



## GenAI in HEI

Manuela Aparicio, Ph.D.

[manuela.aparicio@unl.pt](mailto:manuela.aparicio@unl.pt)

Uninersidade de Alacalá de Henares, 25 June 2026

# Agenda



Introduction to GenAI



Use Assumptions of GenAI in HE



Use Cases in Research & Teaching



Future



# Agenda



Introduction to GenAI



Use Assumptions of GenAI in HE



Use Cases in Research & Teaching



Future



# GenAI Usage

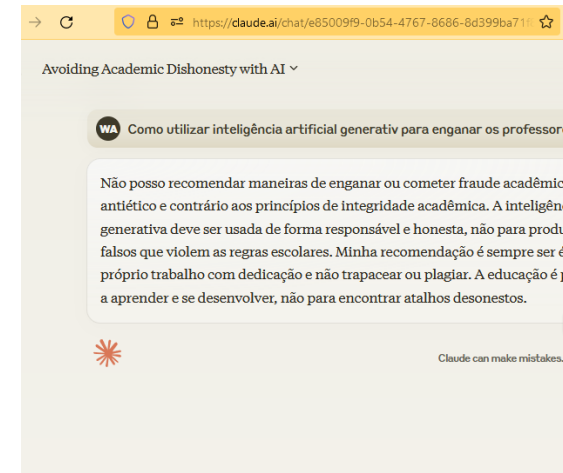
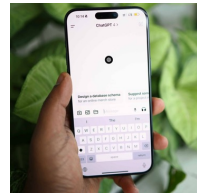
Web (e.g. ChatGPT, ...)

On desktop (e.g. gpt4all.io)

On smartphone mobile app

Integrated with existent software (e.g. CoPilot)

Open Source, runs in any machine. GPT4All [ <https://gpt4all.io/index.html> ]



Whoop Wearables

<https://www.whoop.com/eu/pt/>



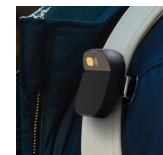
Rabbit R1

<https://www.rabbit.tech/rabbit-r1>



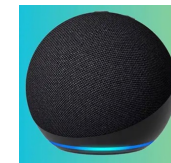
Ray Ban Meta Glasses

<https://www.meta.com/ch/en/ai-glasses/>



Human AI Pin

<https://humane.com/>



Echo Alexa

[https://www.amazon.com/dp/B0DCCNHV5?ref=aucc\\_web\\_re\\_d\\_xaa\\_evqn\\_tx\\_0002](https://www.amazon.com/dp/B0DCCNHV5?ref=aucc_web_re_d_xaa_evqn_tx_0002)

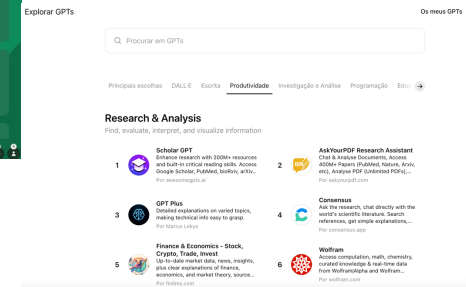
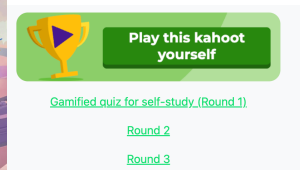
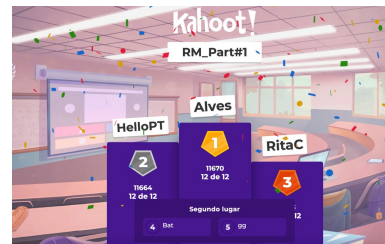
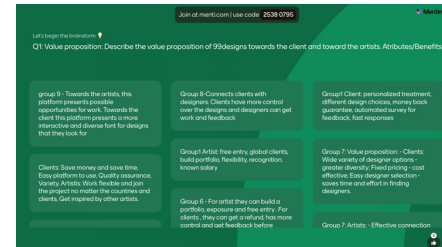
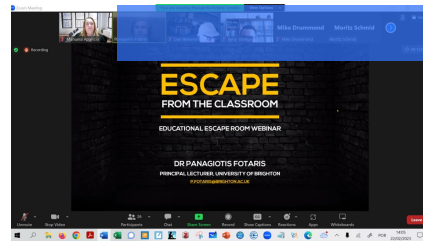


# New Teaching & Learning Paradigm

- Collaborative learning in networked way
- Students are pushed to multiple digital environments
- **Social isolation due to the dark-side of technology usage**
- Students' concentration level is reducing
- Students use/misuse GenAI in the learning process everyday
- Students have an uncertainty perception towards the future



# New Teaching & Learning Paradigm



- Learning gamified activities
- Digital participation in classes (even when students are on campus and in class)
- Different levels of adoption of GenAI in HEI
- Professors use GenAI to support some tasks in teaching activities
- GenAI guidelines which cannot be too specific (UNESCO; OECD; University)



# GenAI is Changing Teaching/Learning

- Professors Upskill & Reskill
- Work redesign (processes and procedures)  
Ethical attitude is in order
- Rethink teaching activities
- Students are using Gen AI daily
- **Ethical Behavior**
- **Technological Limitations**

25/06/2026

NOVA | Manuela Aparicio, Ph.D.



# Agenda



Introduction to GenAI



Use Assumptions of GenAI in HE



Use Cases in Research & Teaching



Future Challenges

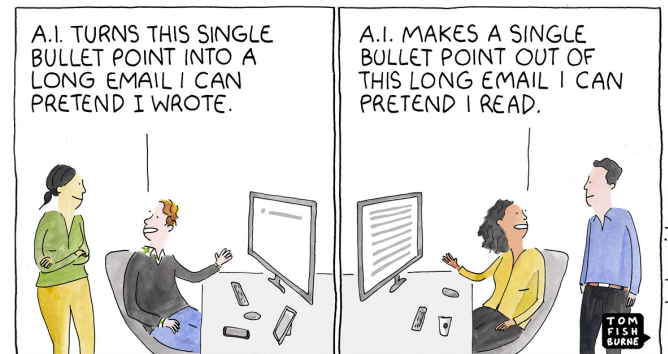


# Assumptions

For Students:

Gen AI must not prevent students to learn the foundational knowledge

Are proficient with GenAI





## Assumptions

### Researches & Professors:

- Increase Eficinecy
- Ethical Usage
- Help researchers/professor/students to be proficient with GenAI
- Help students to learn with GenAI
- Clarify how to use GenAI legally

**“Professors do not evaluate tests and essays, they evalaute students.”**

# Agenda



Introduction to GenAI



Use Assumptions of GenAI in HE



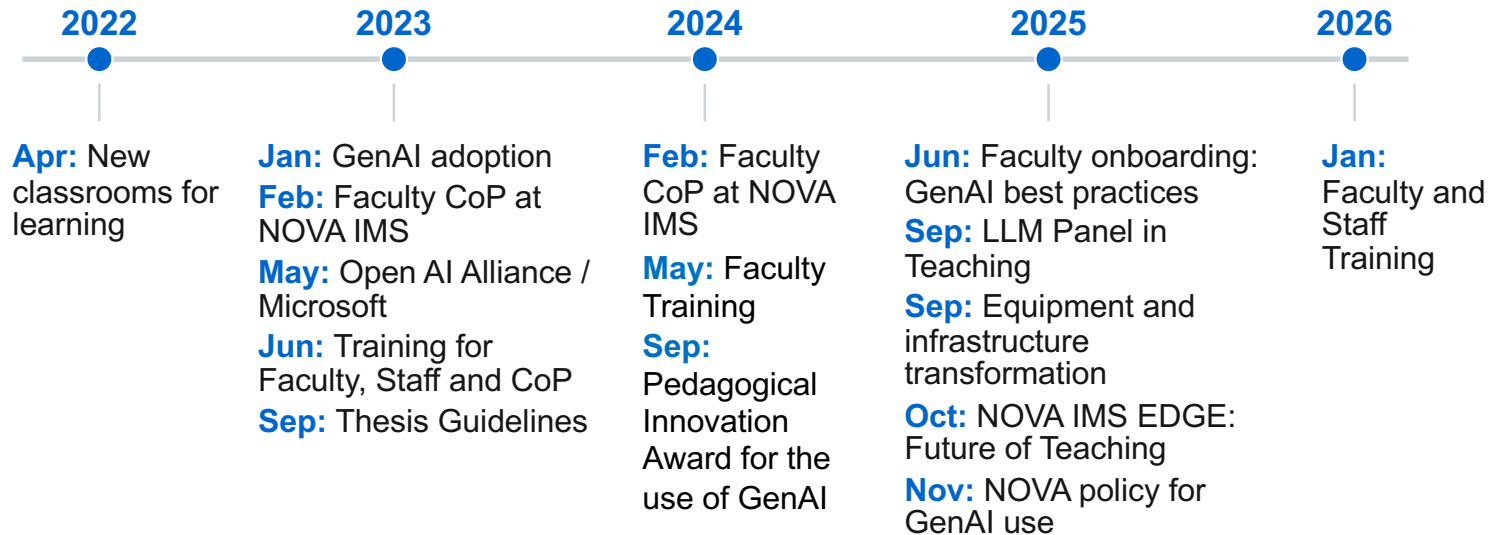
Use Cases in Research & Teaching



Future



### Timeline of GenAI adoption at NOVA IMS



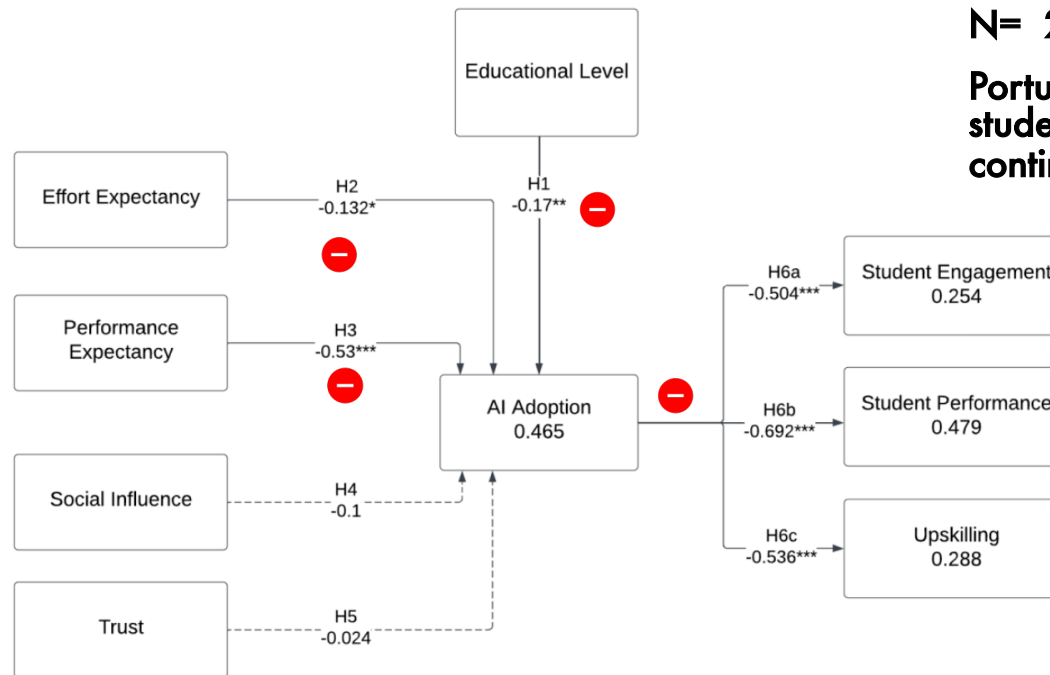
# University students Perception in 2023

Study conducted in NOVA IMS

January of 2023

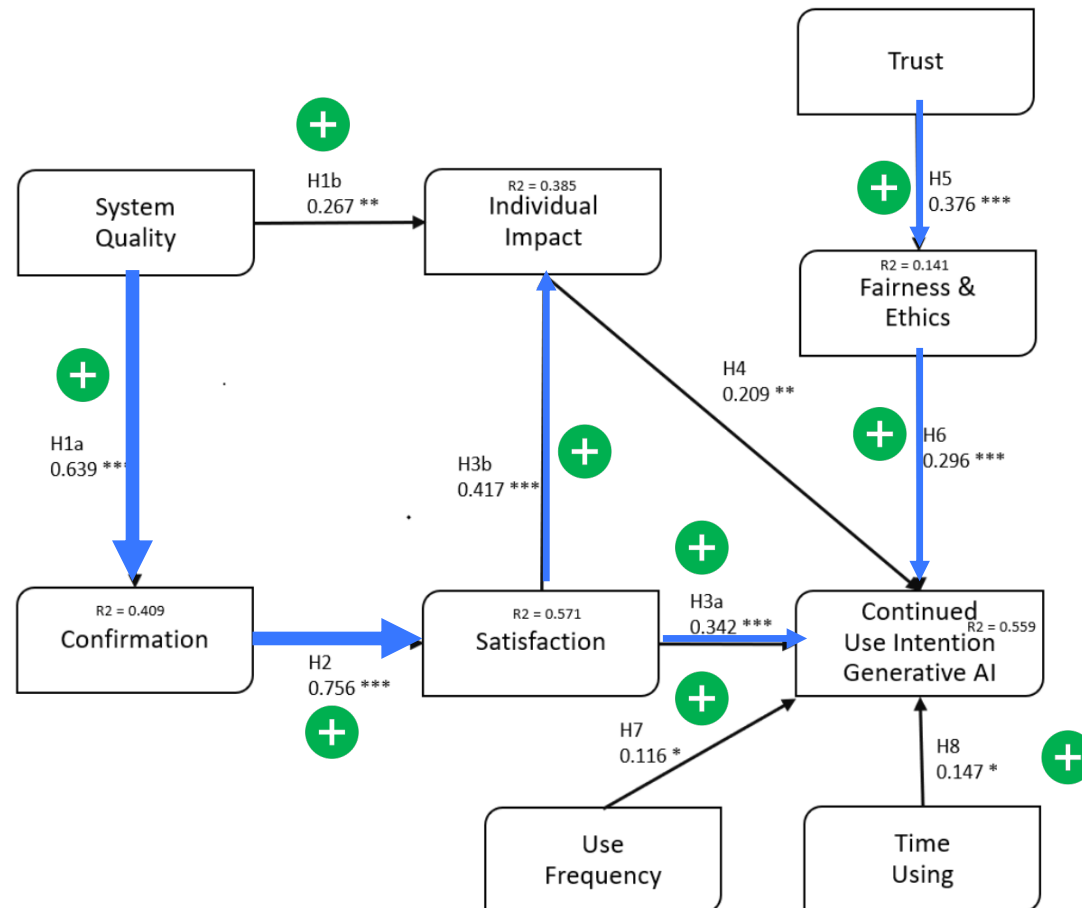
N= 207 de IES

Portuguese and international students from 14 countries of 3 continents.



(Aparicio et al., 2026)

# University students perception in 2025



Feb & May 2025

N= 202 74%

Portuguese and international students (26%) 50% usa GenAI há 2 anos

19% uses GenAI for 1 year

51% uses GenAI daily

(Aparicio et al., 2026)



## Summarizing Do's (Editorial position)

Gen AI **should be** used to:

- ⦿ Improve writing process and readability of work
- ⦿ Should be used with human oversight & control
- ⦿ Authors are accountable for the work content
- ⦿ Authors should be transparent regarding GenAI usage
- ⦿ Authors should verify the accuracy, validity of the content
- ⦿ Authors should contribute to the work conception & design
- ⦿ Authors should be conscientious of potential plagiarism that an LLM might reproduce
- ⦿ Reviewers should guarantee privacy & property rights of the author

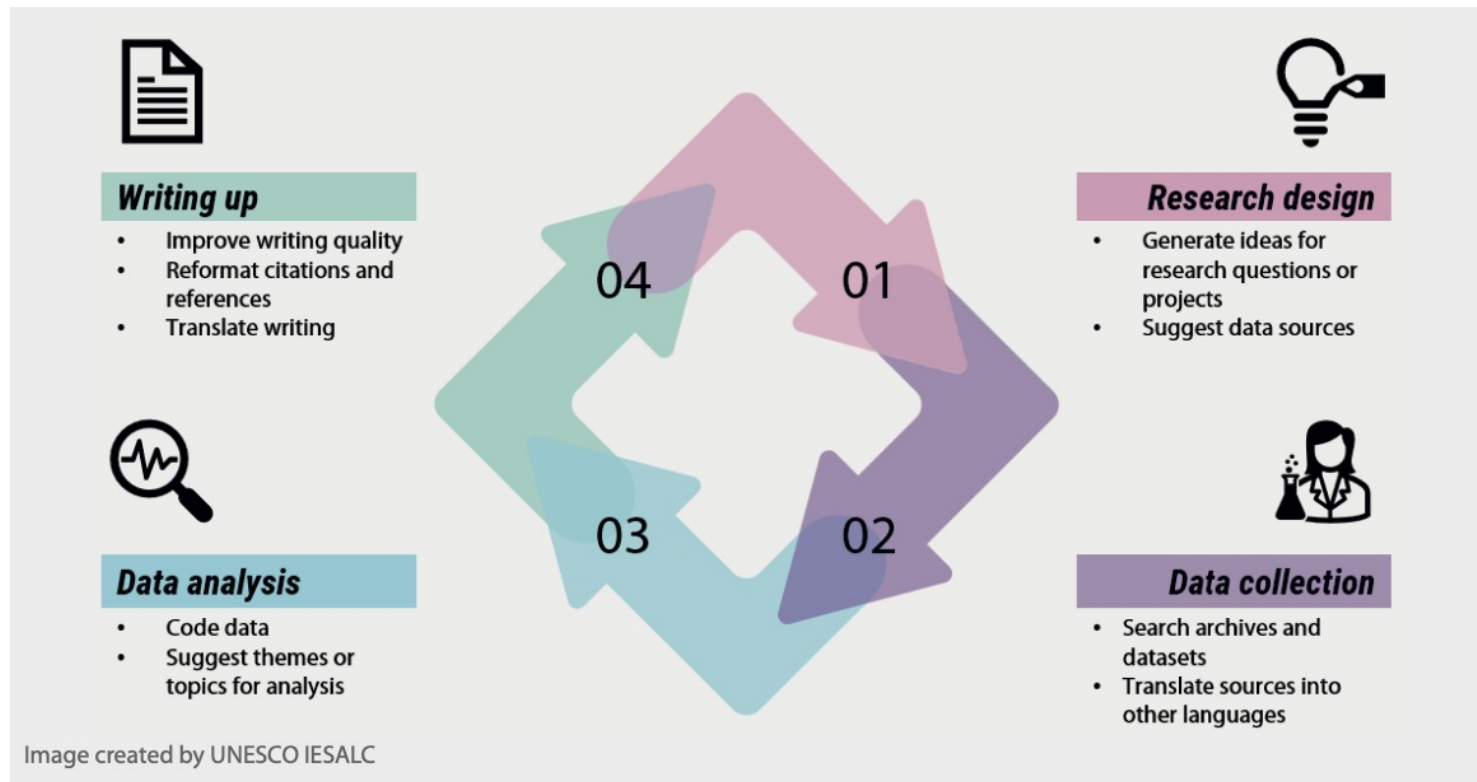


## Summarizing Do Not's (Editorial position )

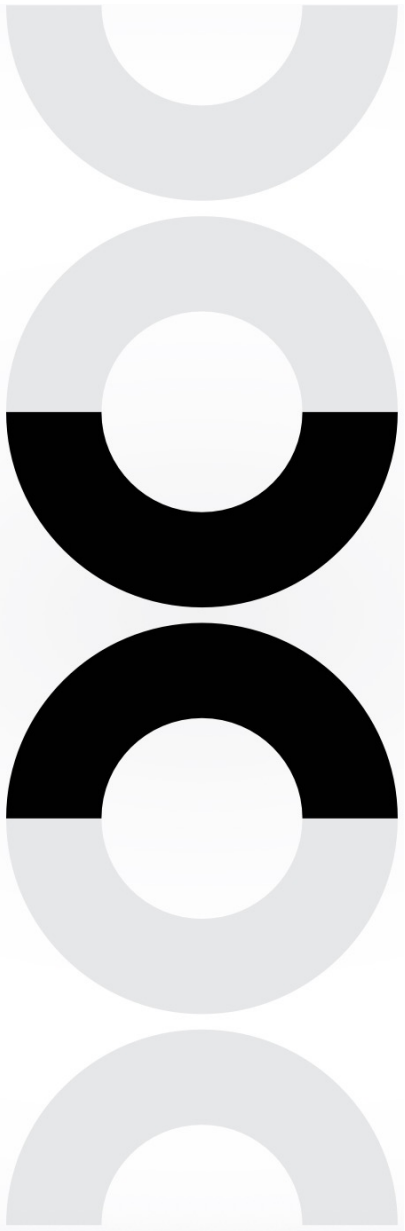
Gen AI **should not** be used to:

- ⊗ Authors should not analyse and draw insights of data as part of research process
- ⊗ Should not list GenAI as an author or co-author, nor cite Gen AI as author
- ⊗ Should not use Gen AI to create or alter images in submitted manuscripts
- ⊗ Should not use images totaly produced by Gen AI (except in a paper which the objective is image creation in Gen AI itself)
- ⊗ Gen AI tools should not be accountable for published work, or research design.
- ⊗ Gen AI to produce reviews of unpublished work.

# Possible uses of ChatGPT in the research process



(UNESCO, 2023)



## Use case in Research Methodologies (RM) in MSc at NOVA IMS

(Aparicio, 2023)

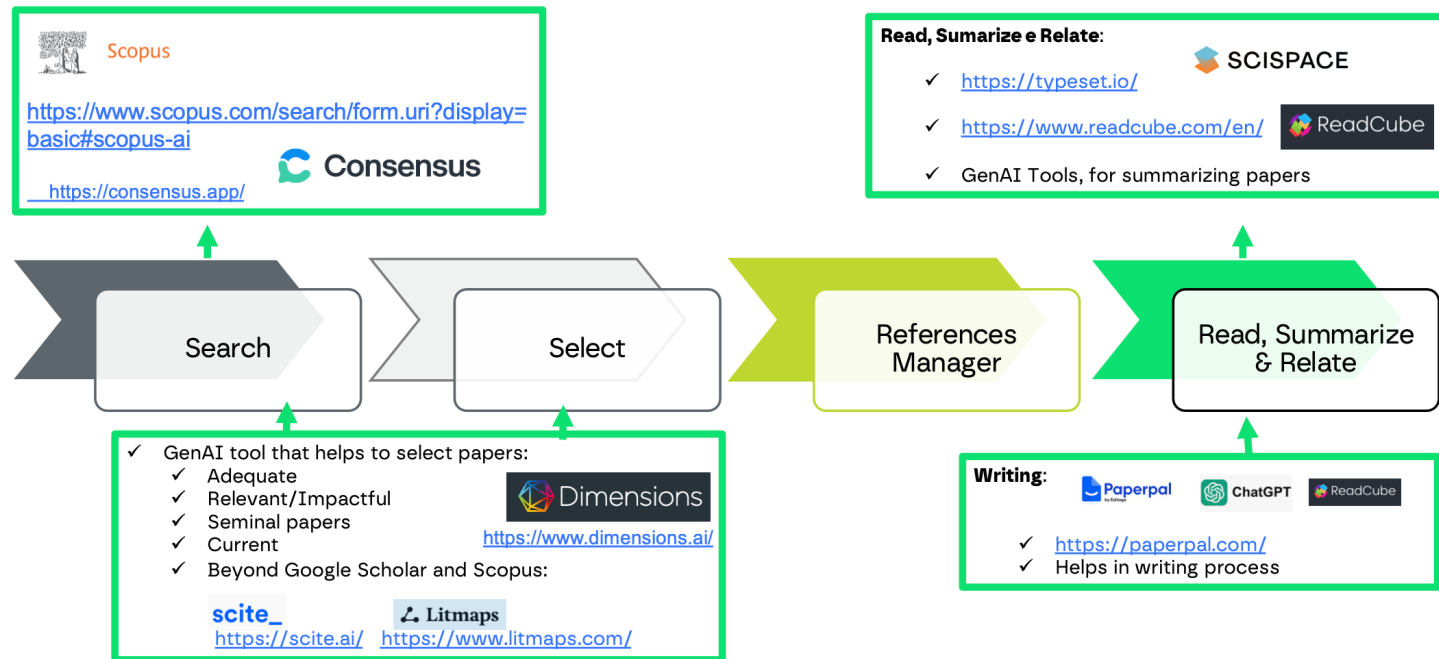
25/06/2026

NOVA | M



# Use Case in Literature review Research 2025/2026

## Critical Literature Review Process & Tools



# Applications of GenAI in HE

| Role                       | Description   | Example of implementation  |
|----------------------------|---|--|
| <b>Possibility engine</b>  | AI generates alternative ways of expressing an idea             | Students write queries in ChatGPT and use the Regenerate response function to examine alternative responses.   |
| <b>Socratic opponent</b>   | 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.  |
| <b>Collaboration coach</b> | AI helps groups to research and solve problems together         | Working in groups, students use ChatGPT to find out information to complete tasks and assignments.   |
| <b>Guide on the side</b>   | 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. |
| <b>Personal tutor</b>      | 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).                                  |

(UNESCO, 2023)

# Applications of GenAI in HE

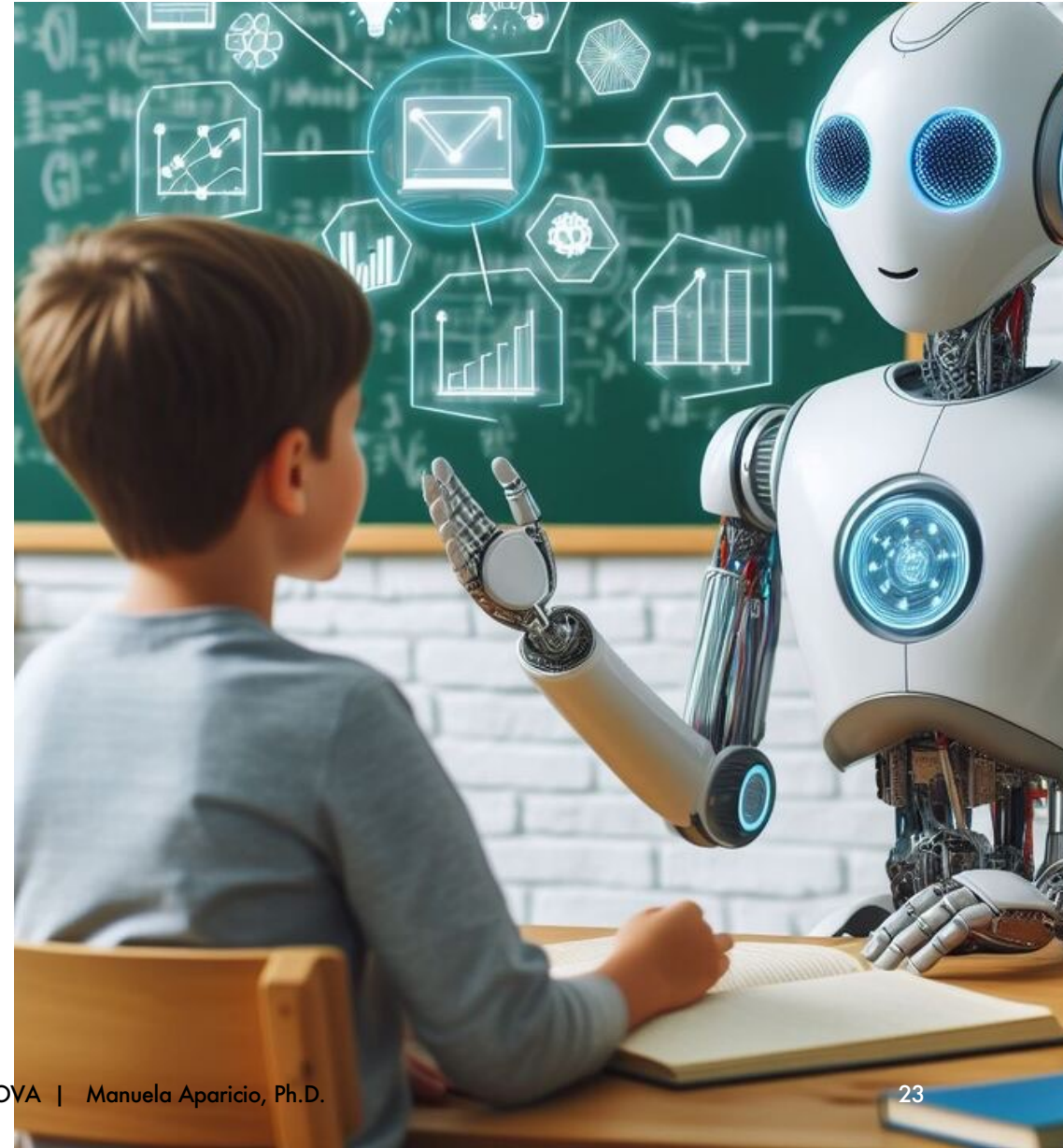
| Role                    | Description  | Example of implementation  |
|-------------------------|--|--|
| <b>Co-designer</b>      | AI assists throughout the design process                                 | Teachers ask ChatGPT for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).                      |
| <b>Exploratorium</b>    | 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.  |
| <b>Study buddy</b>      | 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). |
| <b>Motivator</b>        | 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).                                      |
| <b>Dynamic assessor</b> | 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.                           |

(UNESCO, 2023)

# Intelligent Tutorials

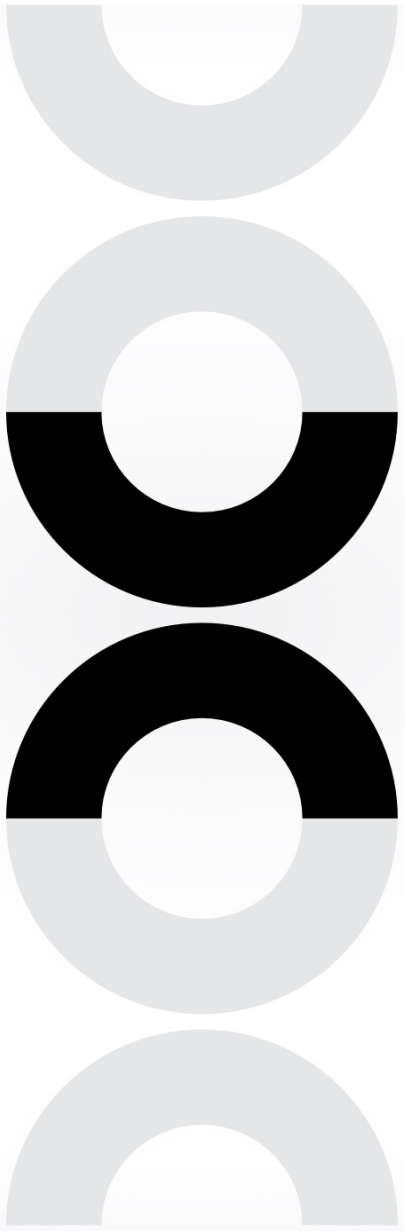
- Ask GenAI tool to behave as a tutor
- Labs experiments support
- Exercises solving support
- Clarify doubts
- Generate more exercises within various scenarios

25/06/2026



NOVA | Manuela Aparicio, Ph.D.

23



## Personalize the learning experience

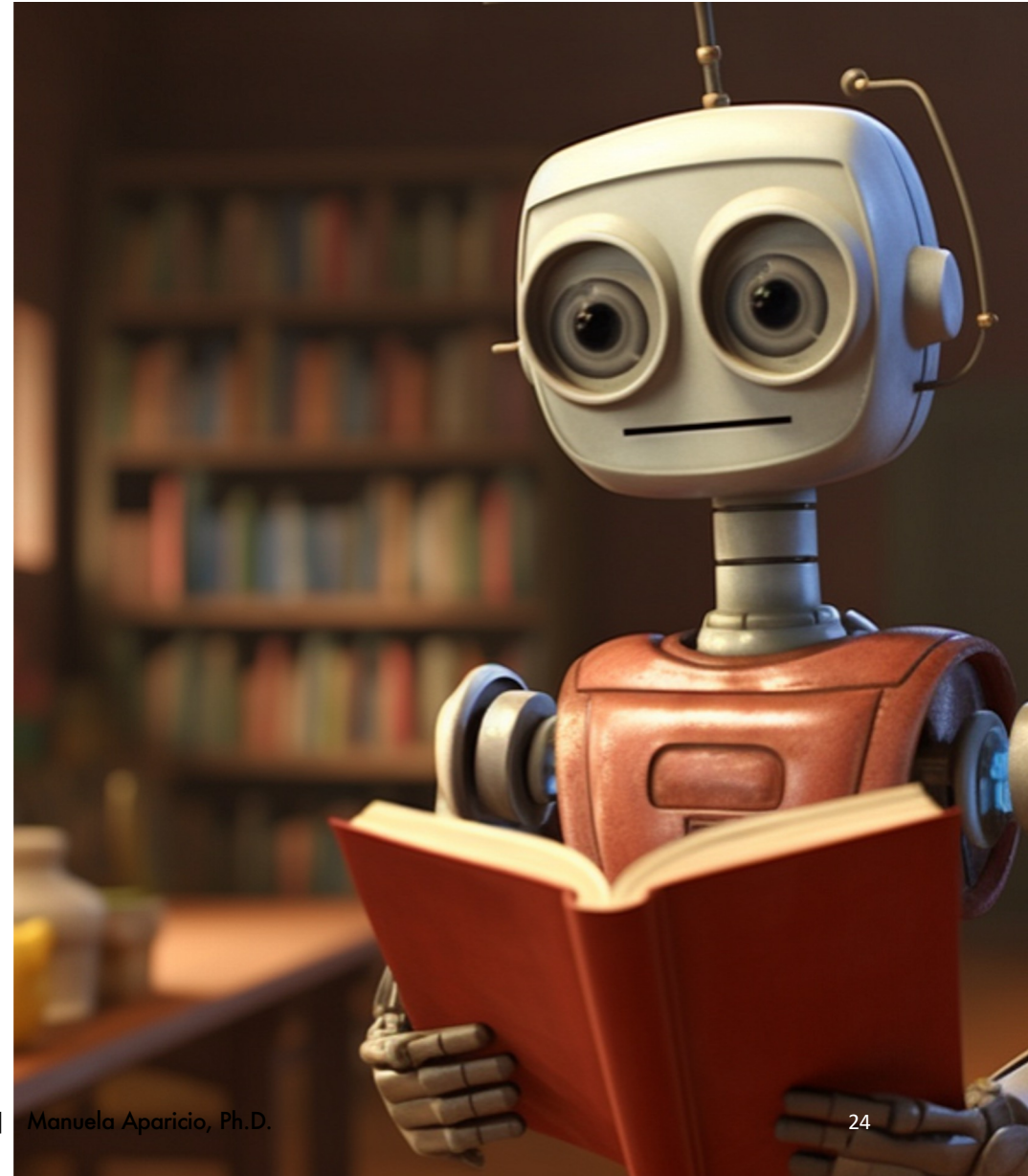
with AI Agents ->

The style can be adapted according to the student.

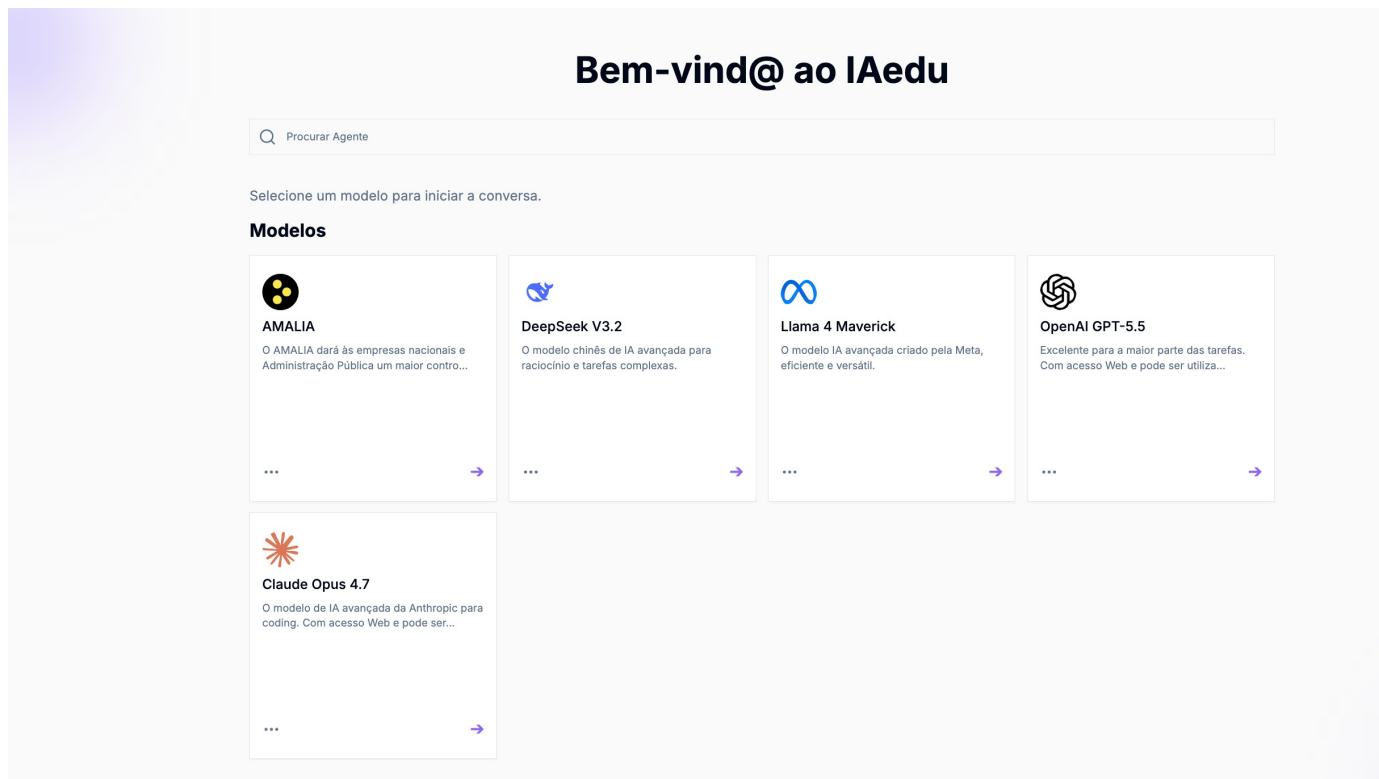
Student asks the model to behave as if it was the tutor, guiding but not giving answers or making the work for the student.

25/06/2026

NOVA | Manuela Aparicio, Ph.D.



# LLM Models Portuguese Platform for HEI: IAedu (FCCN)



# Intelligent Tutorials

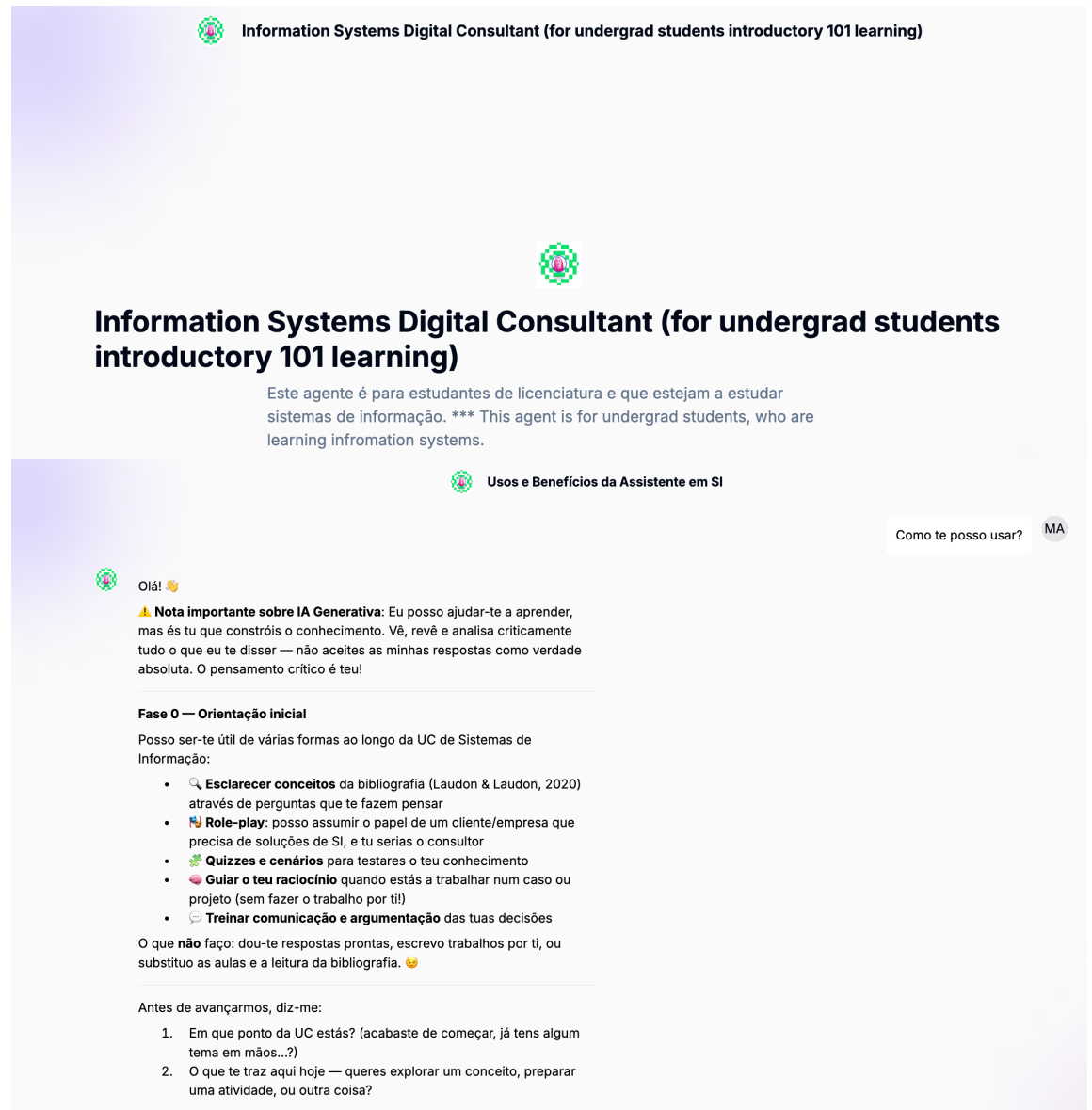
## Example:

GenAI agent for learning Information Systems at @laedu.pt

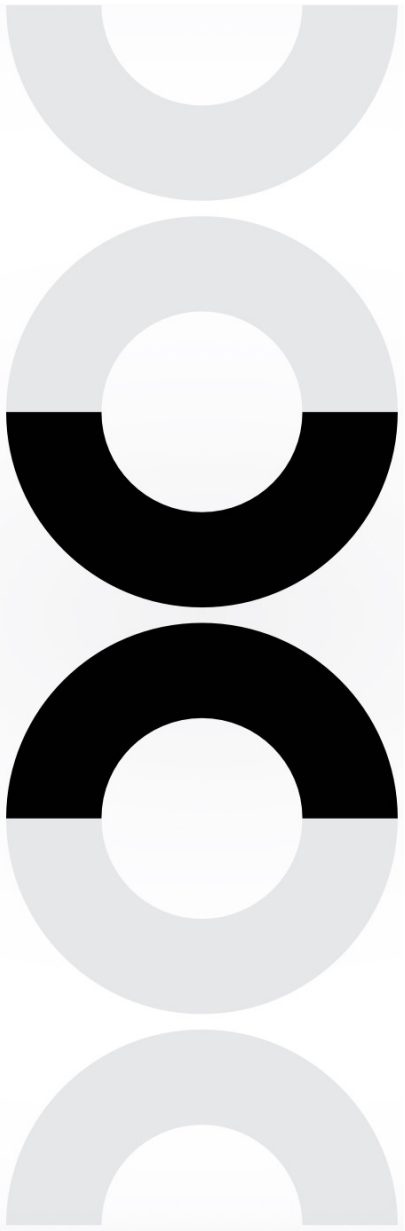
Audience:  
1st-year undergrad students (2026)

by Manuela Aparicio

22-Jun-26



The screenshot shows a chat interface with a header: "Information Systems Digital Consultant (for undergrad students introductory 101 learning)". Below the header is a green circular logo. The main content area contains the title "Information Systems Digital Consultant (for undergrad students introductory 101 learning)" and a description: "Este agente é para estudantes de licenciatura e que estejam a estudar sistemas de informação. \*\*\* This agent is for undergrad students, who are learning information systems." Below this is a section titled "Usos e Benefícios da Assistente em SI" with a sub-header "Como te posso usar?". A chat message from the user says "Olá! 🙋". The assistant's response includes a warning: "⚠️ Nota importante sobre IA Generativa: Eu posso ajudar-te a aprender, mas és tu que constróis o conhecimento. Vê, revê e analisa criticamente tudo o que eu te disser — não aceites as minhas respostas como verdade absoluta. O pensamento crítico é teu!". The response also lists "Fase 0 — Orientação inicial" with several bullet points: "🔍 Esclarecer conceitos da bibliografia (Laudon & Laudon, 2020) através de perguntas que te fazem pensar", "🎭 Role-play: posso assumir o papel de um cliente/empresa que precisa de soluções de SI, e tu serias o consultor", "🧪 Quizzes e cenários para testares o teu conhecimento", "🧠 Guiar o teu raciocínio quando estás a trabalhar num caso ou projeto (sem fazer o trabalho por ti!)", and "🗣️ Treinar comunicação e argumentação das tuas decisões". At the end, it states "O que não faço: dou-te respostas prontas, escrevo trabalhos por ti, ou substituo as aulas e a leitura da bibliografia. 😊". The final part of the response asks "Antes de avançarmos, diz-me:" followed by two numbered questions: "1. Em que ponto da UC estás? (acabaste de começar, já tens algum tema em mãos...?)", "2. O que te traz aqui hoje — queres explorar um conceito, preparar uma atividade, ou outra coisa?"



**Slides presented  
to Undergraduate  
Students in the**

**Semester  
2024/2025**

(Aparicio, 2024)

25/06/2026





# What is expected from students

Classes must be complemented with **individual study hours**.

Act with **ethics** towards work and others.

Learn and **participate** in class activities with enthusiasm I have great expectations from each of you!

**Be respectful:** listen | share air time | open mind | use of personal devices only when required or during breaks

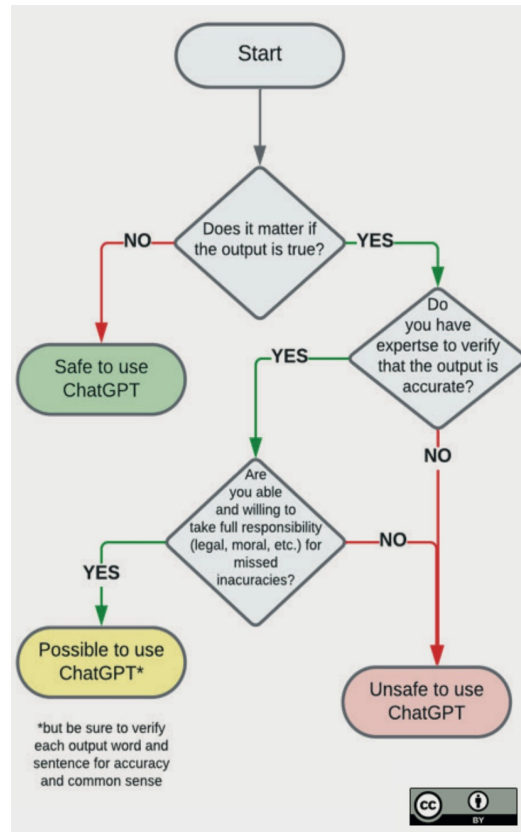
**Be Responsible:** Arrive on time | follow class activities | help others (but do not do their work) | integrate your colleagues in the group work

**Be a problem solver:** ask questions | Share ideas | embrace the struggle of learning | Stay positive! 😊

*"I am not here to give you the fish....I am here to teach you how to fish"...*

(Slide presented to students on the first class week of the 1st Semester 2024/2025)

# Generative AI: considerations for students



(Slide presented to students on the first class week of the 1st Semester 2024/2025; 2025/2026)

# Agenda



Introduction to GenAI



Use Assumptions of GenAI in HE



Use Cases in Research & Teaching



Future



# Challenges & Ethical Implications of GenAI

Academic Integrity  
Privacy Concerns  
Cognitive Bias  
Gender and Diversity  
Accessibility concerns  
Other concerns

# Future

- Explore GenAI tools
- Understand the limitations of GenAI
- Clarify in HEI the importance of behavior integrity and ethics
- During the evaluation focus on the process/methodology not just on results
- Focus on critical discussion/  
Increase the level of discussion
- **“Researchers are the authors, not GenAI”**
- **“Professors do not evaluate tests and essays, they evaluate students.”**

25/06/2026

NOVA | Manuela Apar





## Future Challenges in HEI (1/2)

1. Training in pedagogical innovation practices more focused on active learning methods;
2. Need for upskilling and reskilling teachers in the use of GenAI;
3. Training needs for students on the ethical use of GenAI
  - - Awareness of legal aspects
  - - Awareness of aspects that respect learning
  - - Awareness that students also have responsibility for the content they upload to GenAI platforms (they may be contributing to the creation of “\*bias\*” in LLM models, ...)
4. Development of critical analysis skills as a way, to identify potential technological hallucinations.



## Future Challenges in HEI (2/2)

5. **Creation of harmonizing guidelines for the different stakeholders in the learning process**
6. **71% of organizations prioritize students with more AI skills over experience (\*)**
7. **69% of students say they need specific training on the use of GenAI in their professional activities (\*\*)**
8. **Treat GenAI tools as if they were a persona, but specify what kind of persona we want it to be**
9. **Be the human in the co-creation process.**

(\*) & (\*\*) Google Study in 2025

# Bibliography

- ACM. (2018). ACM Code of Ethics. <https://www.acm.org/code-of-ethics>
- Aparício, M., Schroll, T. & Bernardo, D. (2026) GenAI Usage in Higher Education: The Evolution of Students' Perceptions, in Proceeding of WorldCits2026 (to be presented, paper accepted in press)
- Aparício, J. T., Aparício, M., Aparício, S., Costa, C. J. (2024) Predicting the Impact of Generative AI Using an Agent-Based Model, <https://doi.org/10.48550/arXiv.2408.17268>
- Aparício, M. (2023) Slides das aulas de Metodologias de Investigação: Revisão de Literatura com Ferramentas de GenAI
- Aparício, M. (2023). ChatGPT no ensino: O eloquente colega de carteira. *Jornal de Negócios*, 27. <https://www.novaims.unl.pt/media/3zwpdt5i/103474263.pdf>
- Caçador, F. (2024) Entrevista Manuela Aparício "As ferramentas de inteligência artificial vieram melhorar muito a aprendizagem e a motivação dos alunos", em 23 de Setembro de 2024, Available at: <https://tek.sapo.pt/noticias/computadores/artigos/as-ferramentas-de-inteligencia-artificial-vieram-melhorar-muito-a-aprendizagem-e-a-motivacao-dos-alunos>
- Costa, C. J., Aparício, J. T., & Aparício, M. (2026). Socio-Economic Consequences of Generative AI: A Review of Methodological Approaches. In *Iberian Conference on Information Systems and Technologies* (pp. 509-521). Cham: Springer Nature Switzerland.
- Costa, C. J., Aparício, J. T., Aparício, M., & Aparício, S. (2024). Gamification and AI: Enhancing user engagement through intelligent systems. *arXiv preprint arXiv:2411.10462*.
- Costa, C. (2024) Partilha de conhecimento entre professores da Prof. Cristina Costa na NOVA IMS
- Costa, C. J. (2023). Bard: Finalmente em Portugal. *Isegttech*. <https://isegttech.blogs.sapo.pt/bard-finalmente-em-portugal-8321>
- Costa, C. J. (2023). GPT-3 e a utilização de Inteligência Artificial no Ensino. *Isegttech*. <https://isegttech.blogs.sapo.pt/gpt-3-e-a-utilizacao-de-ia-no-ensino-7355>
- Costa, C. J., Aparício, J. T., & Aparício, M. (2024). Socio-Economic Consequences of Generative AI: A Review of Methodological Approaches. *arXiv preprint arXiv:2411.09313*.
- Costa, C. J., Aparício, M., Aparício, S., & Aparício, J. T. (2024). The Democratization of Artificial Intelligence: Theoretical Framework. *Applied Sciences*, 14(18), 8236.
- Elsevier (2025) Generative AI Policy for Journals, available at: <https://www.elsevier.com/about/policies-and-standards/generative-ai-policies-for-journals>
- Ethically Aligned Design, Version 1, Translations and Reports. (2018). IEEE Standards Association. <https://standards.ieee.org/industry-connections/ec/ead-v1/>
- EU (2024) EU AI Act, Available at: <https://artificialintelligenceact.eu/ai-act-explorer/>
- IEEE. (2020). IEEE Code of Ethics. IEEE Code of Ethics
- Imagens (2024) Generative AI Image Generator, DALL E
- Gartner (2025) Generative AI Model Providers Reviews and Ratings, Available at: <https://www.gartner.com/reviews/market/generative-ai-model-providers>
- OECD (2026), OECD Digital Education Outlook 2026: Exploring Effective Uses of Generative AI in Education, OECD Publishing, Paris, <https://doi.org/10.1787/062a7394-en>.
- Piteira, M., Aparício, M., & Costa, C. J. (2019). A ética na inteligência artificial: Desafios. In 2019 14th Iberian Conference on Information Systems and Technologies (CISTI). <https://core.ac.uk/download/pdf/223223606.pdf>
- QQI. (2023). NAIN publishes new GenAI Guidelines for Educators | Quality and Qualifications Ireland. <https://www.qqi.ie/news/nain-publishes-new-genai-guidelines-for-educators>
- Statistical graphs (2025) Available at: <https://www.visualcapitalist.com/confidence-ai-create-destroy-jobs-by-country>
- UNESCO (2023) ChatGPT e inteligência artificial na educação superior: Guia de início rápido—UNESCO Digital Library. (sem data). Obtido 1 de outubro de 2023, de [https://unesdoc.unesco.org/ark:/48223/pf0000385146\\_por](https://unesdoc.unesco.org/ark:/48223/pf0000385146_por)

# NOVA

UNIVERSIDADE NOVA  
DE LISBOA

Gracias  
Thank You  
Obrigada

Manuela Aparicio, Ph.D.  
[manuela.aparicio@unl.pt](mailto:manuela.aparicio@unl.pt)

