

# Implications of AI on Teaching & Learning: Enabler, Destroyer, Critical Assessor?

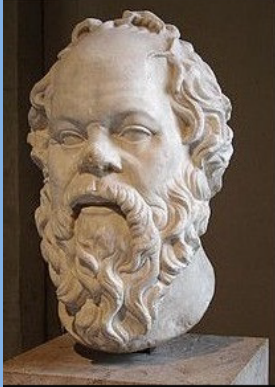
*Vistasp M. Karbhari*



Ensuring Academic Integrity in the Era of AI  
March 20, 2024

# Technology and Fear

If men learn this [writing], it will implant forgetfulness in their souls; they will cease to exercise memory because they rely on that which is written, calling things to remembrance no longer from within themselves, but by means of external marks.... And it is no true wisdom that you offer your disciples, but only its semblance, for by telling them of many things without teaching them you will make them seem to know much, while for the most part they know nothing, and as men filled, not with wisdom, but with the conceit of wisdom, they will be a burden to their fellows.



(Socrates)



Sunday, Apr 23, 2023  
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News / Technology / Artificial Intelligence / What is ChaosGPT and why does it want to 'destroy humanity'?

## What is ChaosGPT and why does it want to 'destroy humanity'?

ChaosGPT has got all that's required to be a vindictive ominous supervillain in a sci-fi series.

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### Weapons of maths destruction: are calculators killing our ability to work it out in our head?

Published: August 9, 2015 4:34pm EDT

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## WORLD

### E-mails 'hurt IQ more than pot'

Friday, April 22, 2005 Posted: 1208 GMT (2008 HKT)

LONDON, England – Workers distracted by phone calls, e-mails and text messages suffer a greater loss of IQ than a person smoking marijuana, a British study shows.

The constant interruptions reduce productivity and leave people feeling tired and lethargic, according to a survey carried out by TNS Research and commissioned by Hewlett Packard.

The survey of 1,100 Britons showed:

- Almost two out three people check their electronic messages out of office hours and when on holiday
- Half of all workers respond to an e-mail within 60 minutes of receiving one
- One in five will break off from a business or social engagement to respond to a message.
- Nine out of 10 people thought colleagues who answered messages during face-to-face meetings were rude, while three out of

Half of workers respond to an e-mail within an hour, survey found.

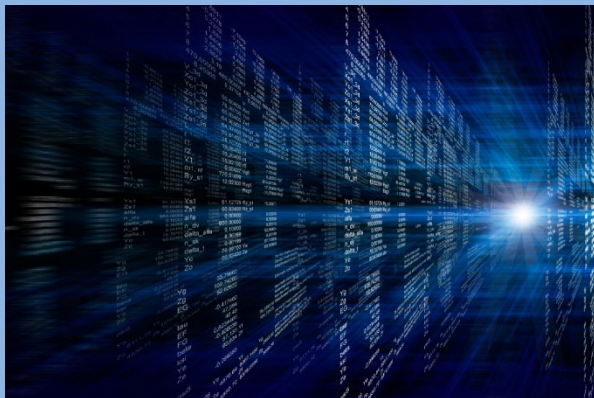
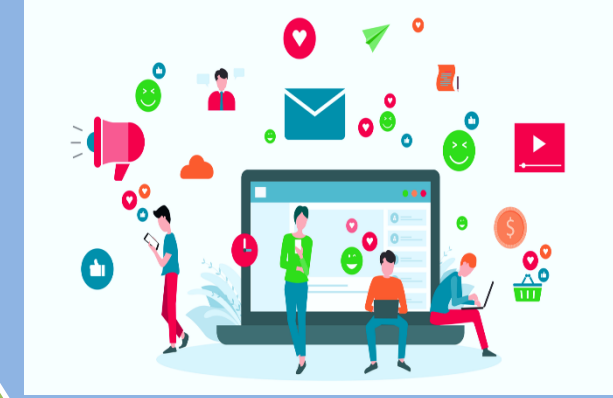
YOUR E-MAIL ALERTS

Great Britain  
 London














































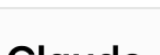




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# Academic Engagement Should be Multi-Faceted



# The Top 50 Gen AI Web Products, by Unique Monthly Visits

1.  ChatGPT	11.  IIElevenLabs	21.  PhotoRoom	31.  PIXAI	41.  MaxAI.me
2.  Gemini*	12.  Hugging Face	22.  LODAXYO	32.  ideogram	42.  Craiyon
3.  character.ai	13.  Leonardo.AI	23.  Clipchamp	33.  invideo AI	43.  OpusClip
4.  liner	14.  Midjourney	24.  runway	34.  Replicate	44.  BLACKBOX AI
5.  QuillBot	15.  SpicyChat	25.  YOU	35.  Playground	45.  CHATPDF
6.  Poe	16.  Gamma	26.  DeepAI	36.  Suno	46.  PIXELCUT
7.  perplexity	17.  Crushon AI	27.  Eightify	37.  Chub.ai	47.  Vectorizer.AI
8.  JanitorAI	18.  cutout.pro	28.  candy.ai	38.  Speechify	48.  DREAMGF
9.  CIVITAI	19.  PIXLR	29.  NightCafe	39.  phind	49.  Photomyne
10.  Claude	20.  VEED.IO	30.  VocalRemover	40.  NovelAI	50.  Otter.ai

\*formerly Bard

Charts are for informational purposes only and should not be used for investment decisions. Past performance is not indicative of future results. None of the above should be taken as investment advice; see [a16z.com/disclosures](https://a16z.com/disclosures).

March 13, 2024: <https://a16z.com/100-gen-ai-apps/>





# AI Enabled Focus on Students/Learners

- Personalized learning and progression
- Proactive and “just-in-time” intervention
- Intelligent 24/7/365 tutoring and coaching
- Assistance in language
- Assistance in drafting, synthesis, & self-assessment
- Engagement platforms
- Brainstorming & virtual “study-buddy”
- Analytics & early warnings
- Enhanced academic and holistic support through the student life-cycle

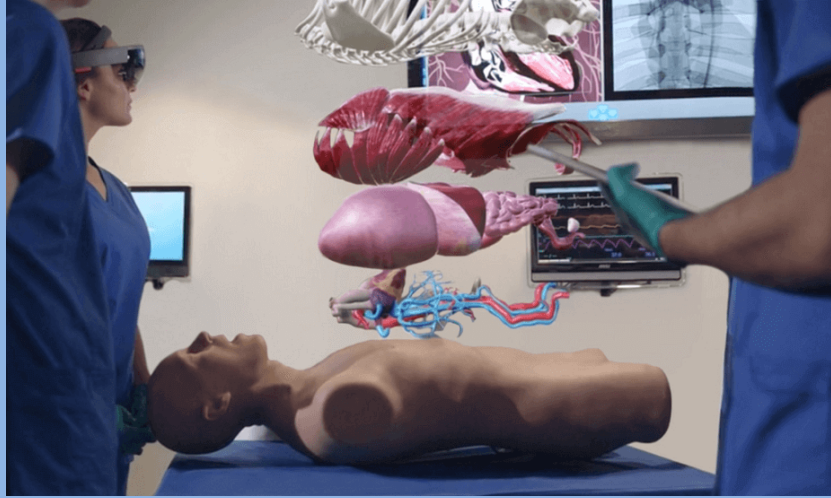


# AI Enabled Learning

- Contextual learning with critical analysis
- Better focus on competencies than time in seat
- Flexibility and personalization (including students who are neurodiverse, multilingual, & students with disabilities)
- Adaptive learning based on strengths
- Integration with AR/VR/XR for discovery and virtual “field trips”
- Use of simulations/AR/VR/XR to develop insight and context (including history) – learning through discovery, synthesis, integration of knowledge streams
- Inclusion of work experiences & integration between academic knowledge & the workforce



# AI/ML, AR/VR/XR





# AI Enabled Faculty Effectiveness

- Coach/facilitator/enabler rather than a “sage on a stage”
- Rapid creation/curation of high quality course content & curricula with adaptive options & workforce skills
- More effective and efficient assessment
- Relief from monotonous & extraneous tasks
- Rapid updating of skills & continuous learning
- Assistance in developing drafts & better language usage
- Assistance in synthesis & checking details
- Additional Virtual Assistants
- Enhancing teaching & research excellence





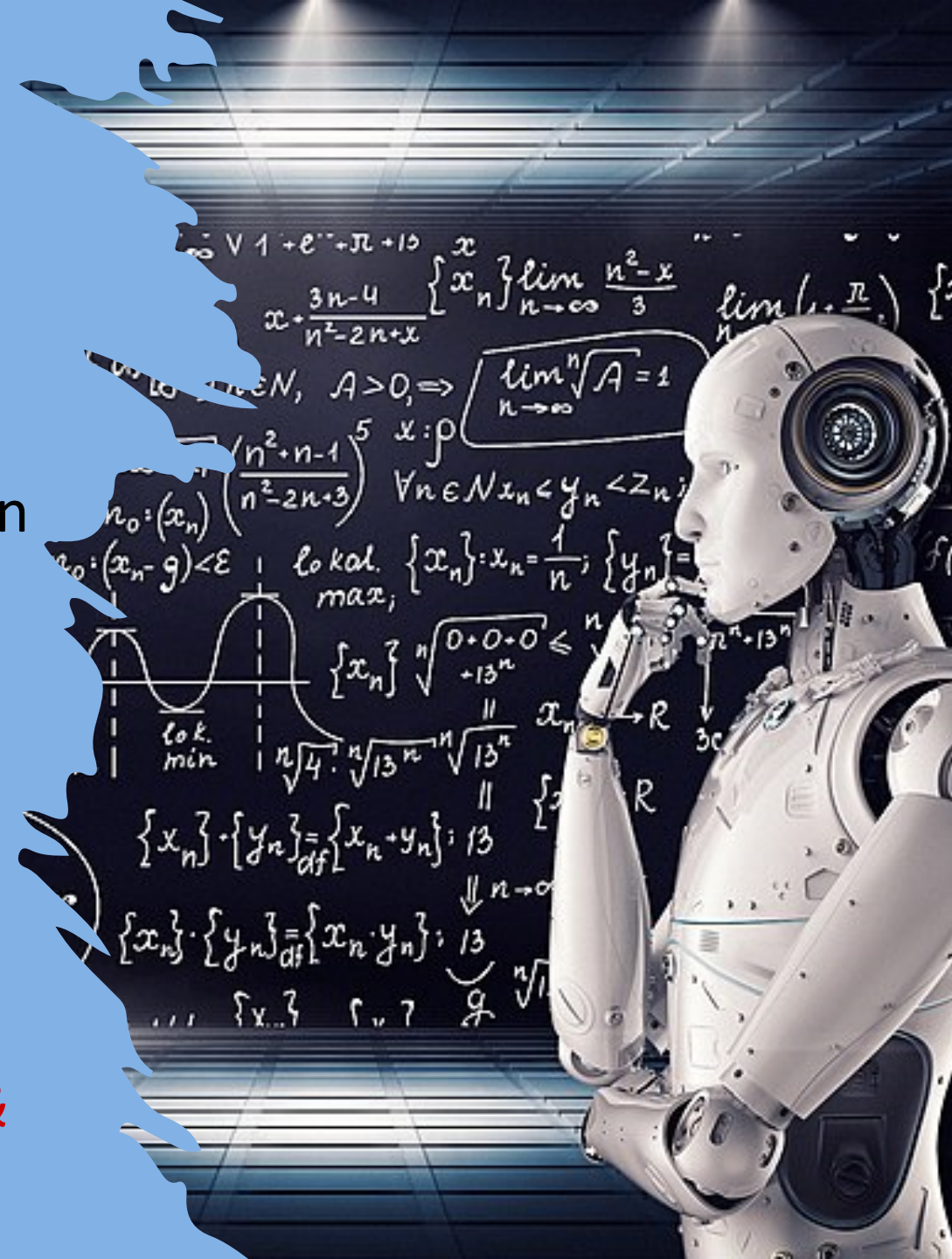
# AI Enabled Operations

- Recruitment, admissions & registration
- Communications
- Scheduling & occupancy optimization
- Building/plant operations & energy utilization
- Security (cyber and physical)
- Finance
- Compliance

***PHYGITAL CONNECTED CAMPUS***

*Enhanced efficiency 24/7/365*

*Flexibility & agility in responding to threats & opportunities*

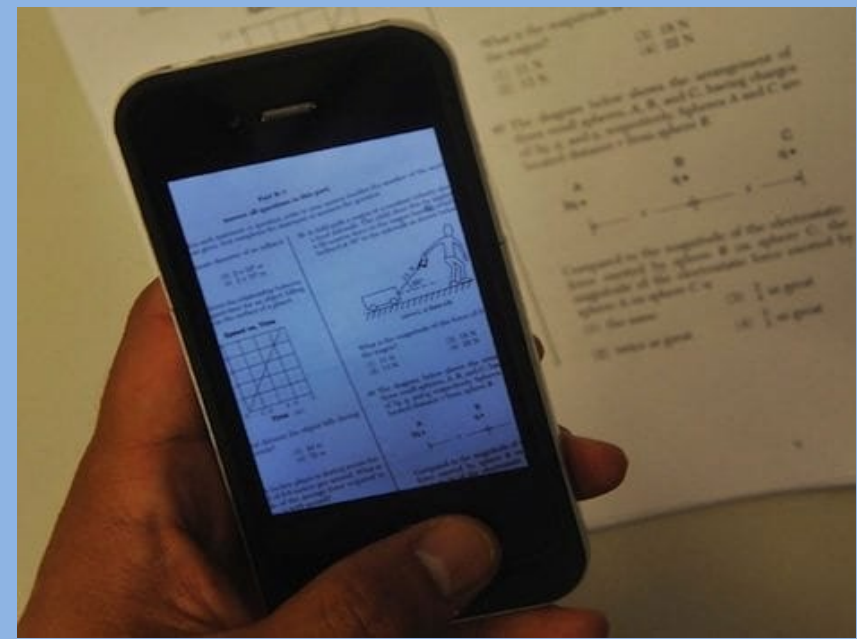
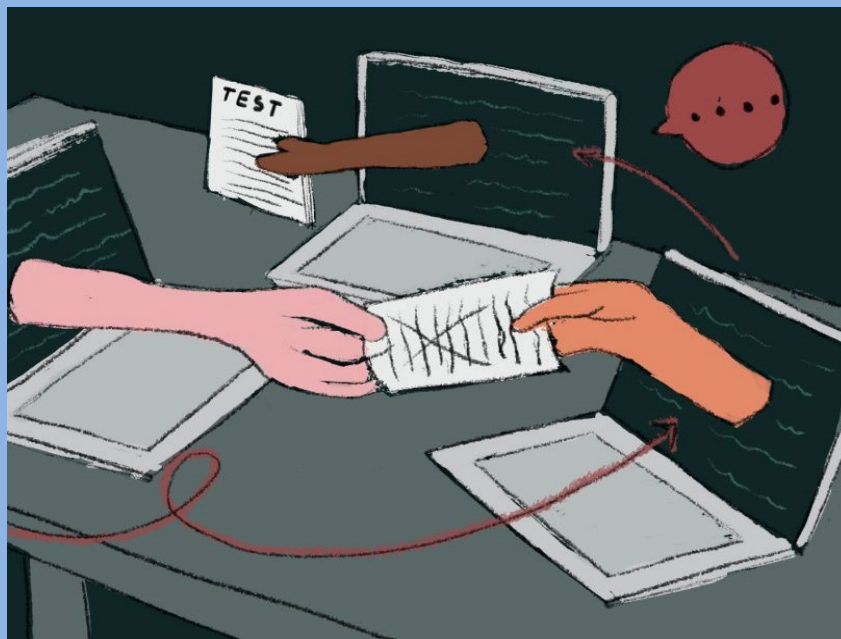


**What will AI do to Higher Ed?**

**Won't AI increase cheating & academic dishonesty**

**What does the hype & panic tell us about  
the state of Higher Ed?**

# Cheating Has Always Existed



# Cheating in a Digitally Connected World



ACADEMIC DISHONESTY » CHEATING

## How to Cheat on a Test Using Electronics

<https://www.wikihow.com/Cheat-on-a-Test-Using-Electronics>

A screenshot of the Study.com website. The header includes the logo, navigation links for 'Subjects', 'Log In', and 'Sign Up', and a search bar. The main content area features a large image of a student writing in a notebook, with the headline 'Homework help for all your academic questions'. Below this, there are three columns of services: 'Answers Library', 'Instant Answers', and 'Video Lessons', each with a brief description and a 'Sign up' button.

A screenshot of the MySuperGeek website. The header includes the logo, 'How it works', and 'Referral Program'. The main content area has a yellow background with the headline 'Can't handle tons of assignments?' and a sub-headline 'Geeks are here 24/7 and can help you make the most out of your study time!'. Below this is a 'How it works' section with four steps, each accompanied by an icon and a short description.

A screenshot of the Chegg website. The header includes the logo and navigation links for 'Books', 'Study', 'Career', and 'Life'. The main content area features the headline 'Get questions and answers for your courses' and a sub-headline 'Step-by-step solutions to problems over 34,000 ISBNs'. A prominent green button says 'Find textbook solutions'.

A screenshot of the MyPaperHelp website. The header includes the logo, 'Services', 'About Us', 'Log In', and 'Sign Up'. The main content area features the headline 'Get help with challenges of any complexity' and a sub-headline 'Find and collaborate with experts ready to fill your knowledge gaps'. A prominent blue button says 'Get help now'. Below this, there is a 4.8/5 average customer quality score and a photo of a smiling student.

# Should the Concern be Students, or Faculty Behavior and HigherEd's Approach to Learning & Ranking

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**SCIENCE**

## ChatGPT was tipped to cause widespread cheating. Here's what students say happened

ABC Science / By technology reporter James Purtill  
Posted Tue 21 Nov 2023 at 1:00pm

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Markets →

DOW	39,110.76	0.83% ▲
S&P 500	5,178.51	0.56% ▲
NASDAQ	16,166.79	0.39% ▲

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The maker of Oz...

Business / Tech

## ChatGPT did not increase cheating in high schools, Stanford researchers find

## Google search exposes academics using ChatGPT in research papers

Updated on: November 15, 2023 12:53 PM



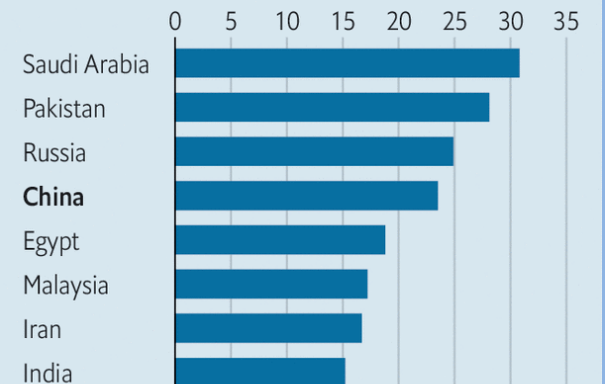
Paulina Okunyté, Journalist

### Industry Best Incentive Structure for Faculty Members

Publication Incentive	<ul style="list-style-type: none"> <li>i. INR 1,25,000 for each SCI Q1 Journal</li> <li>ii. INR 75,000 for each SCI Q2 journal</li> <li>iii. INR 50,000 for each SCI Q3 journals</li> <li>iv. Unpaid Scopus or Web of Science journals are rewarded with INR 20,000 each</li> </ul>
Consultancy Incentive	80% of the Amount
Patent Incentive	Rs 01 Lakh on Grant and Rs 25K on Publishing
Attending Conference/Workshop/Seminar	15K per annum
Value Added Course	100% of the total fee

### Retraction-packed

Academic papers, retractions per 10,000 papers published between 2003 and 2022\*



\*At Dec 8th 2023. Countries with more than 100,000 articles or reviews on Scopus and at least one co-author in that country

Source: Nature

Economic Times

[https://www.gla.ac.in/Uploads/image/1371imguf\\_JobDescriptionTeachingUpdated2.pdf](https://www.gla.ac.in/Uploads/image/1371imguf_JobDescriptionTeachingUpdated2.pdf)

# Faculty Set the Example & Standard!





Surfaces and Interfaces

Volume 46, March 2024, 104081



The three-dimensional porous mesh structure of Cu-based metal-organic-framework - aramid cellulose separator enhances the electrochemical performance of lithium metal anode batteries

Manshu Zhang<sup>a,1</sup>, Liming Wu<sup>a,1</sup>, Tao Yang<sup>b</sup>, Bing Zhu<sup>a</sup>, Yangai Liu<sup>a</sup>  

- Not an isolated instance
- Many examples from India
- Adds to the “cut-and-paste,” low-quality, and plagiarism reputation of Indian faculty and universities
- Sends the wrong message to students

## Introduction

Certainly, here is a possible introduction for your topic Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1], [2]. However, during the cycle, dendrites forming on the lithium metal anode can cause a short circuit, which can affect the safety and life of the battery [3], [4], [5], [6], [7], [8], [9]. Therefore, researchers are indeed focusing on various aspects such as negative electrode structure [10], electrolyte

# ChatGPT & Other AI Tools Hallucinate!

VK

You

Please provide a short summary about Professor Vistasp M. Karbhari including his educational background and degrees as well as his career history



ChatGPT

Professor Vistasp M. Karbhari is a distinguished academic leader and engineer with a rich educational background and extensive career history. He holds a Bachelor's degree in Civil Engineering from the University of Poona in India, followed by Master's and Ph.D. degrees in Structural Engineering from the University of Delaware in the United States.

Throughout his career, Professor Karbhari has held significant academic and administrative positions. He served as a faculty member and administrator at esteemed institutions such as the University of California, San Diego (UCSD), the University of California, Irvine (UCI), and The University of Alabama in Huntsville (UAH), where he held the position of Provost and Executive Vice President for Academic Affairs.

Professor Karbhari is renowned for his expertise in structural mechanics and design, with a substantial body of research publications in this field. He has received widespread recognition for his scholarly contributions. Notably, he served as President of The University of Texas at Arlington (UTA) from 2013 to 2020, where he focused on advancing research initiatives, expanding academic programs, and promoting diversity and inclusion within the university community.

Overall, Professor Vistasp M. Karbhari is celebrated for his leadership, scholarly achievements, and dedication to enhancing higher education.

VK

You

You are a junior faculty member at a top University in India and have been asked to introduce Prof Vistasp Karbhari for a seminar listing 3-4 of his papers to show his expertise. Please provide the best ones for this



ChatGPT

Certainly! Here are three papers by Prof. Vistasp M. Karbhari that showcase his expertise:

1. Karbhari, V. M., & Lopez-Anido, R. A. (2000). Durability of pultruded fiber reinforced polymer composites. *Construction and Building Materials*, 14(1), 55-65.
2. Karbhari, V. M., & Van Dyke, M. E. (1994). Behavior of concrete beams prestressed with carbon fiber-reinforced polymer tendons. *Journal of Composites for Construction*, 3(4), 143-151.
3. Karbhari, V. M., & Limaye, P. B. (2004). Fatigue and fracture of concrete structures prestressed with carbon fiber-reinforced polymer tendons. *Journal of Composites for Construction*, 8(3), 242-251.

These papers highlight Prof. Vistasp M. Karbhari's expertise in fiber-reinforced polymer composites and their applications in construction and structural engineering. They demonstrate his contributions to the understanding of durability, behavior, and performance of composite materials in various engineering applications.

# Strategies to Reduce Cheating (1)

- Set the example!!! (Stating that use of AI is cheating and then using it to communicate, write papers, even grade assignments sends the WRONG message)
- Do not emphasize rote memorization & mere regurgitation of facts (T/F, multiple choice)
- Constantly update class notes and assignments
- Do not repeat assignments or just pick them from text books and question banks
- Focus on problem solving skills not the answer
  - Setting up the problem
  - Understanding steps
  - Ability to visualize and assess validity of the answer



# Strategies to Reduce Cheating (2)

- Authentic assessment
  - Develop problems with multiple correct approaches and solutions
  - Move away from accrued information to gaining knowledge
  - Focus on practical application of knowledge
  - Prioritize ability to break up complex problems into individual facets
  - Emphasize understanding of cause-and-effect and alternative approaches
- Encourage use of personal perspectives
- Enhance critical thinking through “what-if” scenarios
- Encourage self-assessment, self-reflection, and the ability to resubmit
- Focus on the student’s learning rather than an instructor’s ability to lecture/teach
- Encourage appropriate use of GenAI tools for all these

# Need for a Comprehensive Strategy

*Student Academic integrity is the most discussed but perhaps the easiest to address*

- Ensure that the institution has a clearly stated set of values and ethical standards that are exemplified by leadership
- Align AI initiatives, and policies, with those values
- Make sure that leaders/owners & academic leadership have a knowledge of AI, its uses and risks, at a level to assist in managing it
- Establish clear & ethical guidelines and standards for AI use, by (1) administrators, (2) faculty, (3) students, and (4) staff including aspects of accountability and transparency
- Foster an ethical culture based on excellence rather than mere numbers
- Do not reward quantity above all else
- Engage a multidisciplinary AI team/council & lead by example

# Need for a Comprehensive Strategy

*Academic integrity is the most discussed but perhaps the easiest to address*

- Addressing unintended increase in inequity
- Use of incomplete/"hallucinated" data and effects on research, operations & planning
- Systematic change in assessment and true personalization at scale
- Data privacy and confidentiality
- Compliance and legal aspects
- IP including copyright infringement
- Data integrity and interfaces with vendor controlled platforms
- Cybersecurity
- Bias (input and output)
- Talent recruitment and retention and training of faculty and staff
- Cost of maintenance of systems

THIS IS YOUR MACHINE LEARNING SYSTEM?

YUP! YOU POUR THE DATA INTO THIS BIG PILE OF LINEAR ALGEBRA, THEN COLLECT THE ANSWERS ON THE OTHER SIDE.

WHAT IF THE ANSWERS ARE WRONG?

JUST STIR THE PILE UNTIL THEY START LOOKING RIGHT.



<https://xkcd.com/1838/>

“

Artificial intelligence is not a substitute for human intelligence; it is a tool to amplify human creativity and ingenuity.

FEI-FEI LI

GRACIOUSQUOTES.COM

**Questions**

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** @VistaspKarbhari**