academic institutions to educate students how to use such tools in an ethical manner. It is also crucial for students to understand how such models work and what their limitations are.

Academic institutions thus need to adapt to the GAI era to remain relevant and competitive. They need to develop template for policy and procedure and ethical decision- making for teaching and learning by incorporating GAI.

3.4.3. Addressing misconceptions about GAI

Resistance to LLMs can also be attributed to myths and misconceptions regarding such tools. An educator said: “With ChatGPT it is difficult to distinguish the learning level of students and [I] cannot personalize teaching”¹¹². Such misconceptions need to be addressed. For instance, contrary to such belief GAI tools are being developed to better facilitate personalized learning. For instance, Khan Labs platform uses GAI to create personalized and interactive learning experiences for students and teachers. Its GPT-4-powered learning guide Khanmigo can be used as a tutor and a teaching assistant. Likewise, Coursera Coach is a ChatGPT-powered virtual coach, which can answer questions and give personalized feedback¹¹³.

Some educators are reported to using ChatGPT to generate materials for students at different reading levels. A teacher in the U.K, who teaches a class on current events for 14-year-olds reported that the tool helped them produce simplified versions of readings

on the causes of terrorism. The versions were helpful for students that had lower reading levels than the class average or those with English as a second language¹¹⁴.

3.4.4. Contradictions associated with GAI

Various contradictions associated with GAI have been key forces of institutional changes. AI and ML are the most important skills for job seekers today¹¹⁵. According to a 2021 report of ITCareerFinder, jobs that require AI/ML would grow by 71% by 2026 and employers would pay average premiums of \$14,175 to successful applicants¹¹⁶. Today's students will have to work with GAI programs when they enter the workforce. It is important for students to know GAI's strengths and weaknesses as well as "hallmarks and blind spots"¹¹⁷. Students without GAI skills thus are less likely to gain legitimacy from employers. For students, conforming with the norms of their schools or universities or intra-institutional conformity¹¹⁸ has created inter-institutional (between academic institutions and employers) incompatibilities.

If compliance with the existing institutions results in technical and functional inefficiency, institutional actors may question such compliance, which leads to institutional changes¹¹⁹. If LLMs are blocked, students are not able to take advantage of benefits that these tools offer such as role-playing as an admissions counselor, discussing their writing out loud and creating study guides for their courses. They may not be able to find a good job when they graduate.

Plagiarism detection tools such as Turnitin helped academic institutions enforce academic integrity and make adaptation to a digital world. For instance, Turnitin compares an assignment's text against an archive of internet documents. Many academic institutions are considering the adoption of new technologies to prevent students from using LLMs such as ChatGPT to cheat¹²⁰. However, a lack of effectiveness of such tools has also been reported. Ian Linkletter, emerging technology and open-education librarian at the British Columbia Institute of

Technology noted: “I am worried they’re [AI detectors] marketing it as a precision product, but they’re using dodgy language about how it shouldn’t be used to make decisions. They’re working at an accelerated pace not because there is any desperation to get the product out but because they’re terrified their existing product is becoming obsolete”¹²¹. Academic institutions lack an adaptability to the GAI world because of lack of tools to detect the work written by LLMs.

3.4.5. The importance of control and resources

The PRG survey also found that compared to larger or private colleges, smaller colleges and public colleges were less likely to have developed LLM guidelines¹²². As noted above, organizations are more likely to engage in isomorphic actions with respect to some institutional actors if they perceive that gain or loss of control and/or resources associated with such actors are of high importance to them¹²³. Since private colleges depend substantially on tuition revenues to cover their costs gaining legitimacy from students is more important for them. Since students are demanding clearer guidelines on the use of LLMs from academic institutions, an isomorphic response would be to have such guidelines. Public colleges are less likely to face such pressures.

Larger colleges’ higher tendency to adopt LLMs and develop guidelines can be explained in terms of the rank effect¹²⁴. The idea here is that the deployment of new technologies such as LLMs tends to diffuse from large to small organizations.

3.4.6. Banning and blocking LLMs are inappropriate and infeasible

New York City education department blocked access to ChatGPT citing “negative impacts on student learning, and concerns regarding the safety and accuracy of content”¹²⁵. It can be argued that this ban is based on an outdated and misconceived idea of what student learning should be. Educators should encourage students to learn how they can use all available resources to come

up with most appropriate answers to important problems¹²⁶. Students should also be taught to ask others for help. In addition, they should be taught to give full credit to those that help them¹²⁷. Ironically, when students are blocked from accessing GAI tools such as ChatGPT, there is no opportunity for them to learn skills needed in the future. In a February 2003 survey of 1,000 U.S. business leaders conducted by the career site Resume Builder, 90% of respondents said that ChatGPT experience is a “beneficial skill for job seekers”¹²⁸.

Even if academic institutions decide to ban LLMs by ignoring the various benefits and pressures they are experiencing, it is technically difficult or even impossible to ban them. For instance, limitations of LLMs include output that “appear bland and generic” and lack of sources to document cited in outputs. AI researchers are working on several possible ways to address such limitations. For instance, there have been some experiments linking chatbots to source-citing tools. Others are training the chatbots on specialized scientific texts¹²⁹. It is thus not possible to ban LLMs entirely¹³⁰.

3.4.7. Strategies to make assignments cheating proof

Several measures and methods can be used to make assignments cheating proof for academic institutions that are concerned about GAI’s negative effect on academic integrity. Some universities are implementing policies that require students to add an appendix to papers and other take-home assignments to explain how GAI is used. Some normally do not allow AI tools in in-class examinations, tests, or assignments. In order to assess students’ knowledge, educators can ask students to give a presentation of their written work. As a further measure to maintain academic standards, teachers can run the assignments through ChatGPT before giving them to students. Finally, until now, ChatGPT’s information pool, which was limited to its training data, only goes up to 2021. This means that it cannot access real-time information. Educators can thus focus the assignments on more recent news events.

It is worth noting that tools to detect GAI-written materials lack accuracy. In January 2023, OpenAI launched an AI detection tool to help teachers and other professionals detect AI generated work. In July 2023, the company shut down the tool citing a “low rate of accuracy”. The report recommends measures should include domain filtering, URL filtering and content inspection¹³¹. To use a GPT detector, it is important to use several of them on a single piece of text and aggregate the results. However, complete accuracy is not guaranteed even with that¹³².

3.4.8. Intensification of educators’ roles

Prior researchers have noted that, under some conditions, educators’ roles can intensify¹³³. Role intensification is defined as a process that occurs when “teachers are expected to respond to greater pressures and to comply with multiplying innovations under conditions that are at best stable and at worst deteriorating”¹³⁴. In some ways the situation in the context of GAI is deteriorating from the perspective of educators. For instance, Open AI compared GPT-4 and GPT-3.5 in terms of their capabilities to take several exams such as the SATs, the GREs, Uniform Bar Exam and some AP tests. GPT-4 got consistently higher scores and better than some humans¹³⁵. On a simulated bar exam GPT-4 scored in the 90th percentile¹³⁶. GPT-4 also supports more languages, and is less likely to hallucinate than former models¹³⁷.

Apple and Jungck (1992)¹³⁸ argue that intensification may force teachers to work under “interventionist styles of management”. This situation forces them to “rely on ‘experts’ to tell them what to do and . . . begin to mistrust the expertise they have developed over the years”¹³⁹. Under these conditions, teaching-related activities are dominated by external plans and requirements. Teachers may distrust their expertise and show a tendency to rely on others. They are also likely to become de-skilled¹⁴⁰.

3.5. Conclusion

This paper provided an analysis of the nature of the institutional war in the context of GAI in the academic industry. GAI has been a threat to the existing institutional order. We discussed a variety of examples of responses to GAI and the reasons behind the decisions. The above discussion indicates that the battle between incumbents and challengers have turned the institutional field around edtech into a contested territory. The challengers of the existing institutional order have mobilized diverse discourses to facilitate the incorporation of GAI in teaching and learning.

Various contradictions and incompatibilities are also facilitating significant changes towards the integration of LLMs in teaching and learning. Some institutional actors are questioning the value of the existing institutional arrangements. It has been argued that gamification of learning is a particular aspect of the current paradigm that has led to increased cheating. Institutional change agents maintain that LLMs are valuable to students, teachers and other different stakeholders. The required critical thinking, which involves analyzing and evaluating an issue in order to form a judgment, is different in the GAI era. Issues that students face today are different from those faced by students few decades ago.

Banning students' use of LLMs such as ChatGPT is a wrong-headed approach and could hinder students' ability to learn skills that are important to succeed in the workforce. Academic institutions that attempt to ban LLMs are likely to have weak discursive legitimacy. At the same time, it is crucial for students to understand many practical and ethical issues associated with GAI. They should also be aware of the capacities and the limitations of GAIs such as ChatGPT. For instance, GAIs can be wrong. ChatGPT, for example, sometimes "hallucinates". This paper also provided pointers to make assignments cheating proof for

academic institutions that are concerned about GAI's potentially negative effect on academic integrity.

Finally, universities can also utilize their GAI strategies as a competitive advantage tool to attract students. LLMs can also be viewed as a competitor. In this regard, it is crucial to understand a competitor's capabilities, and competencies.

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