NAVIGATING THE FUTURE: PREPAREDNESS OF HIGHER ED BUSINESS EDUCATION FOR THE AI REVOLUTION

Michelle Sisto

Michelle.sisto@edhec.edu

EDHEC Business School

Dec. 4, 2023

Sofia, Bulgaria

EUROPEAN CAPACITY BUILDING WORKSHOP:
UNLOCKING THE POTENTIAL OF AI IN BUSINESS SCHOOLS

Make an impact

EDHEC BUSINESS SCHOOL

8,600 students

35% foreign students (110 nationalities)

175 Professors and researchers

50,000 alumni in 130 countries with an average age of 35 years

- 3 campuses in France
- 2 campuses abroad for Exec Ed and research

Masters Programme Portfolio
- Programme Grande Ecole
  3 years, 4 tracks, 13 specializations, 25 double degrees, year of professional immersion
- 14 MSc: 18 months

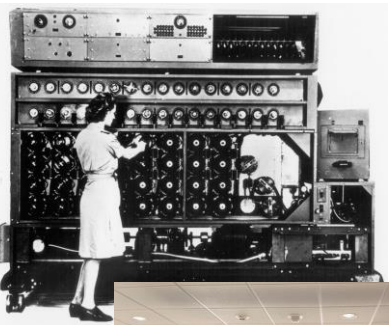# TO GET YOUR INPUT TODAY – PLEASE JOIN

EMERGENCE OF AI – A VERY BRIEF HISTORY

1950s
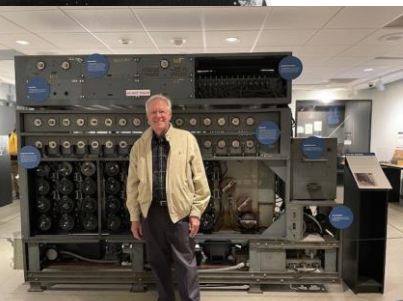
Turing Test
AI term coined
at Dartmouth
Conference

1970s-80s

Expert systems - MYCIN
"AI Winter"

1990s

IBM Deep Blue defeats
Kasparov 1997
Emergence of internet and
WWW and related hype in
companies
NLP developments

2000s

Online platforms for large datasets
DARPA challenge for autonomous
vehicle research

Breakthroughs in image
and speech recognition
AlphaGo Zero

2010s

AND ONTO 2020s…

Amazon employees are already using
They also found the AI chatbot can a
questions and write cloud training m

Eugene Kim Jan 26, 2023, 8:56 PM CET

Argentina's AI election
heralds a new future for
politics

Nov 16, 2023, 2:01pm GMT+1

Bloomberg

● Live Now   Markets   Econor.

Technology
AI

Artificial intelligence
Generative AI will uper

Sectors such as law and m

- Roughly 7,800 IBM jobs could be replaced by AI, auto...
- CEO Krishna says IBM to pause hiring for replaceable roles

Baidu is leading the ChatGPT AI charge in China with plans to incorporate its Ernie chatbot into its search engine from next month
© Qilai Shen/Bloomberg

Ryan McMorrow and Nian Liu in Beijing, Eleanor Olcott in Hong Kong and Madhumita
Murgia in London FEBRUARY 20 2023

💬 20 🖨️

EDHEC
BUSINESS SCHOOL
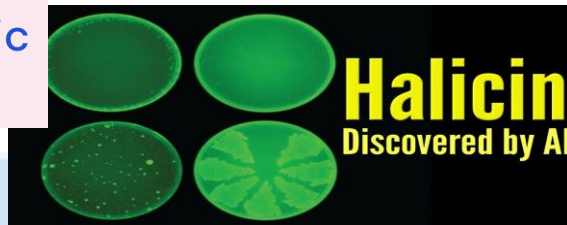
AI IS HERE

A NEW ERA

The Age of AI has begun

Artificial intelligence is as revolutionary as mobile phones and the Internet.

By **Bill Gates** | March 21, 2023 · 14 minute read

Research

AlphaFold: Using AI for scientific discovery

Hi, I'm CoCounsel, your AI-powered legal assistant.

Halicin
Discovered by AI

GitHub Copilot

Examples include:

- **Medicine**: AI diagnostics & discovery, AlphaFold, The Halicin antibiotic (MIT and others)

- **Climate science**: Analytics: Insights into extreme weather events

- **AI labour force:** Workers and assistants: AlphaCode, Copilot, CoCounsel, ChatGPT

- **Robotics**: Waymo, AI piloted drones (Zipline), Atlas (Humanoid Robot)

EDHEC
BUSINESS SCHOOL

QUESTION IS: ARE WE READY?
WHAT IS THE STATE OF AI MATURITY IN HIGHER ED?

From "AI in tertiary education" JISC 2023

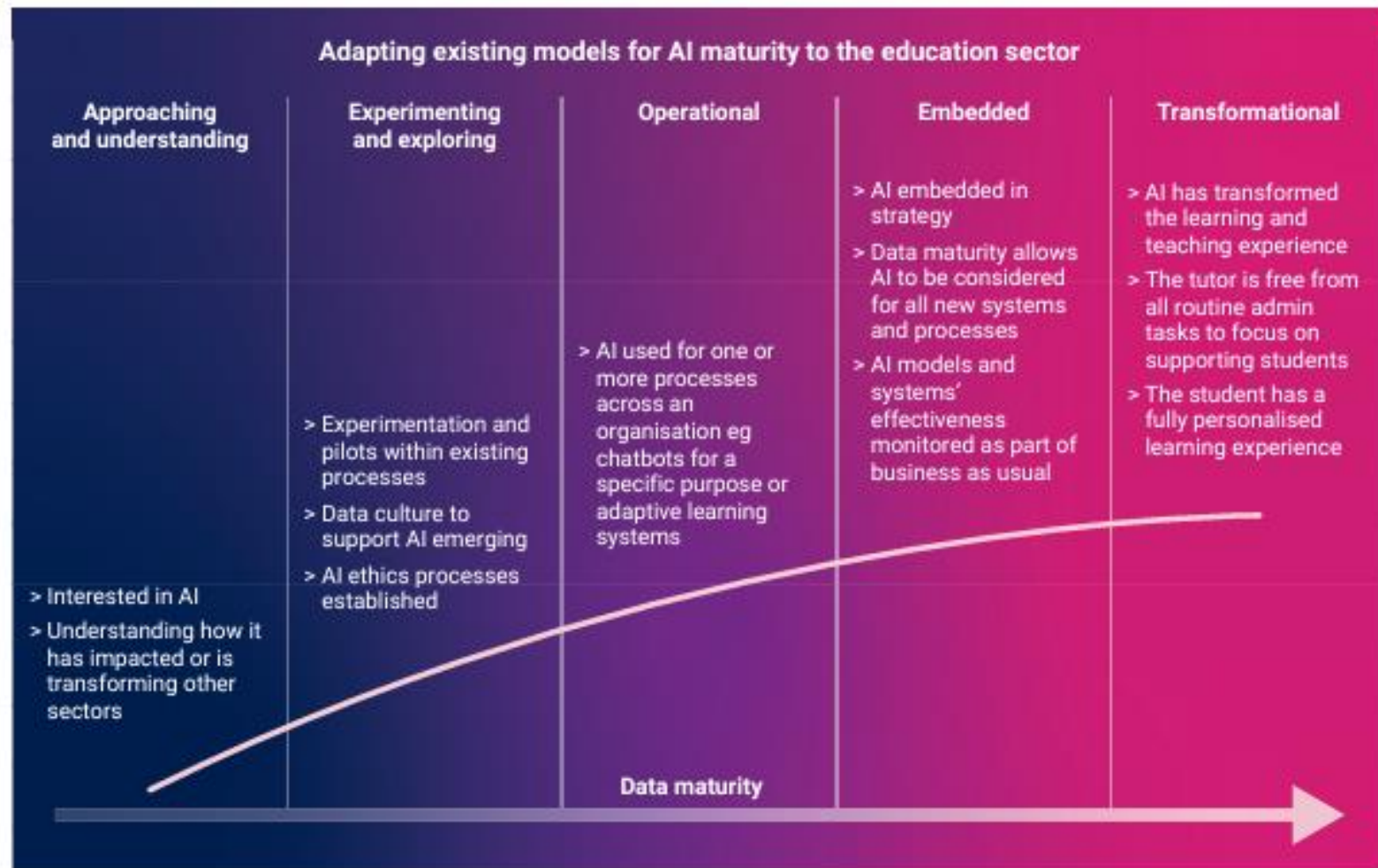- In US, Arizona State University been using an adaptive learning platform, CogBooks, since 2014

- In China SquirrelAi, provides AI-driven learning at scale (K-12)

- Europe?

Figure 1: Jisc AI Maturity model

Adapting existing models for AI maturity to the education sector

Approaching and understanding
> Interested in AI
> Understanding how it has impacted or is transforming other sectors

Experimenting and exploring
> Experimentation and pilots within existing processes
> Data culture to support AI emerging
> AI ethics processes established

Operational
> AI used for one or more processes across an organisation eg chatbots for a specific purpose or adaptive learning systems

Embedded
> AI embedded in strategy
> Data maturity allows AI to be considered for all new systems and processes
> AI models and systems' effectiveness monitored as part of business as usual

Transformational
> AI has transformed the learning and teaching experience
> The tutor is free from all routine admin tasks to focus on supporting students
> The student has a fully personalised learning experience
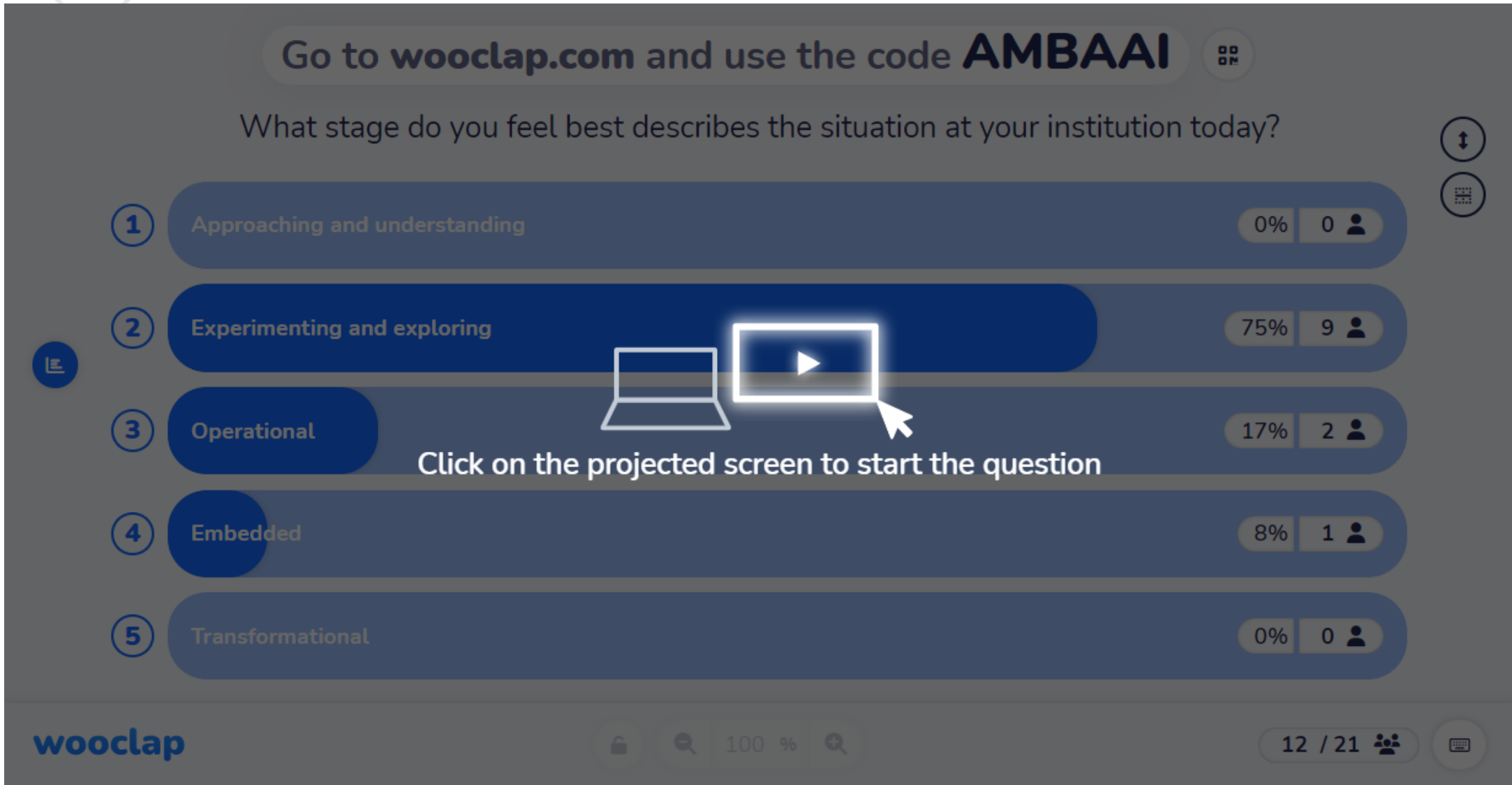
Data maturity

CURRENT STATE OF AI MATURITY?

Go to **wooclap.com** and use the code **AMBAAI**

What stage do you feel best describes the situation at your institution today?

①	Approaching and understanding	0%	0
②	Experimenting and exploring	75%	9
③	Operational	17%	2
④	Embedded	8%	1
⑤	Transformational	0%	0

Click on the projected screen to start the question

wooclap   100 %   12 / 21

EXAMINING ZONES OF PREPAREDNESS
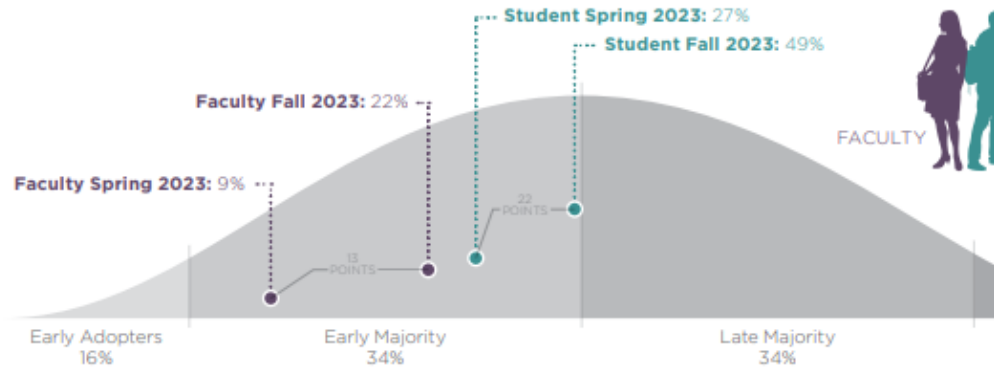
◆ Teaching and Learning

◆ Recruitment and Operations

◆ Future of Work

GEN AI IN TEACHING AND LEARNING

◆ Early look at longitudinal study – Spring and Fall 2023
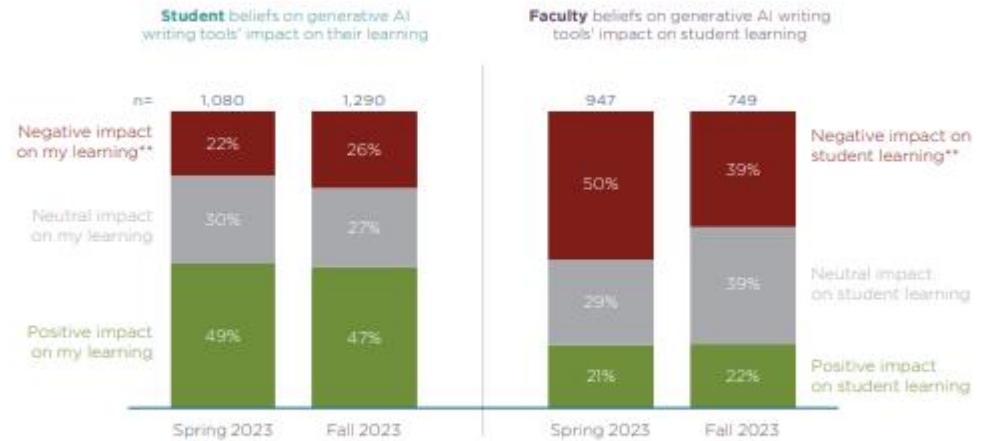
Figure 1:

Adoption* of GenAI writing tools

- **Student Spring 2023:** 27%
- **Student Fall 2023:** 49%
- **Faculty Fall 2023:** 22%
- **Faculty Spring 2023:** 9%

FACULTY

22 POINTS

13 POINTS

Early Adopters 16% | Early Majority 34% | Late Majority 34%

Notes: Survey question: "Which of the following best describes your own use of generative AI writing tools (e.g., Ch
Student n=1,601, Faculty n=1,001; *adoption is defined as monthly, weekly, or daily usage of generative AI writing too
Sources: Time for Class 2023 (fielded in March 2023), Fall 2023 Student & Faculty Pulse Surveys, Tyton Partners an

Students adopting faster than faculty

Figure 2:

Perceived impact of GenAI writing tools on student learning*

Student beliefs on generative AI writing tools' impact on their learning

Faculty beliefs on generative AI writing tools' impact on student learning

	Spring 2023	Fall 2023	Spring 2023	Fall 2023
n=	1,080	1,290	947	749
Negative impact	22%	26%	50%	39%
Neutral impact	30%	27%	29%	39%
Positive impact	49%	47%	21%	22%

Negative impact on my learning**

Neutral impact on my learning

Positive impact on my learning

Negative impact on student learning**

Neutral impact on student learning

Positive impact on student learning

Notes: *Survey question: "For the next few questions, please read each pair of statements and decide to what extent you agree
with one more than the other. If you are exactly neutral, please move the slider to center to record your response as 'Neutral.'",
Positive = 0-33, Neutral = 34-66, Negative = 67-100 . **The difference between student negative attitudes is significant at p=.02;
The difference between faculty negative attitudes is highly significant at p<0.0001
Sources: Time for Class 2023 (fielded in March 2023), Fall 2023 Student & Faculty Pulse Surveys, Tyton Partners analysis

But perceptions of impact on learning are shifting

Figure 7:

Faculty permitted use cases for GenAI and what students indicate doing* *
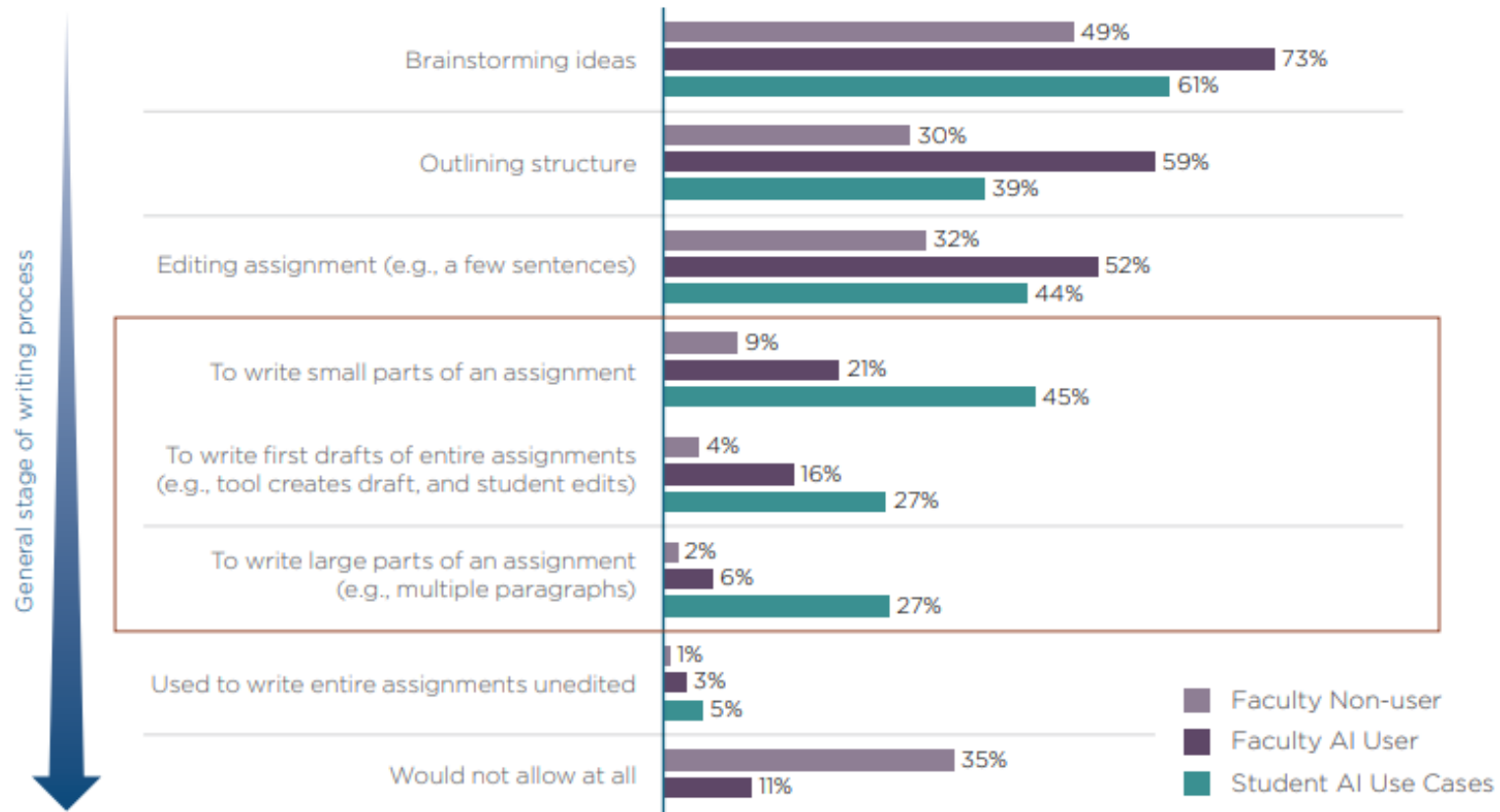
Notes: *Survey question: "Please indicate which of the below you would allow students to use generative AI writing tools for in your courses. Select all that apply.", Non-user n=634, AI user n=217; **AI users refer to those who use generative AI writing tools monthly, weekly, or daily; non-users may have experimented with GenAI once or twice.

Sources: Fall 2023 Student & Faculty Pulse Surveys, Tyton Partners analysis

GOVERNMENTAL AND INTERNATIONAL POLICIES AND REGULATION

U.S. Department of Education Shares Insights and Recommendations for Artificial Intelligence

Italy temporarily bans ChatGPT over privacy concerns

Data protection authority becomes first regulator in world to open investigation into Microsoft-backed OpenAI's chatbot

Texts adopted

Wednesday, 14 June 2023 - Strasbourg

Artificial Intelligence Act

EU AI Act

Technology regulation   (+ Add to myFT)

UK to host AI safety summit at start of November

'Like-minded' states to be asked to Bletchley Park along with tech executives and academics

US upstages Rishi Sunak with AI regulation plan

Gina Raimondo announces new safety institute on day UK prime minister begins Bletchley Park summit

AI OPPORTUNITIES IN TEACHING AND LEARNING

Role[6]	Description	Example of implementation
Possibility engine	AI generates alternative ways of expressing an idea	Students write queries in ChatGPT and use the Regenerate response function to examine alternative responses.
Socratic opponent	AI acts as an opponent to develop and argument	Students enter prompts into ChatGPT following the structure of a conversation or debate. Teachers can ask students to use ChatGPT to prepare for discussions.
Collaboration coach	AI helps groups to research and solve problems together	Working in groups, students use ChatGPT to find out information to complete tasks and assignments.
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces	Teachers use ChatGPT to generate content for classes/courses (e.g., discussion questions) and advice on how to support students in learning specific concepts.
Personal tutor	AI tutors each student and gives immediate feedback on progress	ChatGPT provides personalized feedback to students based on information provided by students or teachers (e.g., test scores).
Co-designer	AI assists throughout the design process	Teachers ask ChatGPT for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).
Exploratorium	AI provides tools to play with, explore and interpret data	Teachers provide basic information to students who write different queries in ChatGPT to find out more. ChatGPT can be used to support language learning.
Study buddy	AI helps the student reflect on learning material	Students explain their current level of understanding to ChatGPT and ask for ways to help them study the material. ChatGPT could also be used to help students prepare for other tasks (e.g., job interviews).
Motivator	AI offers games and challenges to extend learning	Teachers or students ask ChatGPT for ideas about how to extend students' learning after providing a summary of the current level of knowledge (e.g., quizzes, exercises).
Dynamic assessor	AI provides educators with a profile of each student's current knowledge	Students interact with ChatGPT in a tutorial-type dialogue and then ask ChatGPT to produce a summary of their current state of knowledge to share with their teacher/for assessment.

ChatGPT
and Artificial Intelligence in higher education
Quick start guide

Example use cases for Digital Assistants (D.Lefevre, Imperial College)	
Curriculum development	• Digital assistant suggests course topics and course updates
Writing aids	• Digital assistant produces draft text and provides feedback on amended texts
Materials creation	• Digital assistant creates multimedia, interactive activities for students
Revision aids	• Digital assistant enables students to test their knowledge of a topic
Assessment assistant	• Digital assistant provides suggested grade and feedback

CHOOSE A TOPIC AND TAKE 15'

- **Teaching use case at your institution(s) OR Gen AI training at your institution**
  - How was it piloted/run?
  - What worked well? Any roadblocks? Takeaways to help us build ideas and implementation strategies

- **Gen AI policy use case at your institution(s)**
  - Institutional or course level?
  - How has it been tested and/or revised to date?
  - Takeaways to consider integrating into policies

- **Digital assistant use case at your institution(s)**
  - For whom is the assistant designed?
  - Feedback on pilot case? Or on full roll out?
  - Takeaways

GROUP FEEDBACK

◆ Teaching or training
   ■ Why not used by profs if so easy? Cultural – status quo and how faculty see ourselves?
   ■ Optimism – see how agility advanced by covid in online teaching
   ■ Move to incorporate microcreditals
   ■ Internal institutional training sessions, organised centrally but more focused on policy
   ■ Training internally, using padlet to caputure very experiments, inclusivity
   ■ Degree of competitivenss in programme - MBA

◆ Gen AI Policies
   ■ Extending mba to bsc to china - what will change and gdpr rules different
   ■ Traffic light poilicy – red/yellow/green for level of acceptable use
   ■ Evaluation and plagiarism and AI applications
   ■ Implication for scientific research and use of human data in gpt
   ■ Requires sensitivity to security, privacy and data protection
   ■ AI skill diffusion
   ■ What is bar to expel students?

◆ Digital Assistants
   ■ Chat bots

EXAMINING ZONES OF PREPAREDNESS

◆ Teaching and Learning

◆ Recruitment and Operations

◆ Future of Work
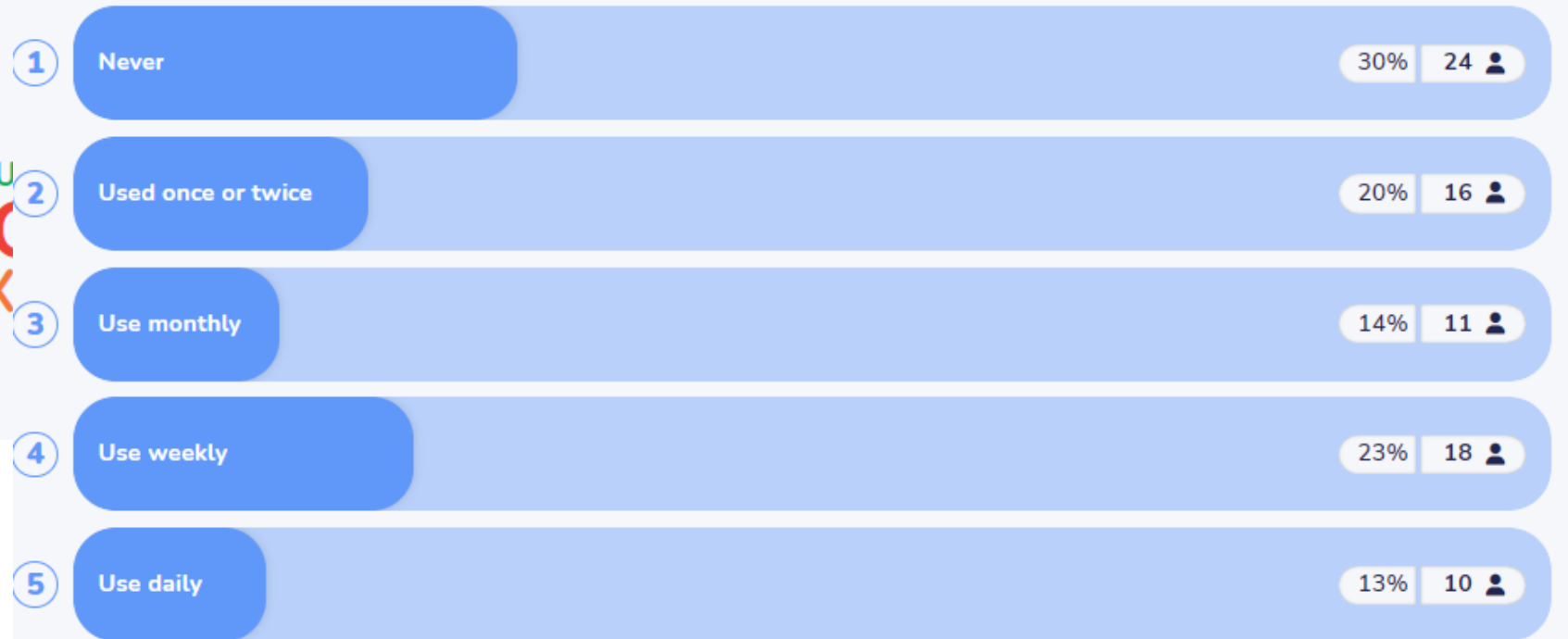
STATE OF READINESS OF YOUR TEAMS

ARE YOUR SALES TEAMS READY AND DISPOSED TO TRY OUT GAI?

What emotion do you feel when you hear "Generative Artificial Intelligence" or "ChatGPT"?

How would you describe your usage of ChatGPT or another LLM?

1	Never	30%	24
2	Used once or twice	20%	16
3	Use monthly	14%	11
4	Use weekly	23%	18
5	Use daily	13%	10

clap   100 %   79 / 102

Survey at GMAC European
Conference Nov. 30, 2023

Audience: largely recruitment,
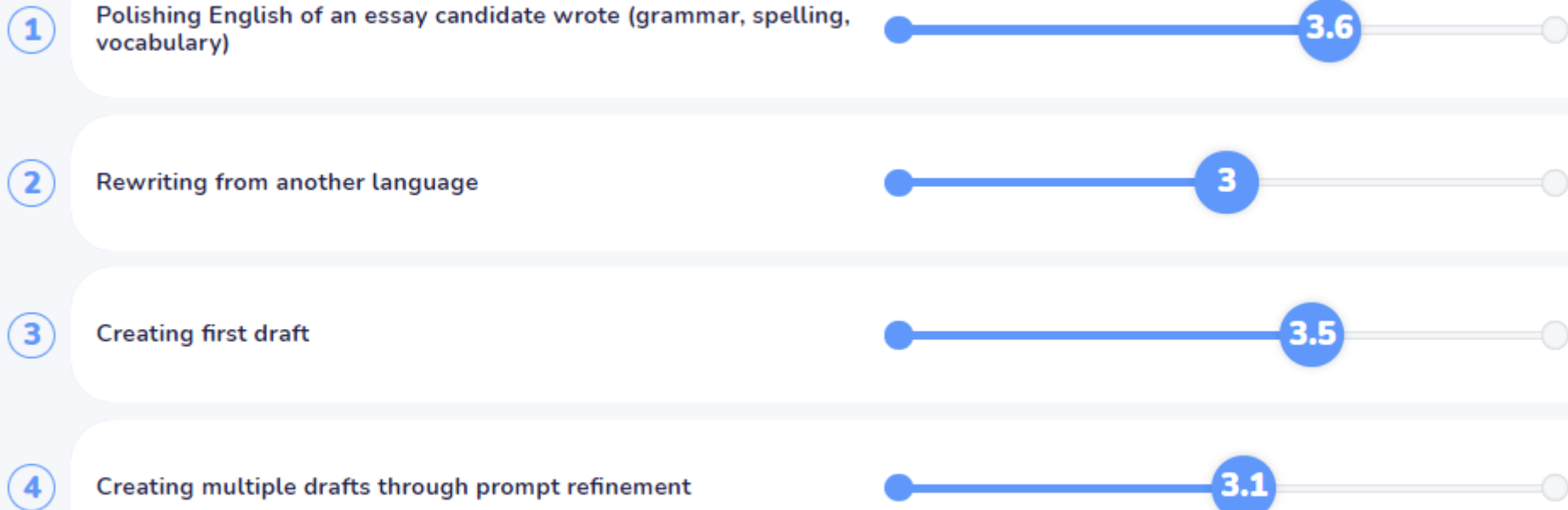admissions and marketing heads

EDHEC BUSINESS SCHOOL

POST GEN AI EXERCISE ON USING FOR APPLICATION ESSAYS

Based on the exercise we just completed, would you consider putting into place explicit ...

(1) Yes

(2) No

(3) Undecided

oclap

To what degree do you consider each of the following an acceptable use of ChatGPT in application ...

(1) Polishing English of an essay candidate wrote (grammar, spelling, vocabulary) — 3.6

(2) Rewriting from another language — 3

(3) Creating first draft — 3.5

(4) Creating multiple drafts through prompt refinement — 3.1

oclap

100 %

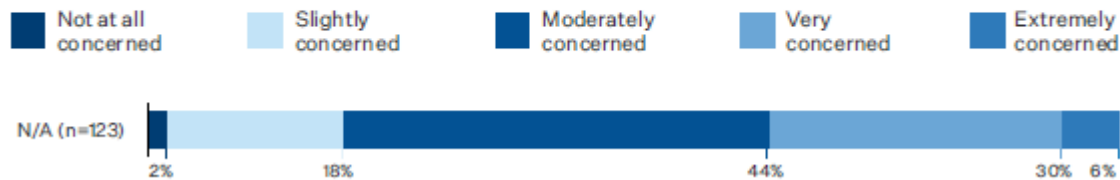69 / 102

WHAT DO CTOs / CIOs THINK?

IHE – 2023 Survey of Campus Chief Technology/Information Officers

As it stands, how much of a priority is investing in artificial intelligence for your institution?

- Not a priority
- Low priority
- Medium priority
- High priority
- Essential

N/A (n=125)

15% 34% 35% 10% 6%
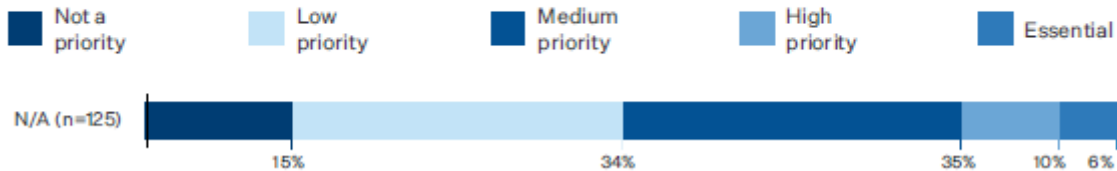
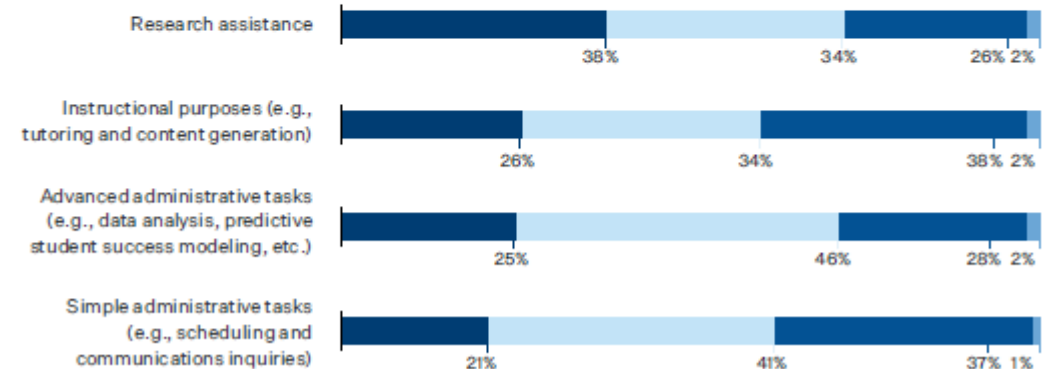Only 16% say high/essential priority

How would you rate your level of concern about the potential implications (such as security, privacy, and ethical issues) of using large language models like ChatGPT, Bard, and other generative AI technologies in your institution?

- Not at all concerned
- Slightly concerned
- Moderately concerned
- Very concerned
- Extremely concerned

N/A (n=123)

2% 18% 44% 30% 6%

However 36% are very/extremely concerned about implications of Gen AI technologies

Which of the following best describes your institution's utilization of large language models and generative AI, such as ChatGPT and Bard, across the following use cases? My institution... (n=123)

- ...does not use any generative AI technology in this area, and is not currently considering using it.
- ...does not use any generative AI technology in this area, but is considering using it.
- ...is in the beginning stages of using generative AI in this area.
- ...is in the advanced stages of using generative AI in this area.

Research assistance
38% 34% 26% 2%

Instructional purposes (e.g., tutoring and content generation)
26% 34% 38% 2%

Advanced administrative tasks (e.g., data analysis, predictive student success modeling, etc.)
25% 46% 28% 2%

Simple administrative tasks (e.g., scheduling and communications inquiries)
21% 41% 37% 1%

All use cases: at least 60% not yet at beginning stages

EXAMINING ZONES OF PREPAREDNESS

◆ Teaching and Learning

◆ Operations

◆ Future of Work

INTERSECTION OF AI AND WORLD OF WORK – CURRENT STATE

◆ LinkedIn Future of Work Report: AI at Work August 2023 and Sept 2023
- ■ 47% Executives believe Gen AI will increase productivity
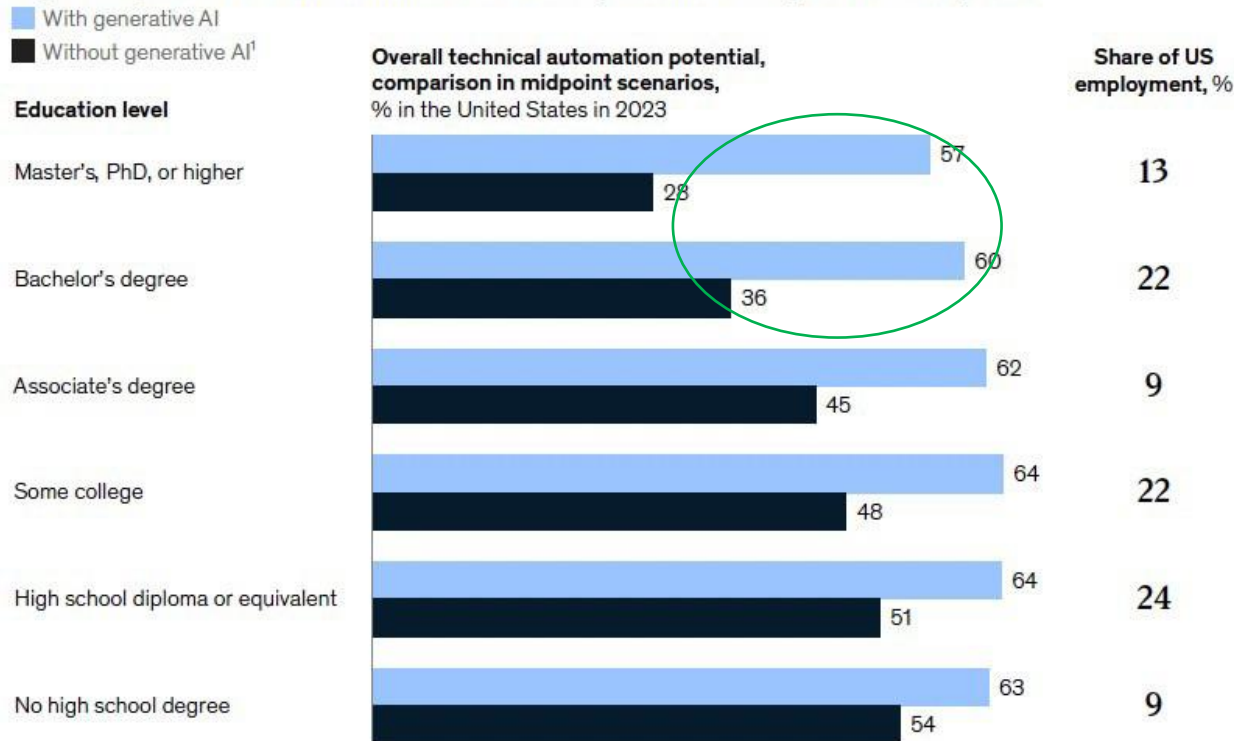- ■ 92% agree people skills more important than ever

> " Companies that focus on skills and shift away from more antiquated signals like degree, pedigree, or where someone worked previously, will be able to ensure they have the right people with the right skills, in the right roles, doing their best work. And it doesn't stop there. Once you have those employees in the right roles with the right skills, it's equally important to continue investing in their career progression and skills. "
>
> **Ryan Roslansky**, Chief Executive Officer, LinkedIn, Fortune, March 20, 2023

AND AI IS IMPACTING MOST THE JOBS WE DO AND THOSE FOR WHICH WE TRAIN STUDENTS

Generative AI increases the potential for technical automation most in occupations requiring higher levels of educational attainment.

Impact of generative AI on technical automation potential in midpoint scenario, 2023

- (light blue) With generative AI
- (black) Without generative AI[1]

Overall technical automation potential, comparison in midpoint scenarios, % in the United States in 2023

Education level	With generative AI	Without generative AI	Share of US employment, %
Master's, PhD, or higher	57	28	13
Bachelor's degree	60	36	22
Associate's degree	62	45	9
Some college	64	48	22
High school diploma or equivalent	64	51	24
No high school degree	63	54	9

[1]Previous assessment of work automation before the rise of generative AI.
Source: McKinsey Global Institute analysis

EUROPEAN CENTRAL BANK | EUROS

About | Media | Research & Publications | Statistics | Monetary Policy | The euro

me > Research & Publications > Economic research > **Research Bulletin**

28 NOVEMBER 2023 · RESEARCH BULLETIN NO. 113

Reports of AI ending human labour may be greatly exaggerated

ECB study

WHAT HAPPENS WHEN SKILLED PEOPLE ARE TRAINED ON AI?

Figure 2: **Performance Distribution - Inside the Frontier**
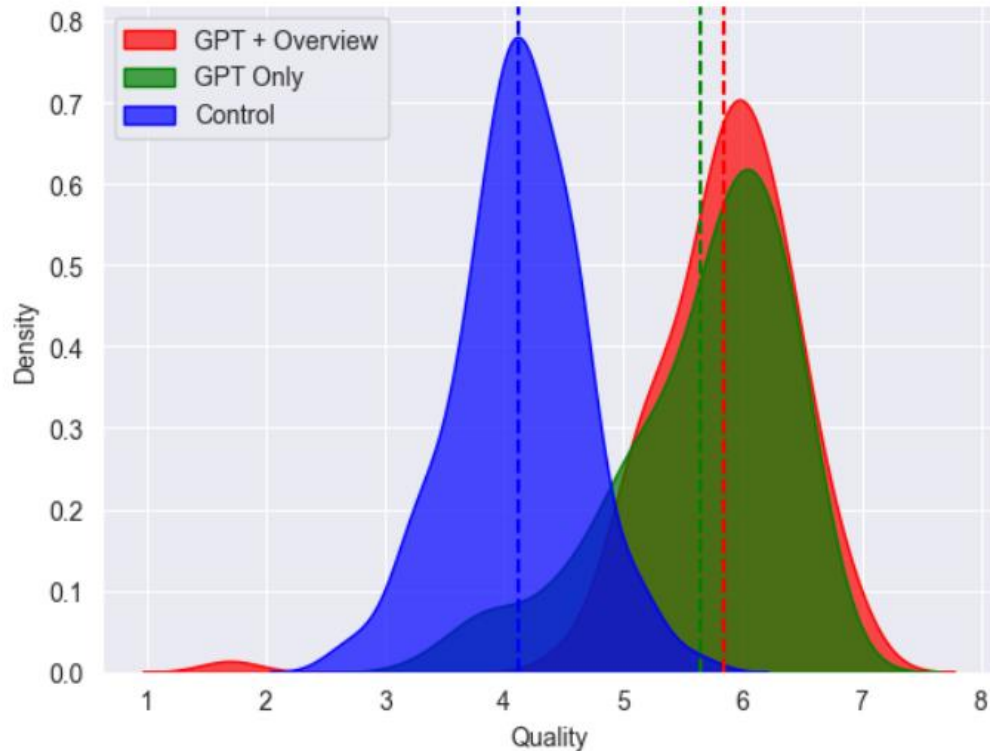
Notes: This figure displays the full distribution of performance in the experimental task inside the frontier for subjects in the three experimental groups (red for subjects in the GPT+Overview condition; green for subjects in the GPT Only condition; blue for subjects in the control condition).

Gen AI shown to increase performance quality and speed of completion on tasks in « frontier »

Figure 7: **Performance - Outside the Frontier**
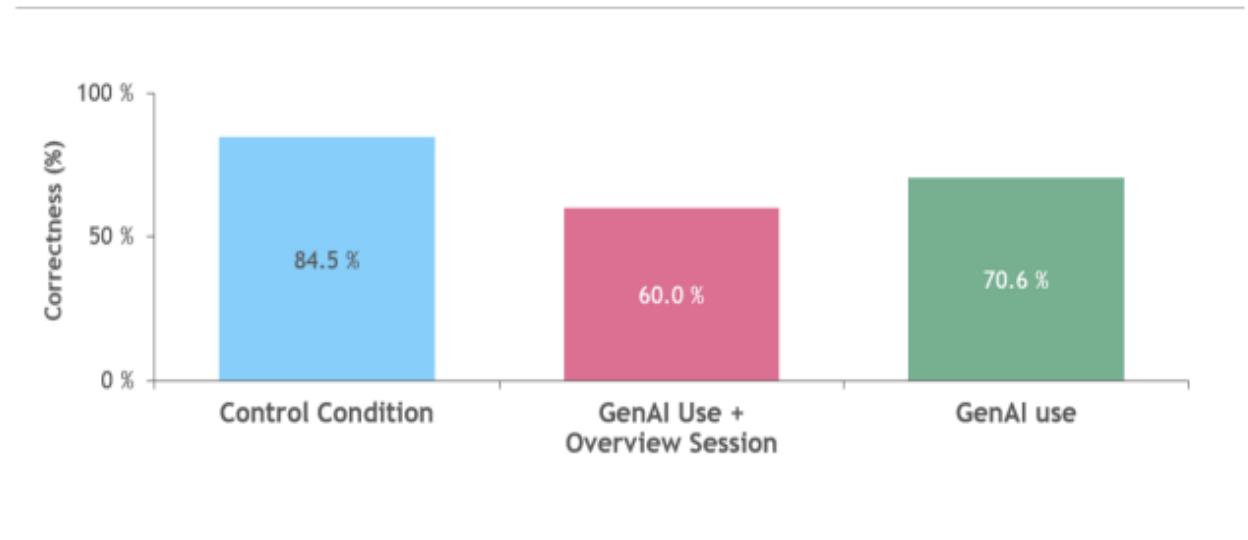
Notes: This figure displays average performance for the task outside the frontier. It reports the percentage of subjects in each experimental group providing a correct response in the experimental task.

But performance worse than humans on tasks outside the « frontier » and in creativity showed less dispersion in ideation

Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality

25

AGI BENCHMARK IS MOOT: 'DIGITAL INTELLIGENCE' IS DIFFERENT TO 'HUMAN INTELLIGENCE'

- On some fundamental tasks comprising intelligence, **digital intelligences can outperform the human brain by a factor of 1000s.**

- AI is outperforming human benchmarks on an increasing number of human job tasks

- We are in the process of re-examining what it means to be human.

Exhibit 2: AI Increasingly Outperforms Human Benchmarks

AI Performance vs. Human Benchmark

ImageNet: Top-5 Image Classification Accuracy

- AI: With Extra Training Data
- AI: Without Extra Training Data
- Human Baseline

Note: Data visually approximated from Stanford AI Index Report, 2022.

SQuAD: Reading Comprehension Accuracy

- AI: Simple Questions (v1)
- AI: Complex Questions (v2)
- Human Baseline: Simple Questions (v1)
- Human Baseline: Complex Questions (v2)

Note: Data visually approximated from Stanford AI Index Report, 2022.

Source: Stanford Institute for Human-Centered Artificial Intelligence, Goldman Sachs Global Investment Research

What are the implications for the experience of learning and education? How can graduate management education deliver on the experience of « being human »?

LOOKING FORWARD: KEEP EYE ON THE GENERATIVE AI MARKET

- Fast-growing landscape

- Scattered

- Growing availability of multi-modal solutions

https://www.sequoiacap.com/article/generative-ai-act-two/

LOOKING FORWARD: KEEP ETHICAL CONSIDERATIONS FRONT AND CENTER

◆ Some GenAI ethical considerations
  - Equity and accessibility
  - Data privacy
  - Bias
  - Deep fakes, …
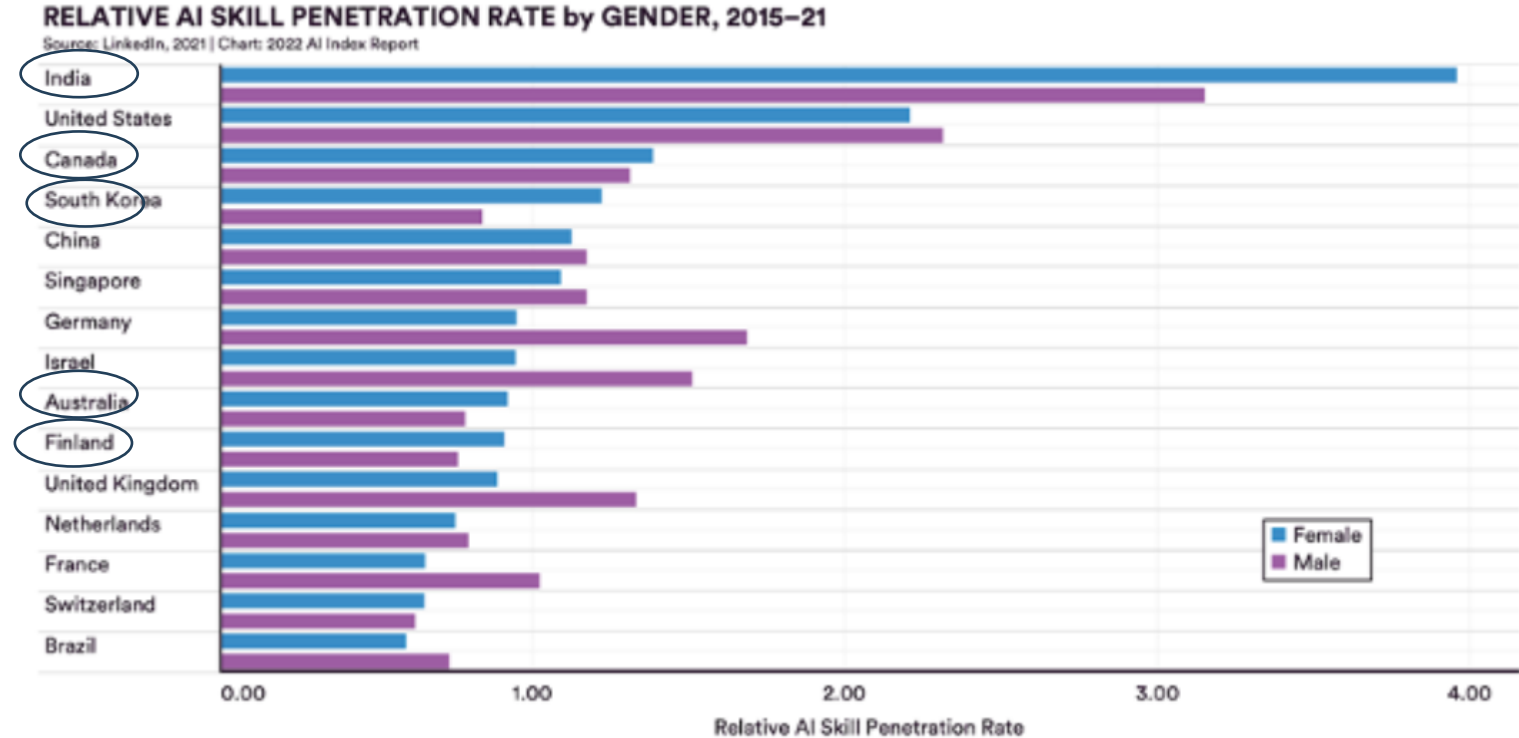

Recommendation on
the Ethics of Artificial Intelligence
Adopted on 23 November 2021
unesco

RELATIVE AI SKILL PENETRATION RATE by GENDER, 2015–21
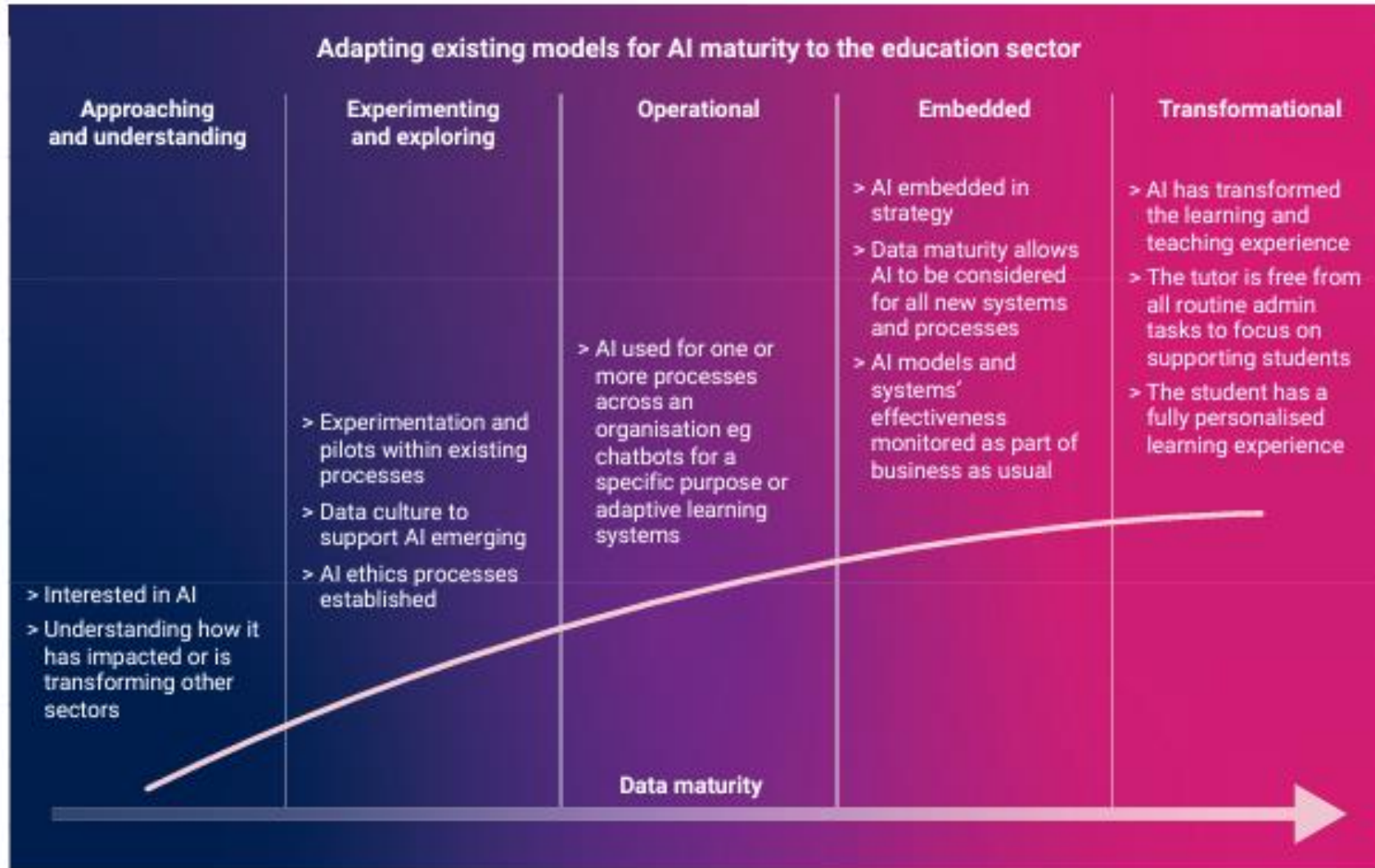Source: LinkedIn, 2021 | Chart: 2022 AI Index Report

Figure 4.1.10

Ethan Mollick in • Following
Associate Professor at The Wharton School
25m •

Reminder again that everything you see online can now be faked remarkably easily with AI. This open source project creates moving videos that follow instructions from still photos. People can create their own influencers.

Seeing how many small teams are creating AI projects that are going to change how we relate to things we see online (see also: Eleven Labs voice cloning, Heygen avatars, etc), one wonders what will be built by state actors with 1000x the budget.

IN WHICH STAGE OF AI MATURITY DO YOU THINK HIGHER ED WILL BE IN 2 YEARS, 5 YEARS, 10 YEARS?

Figure 1: Jisc AI Maturity model

European Capacity Building Workshop:

Unlocking the potential of AI in business schools