The Future of Higher Learning With Generative AI

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Contents

The Main Takeaways

1. An insider's account of what AI tools can do in college teaching paints a very optimistic picture even at this early stage, partly due to the fact that many CustomGPTs have used textbook knowledge in providing answers.

2. Although some suggest that human professors will undoubtedly be completely replaced by AI, others argue that there are domains or fields where humans have an edge, such as human connection, emotional intelligence, real-time adaptability, trust and ethics.

3. The future of higher education with GAI is fundamentally uncertain, including whether AI will replace all human professors completely, whether the college tenure system will come to an end, or whether there will be as many colleges and universities as we have today.

4. One area where human faculty can add more value to learning is teaching the "nuances" or crucial details. The other value added area is to integrate separate knowledge points into an assembled version ready to be applied in practice.

5. We do not want to pit humans and AI against each other, separating a winner and a loser. The only healthy and constructive relationship is synergistic, such that combined and crossed-over efforts and progresses create greater gains than one-sided efforts and progress would. The stronger each side, the better off or stronger both sides.

6. Following the co-evolution logic, more frequent interactions with AI in learning help all students, who may take the forms from writing critiques of AI summaries, asking follow-up question or beginning with new questions, and reading the key originals to write human summaries and then compare with AI versions.

7. While the insurance revolution focuses on the supply side, a higher learning revolution is likely to be more productive if we focus on, and start with, the demand side (i.e., students, peers and parents) both because the current learning goals have more problems and because it is new learning demands that will shape up the new supply, affecting the future of human professors.

8. Humans are the only qualified and desired leaders for future educational innovations, but some humans will be laggards in the learning revolution. GAI might help reduce the human difference so that we are better qualified to lead changes.

9. Humans will always have a need to differentiate from each other, in the sense that they always desire some external confirmations or certification to prove they are better than others in a particular domain or field of knowledge. This need will help keep colleges to stay for a long time, other things equal.

10. Humans also prefer to stay with the same age group, which helps explain the enduring popularity of colleges. The majority of college students are

high school graduates in the same journey toward a bachelor's degree before getting a job, or getting a higher degree.

11. Humans also prefer to learn through visual means. This includes watching videos or live presentations with our naked eyes.

12. The second fundamental human learning preference is to transfer the ownership of learning materials. The best way to learn something (knowledge, skill) is to make it your own, whether complete or partial. We always appreciate more, memorize better and understand deeper what is in our own heads.

When it comes to AI usages and potential impacts on higher education, there seem to be two main viewpoints among college faculty and administrators: "AI doubters" vs. "AI believers." The former may be represented by Professors Gary Smith and Jeffrey Funk (see my earlier post here debating their view that AI "flunked" the critical thinking test).

I consider myself one of the "AI believers" for sure.

1 An Insider's Account on AI Capabilities

But you should read the enthusiastic words from this Forbes article by Steve Andriole, a business professor at Villanova University, on how Generative AI (GAI) can fundamentally change higher education:

"If fact, it's so big that it **literally changes the very premise of learning as we know it** today... **they're much closer to partners than assistants**... Gemini and Chat have often made terrific suggestions and found materials I missed in what I thought was an exhaustive search." (Emphasis added, note the potential typo "If fact" at the beginning that should be "In fact").

Since Androile currently teaches at a college and has access to what he calls "CustomGPTs" that apparently are designed for college professors, he must speak from firsthand experience. In doing so, he offers a valuable and timely public service by demonstrating the capabilities of today's AI tools. I wish more college teachers in different disciplines and subject fields would do the same to keep us updated.

Androile provides detailed accounts of what he has accomplished with GAI tools for a graduate level class of Marketing, ranging from developing a terrific syllabus to creating course videos in multiple languages by describing to a Cus-tomGPT "about what they'd like the video to communicate with their or another

image... select the image they want the 'actor' to use? ... also add a British accent and insert some (GenAI-developed) jokes into the videos if they like... Did I forget the cases? Introduce a product and then ask Gemini to write the press release and describe the marketing campaign."

2 My Quick Comments

It is fair to claim, based on Androile's descriptions, that even as early as today, there is little that AI can't do to teach an entire course from conceiving, designing, developing and delivering in higher education.

2.1 Caveats in Evaluating GAI

Androile raises a good question of "What's a 'Professor'?... what's the unique contribution professors can really make?" He believes professors will be replaced no later than 2035 in his essay. "There are trends here that cannot be ignored. It's all just around the corner. Professors are not a protected species."

I want to add two quick caveats: The unique contributions of human professors are not limited to teaching. At research universities, the reality has been that professors pay far more attention to research and publishing than teaching, for the simple reason that publishing rewards far better than teaching.

Secondly, for those in favor of the value of the GAI tools, it helps to bear in mind that professors could be biased about AI contributions. One reason is that the data sources used by educational chatbots, or answers to the questions asked by faculty members, tend to be more narrowly defined and reliable than others, in the sense that they utilize commonly accepted, textbook type information.

Not everything in the real-world fits into this category. There are many domains of knowledge, especially in social science, that have deep-seated uncer-

tainties and variability.

But even textbooks do not stay constant, they just updated slower than others. For example, after at least 70 years, the 4Ps principles (Product, Price, Promotion and Place) in marketing are still widely taught at universities and colleges today, not because they are absolutely right, but because they have been on the books for decades and can adapt to changes. Digital and social media marketing for example can still fit into the framework, even though they have been cited as criticism against the 4Ps.

2.2   Replacement of Human Professors?

But Androile is not alone in his view of replacing human professors. This post from Medium.com claims:

"The replacement of human college professors with AI professors **is not a question of if, but a matter of when** it will happen. Technologically speaking, by the 2030s, AI should be competent enough to serve as professor assistant (PA) in most colleges and universities. By the 2040s, AI should be good enough to commence tenure as faculty. By the 2050s about half of university professors may be AI rather than humans. By the 2060s, it will be hard to justify the need for human professors." (Emphasis added).

The post goes further and questions the value of traditional college education: "Along the lines of the eventual replacement of human faculty with AI faculty, a related and perhaps bigger question will be about the value of a traditional college education."

It then offers a long list of degreeless celebrities as the proof that we do not need a traditional college degree to succeed. I find two familiar names quitting colleges in California: Tom Hanks from Cal State Sacramento, and Steven Spielberg from Cal State Long Beach. Finally, Taylor Swift never went to college.

2.3   Changes on the Students Side

The above are changes on the teacher side, what about the student side? This question deserves much attention because while the insurance revolution focuses on the supply side, a higher learning revolution is likely to be more productive if we focus on, and start with, the demand side.

Androile does not give us a very optimistic picture there, either. The same general GAI tools will be available to students (perhaps not the CustomGPT for teachers). In the extreme scenario, "students do not need to read or watch anything" as AI can do the reading and watching for them and come up with summaries that are required by assignment.

This CBS news report provides supporting evidence: "A recent survey by Best-Colleges revealed that 56% of college students admit completing assignments using AI technology."

The report also tells us something to be concerned about the quality of AI answers, although we don't know how common the incidents are: "'We have seen that our library has received more requests for interlibrary loans, for books or journals that don't even exist because somebody looks at a reference that was generated by a generative AI model that has, you know, journals and books in there that don't exist,' Tilman Wolf, the Senior Vice Provost of Academic Affairs at UMass Amherst explained."

Babson College offers four faculty recommendations:

- Forbid the use of AI.

- Discourage AI use – but require proper credit when AI is used.

- Encourage – and even assign – AI augmented work.

- Decide whether AI can be used on a case-by-case basis for assignments.

Such policies offer limited value, as they are too broad — ranging from discourage to encourage — to be practically useful. More on this later.

3 A Survey of Academia Attitudes & Policies

Returning to Androile's Section of "Now what?" on academia responses to GAI:

"Some universities will just keep their heads in the sand for as long as they can, ... Other universities – the smart ones – will immediately assemble open-minded Task Forces to explore how and where GenAI will impact higher education."

His suggestions? "There's no question that academia's response is late, inconsistent and incomplete... Higher education needs a **fast audit.** The roles that professors and students should play in the education process must be re-defined – and then re-invented, if not re-imagined altogether. **The larger issue is the relationship between humans and AI.**" (Emphasis added).

4 How The Other Side Sees It

Androile cites this blog post by Sarah Hanawald on ERB.ORG September 12, 2023. The official title is "Why Teacher Intelligence Will Always Matter More Than Artificial Intelligence," but the running head says it more directly: "AI Won't Replace Teacher Intelligence."

In terms of generative AI, Hanawald feels "positive it's going to be exponentially faster than previous technological adoptions have been." But she also argues that "When social media emerged to become part of the landscape, we (educators) let social media teach students about social media for far too long. We

need to do a better job this time around."

Hanawald raises a good point, "It's never been more important to explain the *why* of every lesson to students and emphasize the importance of cognitive skill development over producing a final product." so that students won't think, "My writing isn't as good as AI-generated text, so why bother?"

I also like her thought-provoking question: "When generative AI can assist teachers and academic leaders in more effectively accomplishing various tasks like grading, personalized instruction, and administrative management, what does this recaptured time empower teachers to do more of?"

This touches the core question of how we humans take advantage of AI driven savings in time and efforts to do something that brings more value to the learners.

Unfortunately, Hanawald spends the bulk of the space on *dividing* humans and AI, with the main thesis that in certain fields (e.g., Human Connection and Emotional Intelligence, Real-Time Adaptability, Trust and Ethics), it is teacher intelligence that will trump AI.

It is unnecessary (even damaging) to separate a winner and a loser here, although I can fully understand why many people get into that thinking. When something new emerges on the horizon, it is one of the basic human instincts to wonder about "What is it?" or "Is it stronger than us?"

Even in the above fields that Hanawald believes humans having an edge, it is entirely likely that AI apps may emerge to offer recommendations and assistance to human agents on things humans traditionally are strong, such as human connection and emotional intelligence, real-time adaptability, trust and ethics.

In that sense, I like Tom Rochon's essay better on teaching writing with AI, to which Hanawald cites and recommends. Rochon has a good summary of why teaching students writing matters, 'so they are able to *formulate* and *communicate* their thoughts accurately and clearly... To get the AI 'take' on any given topic is

not much different from reading someone else's thoughts on that topic as an inspiration to formulating and refining your own."

I would add that to write is also to think, in addition to "formulate" and "communicate." Without mentioning the "thinking" part, we risk creating an impression that writers have predetermined ideas, all that is waiting is to organize and lay them out nicely.

In my view, writing, just like thinking, is an *iterative* process where sometimes brand-new ideas emerge to add to the old ones in the midst of writing up. It is not necessary to wait for the writer to have everything figured out before they start drafting.

It is this "writing = thinking" notion that makes writing and AI both dynamic, because writers will learn not from someone else for once, but multiple times or as many times as the writer wishes, and from a massive number of people.

However, I believe Rochon is thinking of the same thing as I am talking about, at least the iteration part. Later in the essay, he talks about "revision process as a way of honing skill." If anything that differs between the two of us, I would say revision is not just for honing skills, but also rethinking and reorganizing your own thoughts at the same time.

Rochon also suggests a way to get the teaching of writing started, "the student could be asked, as a first step, to write a critique of the AI-generated essay."

I am always in favor of critiquing others as the best way of developing critical thinking. The only thing I would add is that it may or may not be the best first step, as critique requires deep thinking and foundational knowledge, the two things not all students already possess at the beginning.

One alternative is to introduce diversity. For some strong-thinking students, we can do what Rochon suggests. Others may need some training first to get used to AI essay.

Even more importantly, I would suggest more frequent interactions with AI essay during the writing, which may take the forms from writing critiques of AI summaries, asking follow-up question or beginning with new questions, and reading the key originals to write human summaries and then compare with AI versions.

5   A Synergistic Human-AI Relationship

It pays to have a fundamental understanding of humans-AI working relationship. While General Artificial Intelligence (GAI) is still in its early stages, the information we have so far suggests that a synergistic human-AI relationship is the only healthy and productive path forward.

5.1   Defining Feature of synergistic Relationship

In a synergistic system, combined and crossing over efforts and progresses create greater gains than one-sided efforts and progress would. The stronger each side, the better off or stronger both sides. On the other hand, an over-dependence on either side, whether humans or GAI, is likely to slow us down.

Here is a negative example showing an early sign of depending too much on ChatGPT: "reliance on ChatGPT is linked to procrastination, memory loss, and a decline in academic performance."

This is on top of the other well-cited AI usage problems cited by the earlier CBS news report, such as "plagiarism, inaccurate information, and students not learning how to write their own papers or do their own work."

5.2   Humans Are Leaders and Laggard At the Same Time

A synergistic relationship does not mean the two sides are equal. Humans are the only qualified and desired leaders for future educational innovations, whether they are AI driven or otherwise. People (including me) like to call our time as the "GenAI era," but deep down, it has been, and will continue to be, the "Human era" because we humans are in charge of the show.

This may not be obvious when AI generates a superior syllabus that even the best professor cannot match. But bear in mind, the AI version merely gathers all the best syllabi created by other humans.

On the other hand, humans might also be the weaker link or laggards in this synergistic system. After all, machines tend to lean much faster than humans.

Here is a real-life example: Even today, after more than 70 years since its invention, we still have people who don't know how to kill the remaining — but unwanted — time on a microwave. Since running an empty microwave oven will generate sparks or arcing, these people would leave the oven door open, waiting for the next user to use up the seconds or minutes — when a quick press of the "Cancel" button would have solved the problem entirely.

On the other hand, we also have people working on the next generation of Microwave oven that is small enough to be carried by a human back.

Looking around, we always see a large knowledge gap among people. This is why we rely on area experts to tell us what to do and to say.

The good news is that AI assisted education will reduce that gap, such that we will all learn basic knowledge of something quickly at our fingertips if we want — all it takes is human curiosity. But even curiosity will benefit from AI when our questions are always answered 24/7, always waiting for the next question.

6 Students Do Need to Read & Write

Following the synergistic goal, especially the co-evolution logic that calls for both humans and AI to move forward together, we need to make it clear that students will still read and write on their own — often with the AI assistance.

Here's where Androile's perspective and mine diverge. He believes AI can render reading and writing obsolete for students, as AI can swiftly summarize lengthy assigned readings. However, the concept of co-evolution suggests that continued human reading and writing benefit not only human learning but also the development of better AI tools and summaries.

The more people read and write, the better chance some of us will add new insights, wisdom and knowledge points to be entered into the next AI chatbots.

The best way to understand the necessity of reading and writing is to consider skateboarding. One cannot do it well unless one gets on the skateboard and falls time and time again. Watching others to do it helps little, whether on YouTube, Instagram, TikTok, in person, or reading AI summaries.

The same applies to reading and writing. Learning AI summaries is not the same as reading the originals. The former is like eating instant noodles: You cannot get all the nutrition that you can get from a full meal. Part of it is creditability. Even today, I still find it necessary sometimes to check out the original pieces listed by Perplexity.AI — after finding answers from Gemini: Having someone's name to cite for from a trustable source still matters.

There will be "errors" or missing pieces with AI summaries, regardless of how good the models will be made in the future. A better model can reduce or even eliminate simple AI mistakes, but not "errors" caused by variations from the sheer amount of underlying knowledge points involved in a chatbot's answer. In terms of getting the most important points from a long document, the best qualified summary normally comes from the original author. Any summary written by

any third party will have a non-zero chance of missing something crucial in the mind of the author.

Some combinations of knowledge points will emerge as common sense error, especially when an AI model does not have a "black list" of prohibited answers installed through an internal auditing mechanism.

But equally importantly, oftentimes reading the original helps understand the summary better, while the same holds from reading summaries to the originals.

Going back to the skateboarding analogy, reading the originals is like getting on the skateboard by yourself, while reading AI summaries is like watching a video of others. The only right approach is to let AI help students read and write more, enjoy reading and writing more, and read and write better than before.

One way to achieve the goal is to begin from the AI summaries, and then direct students to read the originals, followed by writing summaries of their own and compare them with the AI summaries to arrive at a good evaluation of the latter.

The other way is to use AI summaries as an introduction and then ask follow-up questions while you are doing your reading and writing. The more frequent you cross the line between human and AI, the better.

7   The Uncertainty of the Future in Higher Learning

The future of higher education with GAI is fundamentally uncertain, including whether AI will replace all human professors completely, whether the college tenure system will come to an end, or whether there will be as many colleges and universities as we have today. These are all hard to predict with certainty at this early point.

Fundamentally, we have two forces driving the future in a tug-of-war: the

"Lab-Diamond" force and the "cost" force. Lab-grown or man-made diamond may never be appreciated as much as natural diamond, even though chemically, optically, and gemologically they are the same. By the same token, AI professors may not be perceived as prestigious — and reliable — as human professors, at least before AI faculty fully prove themselves.

Humans are known for a preference for natural things, which are often equated to "real" or genuine things. I am sure some couples would never even consider getting a lab-diamond, which may be considered "fake."

There is no evidence that a college degree is as emotionally attached as a wedding ring. This is where another driving force of cost comes into play. Lab-diamond is 30-50% cheaper than natural diamond, even though no one can tell them apart with naked eyes.

Humans are also known for cost-cutting and searching for best deals. I am sure some people would prefer AI professors as long as the cost is significantly lower.

Lab-diamond and cost shape the future demand of higher education. But humans have other needs, one of them is differentiation.

8   Fundamental Human Needs & Preferences

Humans will always have a need to differentiate from each other, in the sense that they always desire some external confirmations or certification to prove they are better than others in a particular domain or field of knowledge.

8.1   The Lesson from Tattoo

Ask why some people having tattoos or rings on parts of their bodies (e.g., nose or nipple). When I was driving Uber, I asked those people how much pain

they had suffered, and they all said from "very painful" to "somewhat painful." I never asked why they had done that, because I already knew the answer: Regardless of what they may tell you, tattoos and body rings are ultimately driven by a deep-seated human need for differentiation.

Getting a degree from a prestige university is similar to getting a tattoo, both are driven by the same need for differentiation. The only difference is that tattoo is pure personal, while which college to go may concern your parents. That said, it is unlikely that universities and colleges will go away in the future — even after the bulk of teaching will be taken over by AI professors — because they serve a fundamental social function for humans to separate from each other.

This means AI in the future will have to fulfill that need one way or the other. It is possible that we start from full "human certifiers" to a hybrid of "AI-human certifiers" before we eventually move to "all AI certifier" mode.

But a more likely scenario is to keep human certifiers for a long time, because if nothing else, college graduation ceremony is an emotional moment and having a machine to issue the degree diploma is just not that sexy or exciting, not by the shared preference today.

8.2   The Need for Same Age Interactions

The other side of the human differentiation is birds of a feather flock together, meaning to satisfy humans' social need of finding companies with shared preference. The most important "feather" is age groups. People naturally gravitate towards others of similar ages, which helps explain the enduring popularity of colleges. The majority of college students are high school graduates in the same journey toward a bachelor's degree before getting a job, or getting a higher degree.

Being in the same age group creates many derived needs, such as hanging around with peers, playing college sports, going to bars, having spring breaks, or

perhaps most importantly, having the possibility of finding a life partner, starting from dating someone on campus.

I believe these derived needs — if the current trend of one in five American young males choosing to live with their parents does not continue or expand — can play a huge role in keeping the centralized learning more fun and more sustainable. Having a physical campus can be essential, not replaceable by a completely virtual campus.

In addition to human needs for differentiation and age based coalition, we also must consider their learning preferences, which significantly shape learning efficiency.

8.3   Human Learning Preferences

The first learning preference is to learn through visual means. This includes watching videos or live presentations with our naked eyes. Although humans have other sensing organs like ears and nose, eyes are still special such that we have a saying, "seeing is believing," but not "hearing (or smelling or touching) is believing."

When in doubt, we would like to start from (and sometimes all the way end in) learning by going to lectures, recorded or live, by someone with knowledge authority like a professor. We also would go to YouTube or other visual media first. The same generally applies to learning something — or anything — that is brand new to us.

Of course, what is in a video almost always contains audio to make them multimedia in nature. Live exchanges are still preferred to the extent that whenever the audience has questions they can ask and get an instant answers. But live exchanges have capacity limits, while digital exchanges do not. In a way that is understandable, having capacity limits adds to the privilege of live exchanges, as

we know the resource is limited and thus to be more appreciated than otherwise.

In a way, the preference for live exchanges in learning is another factor favoring the stay of local colleges, even though different professors are essentially teaching the same textbook stuff, and even though some professors are doing a lousy job compared with the best ones in the field.

I summarize the other learning preferences below:

1. by repeated exposures, preferably from different people in different settings from different perspectives, but still on the same knowledge points.

2. by learning from doing or practicing, again preferably in different settings and with more body parts (e.g., eyes, ears, tong, nose, skin and of course brain).

3. by asking questions, sometimes having question first and bring them to learning. Otherwise, generate your own questions along the way. Remember, having questions of your own is always better than not having any question. This holds cognitively and for measurement purpose. Cognitively, you learn faster and remember better for answers related to your own question, while for measurement purpose, having more questions indicates your brain is actively engaged in learning.

4. by analogy and imagination, such as forming a picture when the teacher is describing something, or comparing something the teacher tells you with something else. It does not matter how illogical the comparison may sound, as long as it helps you to remember or to understand. You can even tell teachers of your analogy, just framing it by saying something like, "I know this does not make sense to most people, but I find it interesting that…"

5. by using all your body parts, like skateboarding, in which you learn to coordinate your minds and different parts of your bodies.

6. by looking at things from different perspective, different disciplines or different knowledge fields.

7. by learning both from the people possessing more knowledge than us *and* from peers.

8.4 Ownership Transition Preference

The second fundamental learning preference is to transfer the ownership of learning materials. The best way to learn something (knowledge, skill) is to make it your own, whether complete or partial.

Prove to yourself by putting down some thoughts in writing, whether physically in an old style note pad or digitally in a laptop, tablet or phone. Leaving it alone for one year or one decade. When you pick them up again later, you will find the notes are still familiar, easier to understand than a note written by someone else, more interesting and more emotional. This has nothing to do with being a narcissist, but rather a part of human nature, which prioritizes our own minds and bodies.

There is magic in claiming learning ownership, in transitioning knowledge or skills originally in the public domain.

In the old days, there was no shortcut in the transition process, we must take the painful steps to learn something. In the GAI era, however, AI can flatten the learning curve significantly, making the ownership transition faster and easier.

The evidence of knowledge ownership can come in the form of your learning notes, papers, essays, books, audios and videos, lectures, and tutorial notes.

9 When Bulk Knowledge Becomes Commodities

Another foreseeable trend is that AI will make learning the bulk of knowledge a commodity in the future, which could mean colleges and university will cut down the number of human professors to save cost. Of course, the pace of downsizing human faculty will vary by major fields and disciplines — and also over time.

What is not sure is whether human professors will be completely replaced by AI. I tend to believe the hybrid mode will last for a long time, given that there will be bias against AI initially, such that AI drawn paintings will not be appreciated as much as human paintings (the older human paintings are the more valuable), just like the lab-diamonds.

But the key hinges on whether a new model of teaching and learning will emerge that allows human professors to be more appreciated and become an endless source of "value added" in learning of higher education.

One thing in favor of human faculty is to teach the "nuances." In education and in real life, often times it is not the main knowledge points, but rather the seemingly trivial details that separate an expert from others.

Here is a good example, in insurance we have a formula of Premium = Insurance Rate x Coverage Limits. In a simplified way, this is what you need to know for easy premium calculation.

When I first asked Gemini, it did not mention the crucial detail that insurance rates are peril specific. For example, the insurer might provide a single premium for the entire policy, but that premium will be broken down showing how much of that premium is attributed to each covered peril. In this case, the formula Premium = Rate x Coverage Limit still applies, but it's used individually for each peril covered by the policy.

Say a homeowner's insurance policy with coverage for fire damage and theft.

The rate for fire damage is 0.5%, and the coverage limit you choose is $50,000. Using the above formula, the Fire Premium = 0.5% x $50,000 = $250.

On the other hand, the rate for theft is 1%, and the coverage limit you choose is $10,000, then the Theft Premium = 1% x $10,000 = $100. The Total Premium = Fire Premium + Theft Premium = $250 + $100 = $350.

Now, say we have two students, John and Ed, both being asked to explain how insurance premium is determined. John cites the formula **and** the peril specific insurance rate, while Ed cites the formula but nothing about the latter fact, John is considered "learned" but not Ed — even if both John and Ed know the formula. This is where the extra value comes from knowing the seemingly trivial details — especially when every AI app will mention the formula.

The other advantage that human professors possess is to integrate separate knowledge points into an assembled version ready to be applied in practice. The power of integrated knowledge shows when there is a team of interdisciplinary professors acting as consultants for student projects. Such a need or educational demand does not or rarely exists in today's higher education, but will become routines after a demand side learning revolution, to be discussed later.

10   Changing the Education Goal

I believe we must change the goal function of learning. Before GAI, learning means to start and to end in textbooks in a centralized location for a largely predetermined number of years, and the final goal is to get a diploma or degree.

GAI changes that because knowledge contained in textbooks will become commodity first, before other knowledge types. When something becomes a commodity, its value is generally less appreciated. This is akin to the value of horses for transportation after automobiles became widely available. Students and par-

ents will naturally ask whether a college degree is worthy of the money, or more like what extra value colleges will offer to students above and beyond what AI can offer.

This is the moment when demand of higher education will be different from before GenAI, and is also the moment a demand side learning revolution is likely to come.

In a way, Americans are not the worst in setting the wrong education goals, Asians, especially East Asians (China, Japan and Korea) are the worst. I have watched a Japanese movie talking about how a high school girl who was lagging behind in all subjects but managed to be accepted by one of the best universities in Japan after just one year intensive reviews and tutorials.

Many Chinese parents prioritize sending their children to Ivy League universities in the United States. However, the focus on the prestige of the institution often overshadows crucial questions: Why is an Ivy League degree important? What are the long-term goals after graduation? Viewing college admissions as the finish line hinders a well-rounded educational journey.

With GAI taking care of learning the bulk knowledge, and when the bulk knowledge itself becomes accessible anytime, anywhere, centralized learning in a fixed block of years may still hold its value to some old school people, but not to all. Even to "old schoolers" the value will be somewhat reduced, especially when the cost of AI learning is significantly lower.

Most importantly, the goal is no longer to prove you are "book-smart" in your major field but "book-and-street smart," where being "street smart" means excellence at applying book knowledge to solve real-world problems, through critical thinking, integrating cross-disciplinary knowledge, being innovative and creative, and having a holistic understanding of issues and problems in the real world.

To that extent, the learning will use more seminars, essays, case studies and

projects than tests on bulk knowledge to get the job done. The walls separating colleges and companies will be shorter or gone, as learning will be carried out in both college and company.

Nothing will be more valuable than startup projects, where entrepreneurs MUST be "book and street smart" by default, otherwise they fail. Nothing else combines theory and practice better, and nothing else demands a package of IQ, EQ, vision, determination and social skills as much. Finally, but perhaps most importantly, startups, from beginning to the end, are entrepreneurs self-teaching and self-learning more than third-party teaching and guided learning.