



IA GÉNÉRATIVE ET ENSEIGNEMENT

Une étude de cas

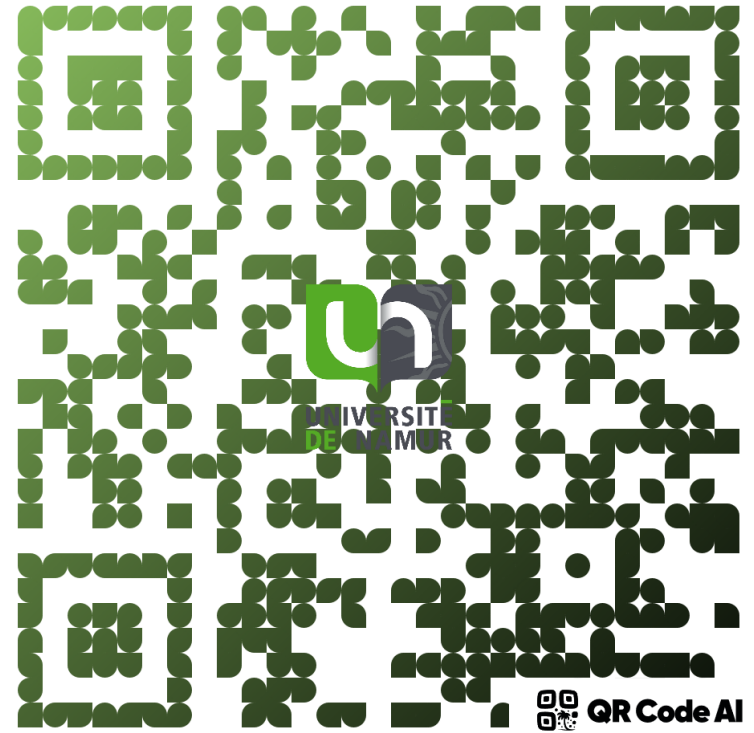
Congresso Internacional
de Iniciação Científica da FEPI

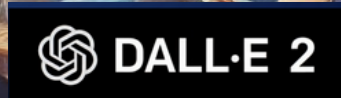
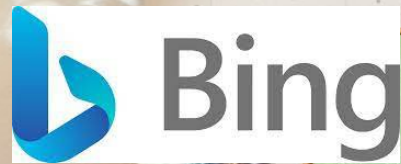
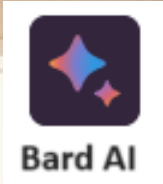
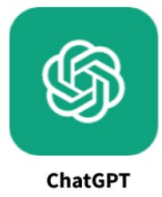
29/10/24

Dr Michaël Lobet



*Support
disponible*





Panique dans le milieu scolaire



Quel impact de l'IA generative sur l'enseignement?



Comment réagir?

SciencesPo

PRESS RELEASE

SCIENCES PO BANS THE USE OF CHATGPT

Paris, January 27th 2023 - Last November, the company Open AI made its artificial intelligence (AI)-based chatbot available to the general public.

MENACE

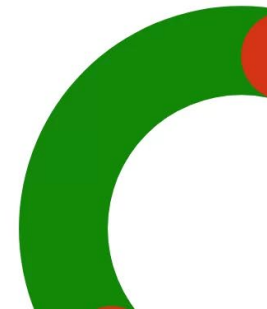


GPTZero

The World's **#1 AI Detector** with
over 1 Million Users



ChatGPT
Killer



Edward Tian, Princeton, December 2022

Contrôle de la menace

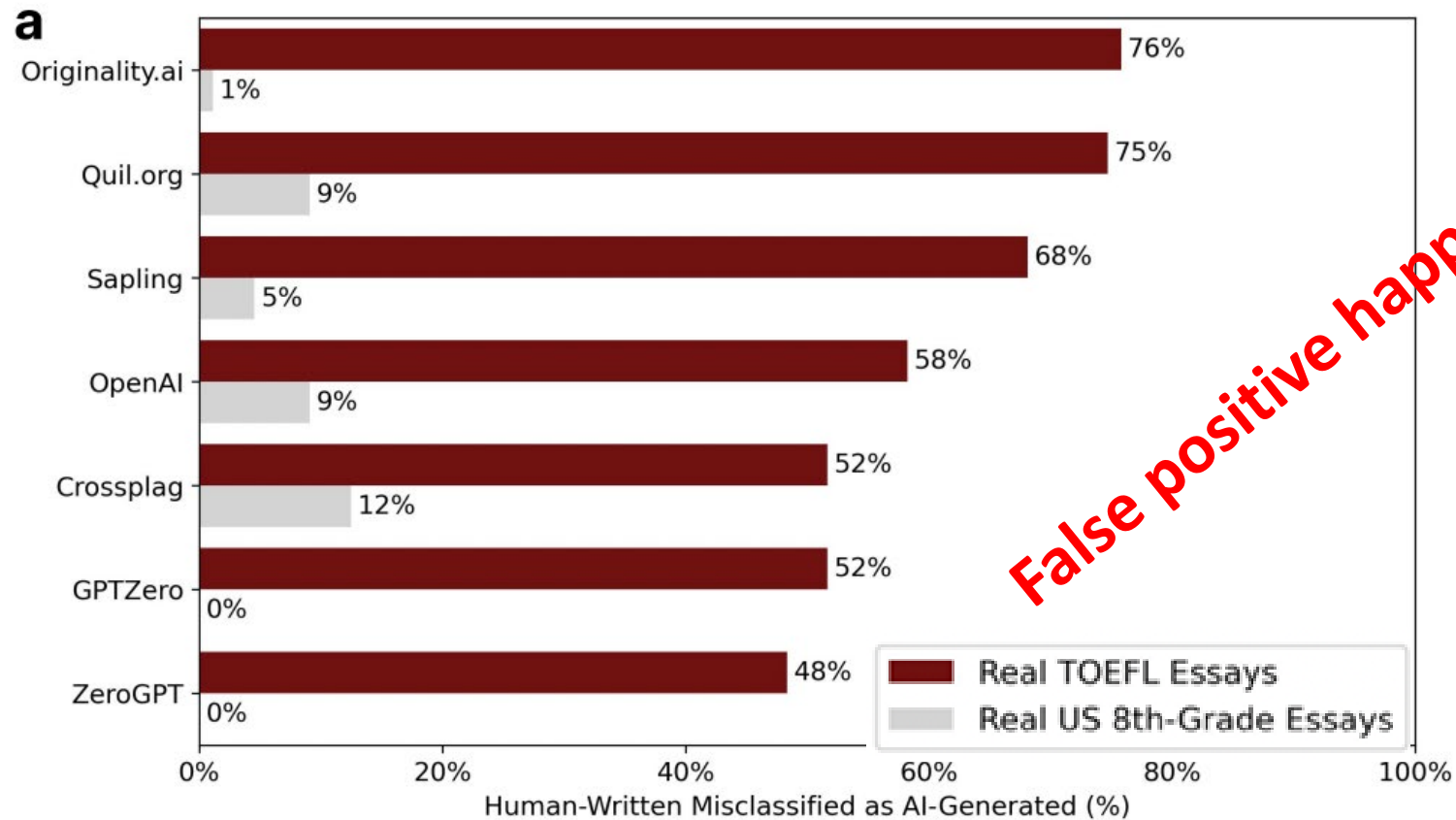
Est-ce une reaction normale?



WIKIPEDIA
The Free Encyclopedia





Bonne idée d'utiliser ces détecteurs? **NON**



GPT detectors were *misclassifying* writing by *non-native English speakers* as AI-generated **48-76%** of the time, compared to **0%-12%** for native speakers.

Bonne idée d'utiliser ces détecteurs? **2^e NON**



StealthGPT **BETA** App Pricing Blog Affiliates API   [Start For FREE](#) [Sign In](#)

Undetectable AI For All Your Daily Needs

From emails, to blogs, to papers – Our Undetectable AI, plagiarism-free AI tool allows you to get more done, 10x faster so you can concentrate on what matters...

Bonne idée d'utiliser ces détecteurs? **2e NON**



Unlock Unlimited Stealth

Monthly Annual

<h3>Essential</h3> <h1>\$99.99</h1> <p>\$179.99 Billed Annually</p> <p>For the creator who is just starting out and needs to get their content out there. Great for new creators, small businesses, and content creators.</p> <h2>100,000</h2> <p>Words Per Month</p> <ul style="list-style-type: none">Instant Response TimeBeats Turnitin, GPTZero, And More!Access To The Infinity Stealth Engine	<h3>Pro</h3> <h1>\$199.99</h1> <p>\$239.99 Billed Annually</p> <p>For the professional who is already using AI to produce a high volume of content, and needs peace of mind that their writings won't be penalized for AI. Great for SEO specialists, blog editors, and growing creators.</p> <h2>500,000</h2> <p>Words Per Month</p> <ul style="list-style-type: none">Instant Response TimeBeats Turnitin, GPTZero, And More!Access To The Infinity Stealth Engine	<h3>Exclusive</h3> <h1>\$299.99</h1> <p>\$359.99 Billed Annually</p> <p>For the industry leader pushing the boundaries of AI in content creation, seeking unparalleled assurance against AI-induced penalties. Great for digital strategists, chief content officers, and pioneering influencers.</p> <h2>1,000,000</h2> <p>Words Per Month</p> <ul style="list-style-type: none">Instant Response TimeBeats Turnitin, GPTZero, And More!Access To The Infinity Stealth Engine
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Bonne idée d'utiliser ces détecteurs? **NON**



**Ne pas utiliser des détecteurs d'IA
pour quelque chose d'important**

Un nouvel outil

Utilisation de la scie sauteuse

Simplement couper du bois



Faire une **oeuvre** d'art



Possibilité
d'**accident** si pas
utilisé
convenablement

Risques d'utilisation de l'IA générative

Mollick, Ethan R. and Mollick, Lilach, Assigning AI: Seven Approaches for Students, with Prompts (September 23, 2023). Available at SSRN:

<https://ssrn.com/abstract=4475995> or <http://dx.doi.org/10.2139/ssrn.4475995>

Risques de confabulation

- ✓ Les grands modèles de langage (LLM) sont enclin à produire des faits plausibles mais incorrects
- ✓ Il peut inventer des faits
- ✓ *Hallucinations*
- ✓ Etre spécialement attentifs aux références, sources, citations, ... (esprit critique)
- ✓ Peut être difficile à détecter

Dans sa dernière aventure, Harry Potter fait-il équipe avec un brocoli ou une carotte ?

Dans sa dernière aventure, Harry Potter se prépare pour le Tournoi des Sorciers où chaque sorcier doit former une équipe avec un être végétal. Harry se retrouve avec Brocilus, un brocoli magicien au sourire énigmatique. Au début perplexe, Harry découvre que Brocilus possède une connaissance approfondie des herbes magiques. Ensemble, ils affrontent les épreuves en utilisant les talents de Brocilus pour communiquer avec les plantes et trouver des solutions créatives ■

https://fr.wikipedia.org/wiki/Hallucination_%28intelligence_artificielle%29

(Mai 2023)

You
Bonjour, dans sa dernière aventure, Harry Potter fait-il équipe avec un brocoli ou une carotte?

Copilot
Bonjour! Dans les aventures de Harry Potter, il ne fait pas équipe avec un brocoli ou une carotte. Cependant, il vit des aventures incroyables avec ses amis Ron et Hermione. Si vous avez d'autres questions sur Harry Potter ou un autre sujet, n'hésitez pas à demander! 😊

(Septembre 2024)

Risques d'utilisation de l'IA générative

Mollick, Ethan R. and Mollick, Lilach, Assigning AI: Seven Approaches for Students, with Prompts (September 23, 2023). Available at SSRN:

<https://ssrn.com/abstract=4475995> or <http://dx.doi.org/10.2139/ssrn.4475995>

<https://edit.co.uk/blog/ai-has-a-weird-problem/>

Risques de biais

- ✓ L'IA (gen) nécessite de l'entraînement sur une vaste quantité de données. Il y a un entraînement supplémentaire, **humain** pour créer des "gardes fous".
- ✓ Ce processus peut introduire des **biais**: **genre**, **racial**, biais de **point de vue** personnels, ou d'affiliation **politiques/philosophiques/religieuses**.
- ✓ **WEIRD** : **W**hite/**W**estern **E**ducated **I**ndustrialized **R**ich **D**emocratic
- ✓ Très difficile à identifier

« On parle de **biais algorithmiques** lorsqu'un algorithme d'intelligence artificielle pénalise une partie de la population, soit parce qu'il reproduit une discrimination préexistante, soit parce que certaines populations sont sous-représentées dans les données d'apprentissage »

Les grands défis de l'IA generative, Data for Good, version 1.0, Juillet 2023

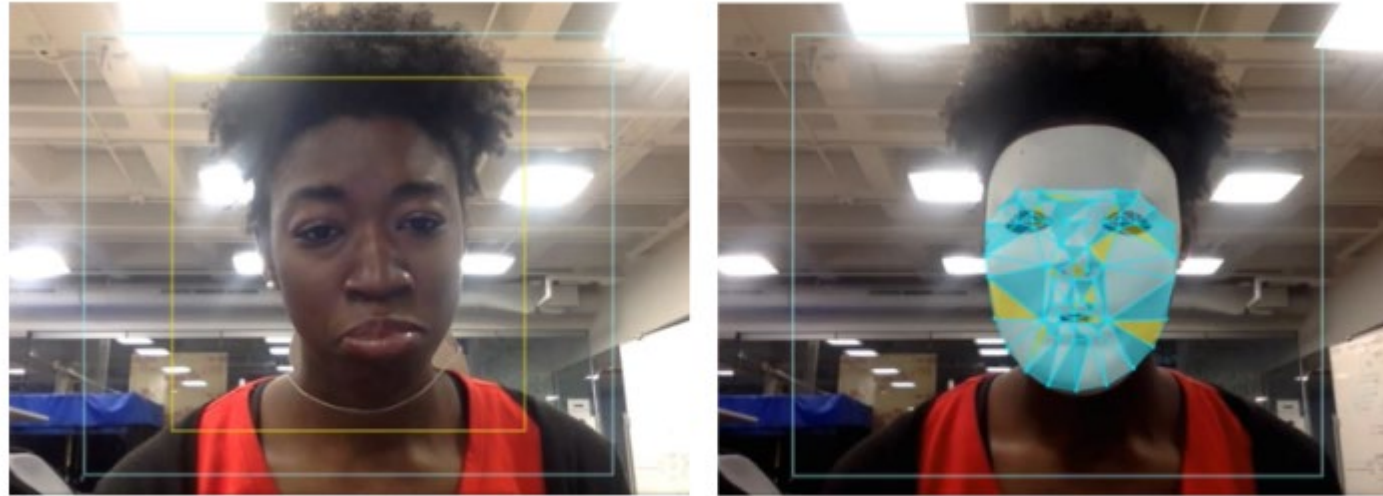


Risques d'utilisation de l'IA générative

Les grands défis de l'IA generative, Data for Good, version 1.0, Juillet 2023

Risques de biais

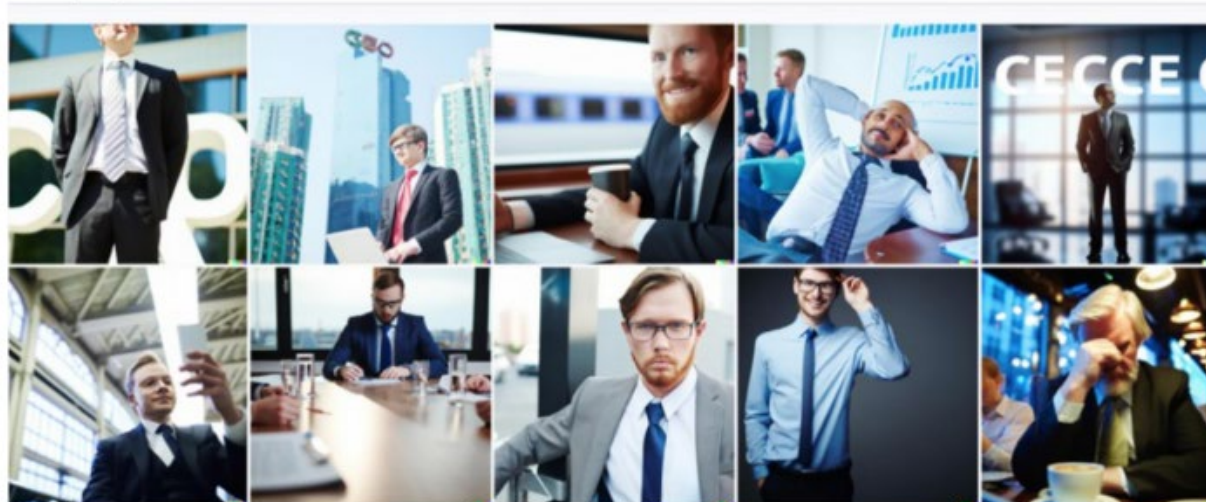
Exemples



Biais ethniques

Joy Buolamwini, conférence TED 2017^[82].

Prompt: ceo;
Date: April 6, 2022



Biais ethniques

Réponses à des prompts simples de DALL-E, 2022^[89].

Risques de biais

Exemples

Biais de genre



Midjourney, demande de génération de personnalité politique (en anglais «politician», à gauche) et de secrétaire (en anglais «executive assistant», Analyse Data for Good, mars 2023.

Risques liés aux caractères privés des données

- ✓ Les données peuvent être utilisées par les sociétés qui développent l'outil d'IA pour de futurs entraînements
- ✓ L'état de protection des données n'est pas clair pour certains outils d'IA

Risques d'utilisation de l'IA générative

Mollick, Ethan R. and Mollick, Lilach, Assigning AI: Seven Approaches for Students, with Prompts (September 23, 2023). Available at SSRN:

<https://ssrn.com/abstract=4475995> or <http://dx.doi.org/10.2139/ssrn.4475995>

Risques éducatifs

- ✓ Une IA peut être très convaincante, avoir des opinions très fortes à propos de faits ou de théories qu'elles estiment être correctes.
- ✓ Cela pourrait convaincre, à tort, un étudiant
- ✓ Les étudiants pourraient examiner de manière non critique la réponse fournie par l'outil d'intelligence artificielle qui peut contenir des erreurs... alors qu'il est lui-même dans un processus d'apprentissage

En informatique, l'**effet ELIZA** désigne une tendance à assimiler de manière inconsciente le comportement d'un ordinateur à celui d'un être humain. Dans sa forme spécifique, l'effet ELIZA désigne uniquement « la prédisposition à attribuer à des suites de symboles générés par ordinateur (en particulier à des mots) plus de sens qu'ils n'en ont réellement



Piste de solution: projet PUNCH 4.0 GenAI4 Students
M. Lobet, J. Colaux, J. Henri, B. Frenay

IAG ET ENSEIGNEMENT :
LE GRAND
BOULEVERSEMENT ?

Impact sur l'enseignement

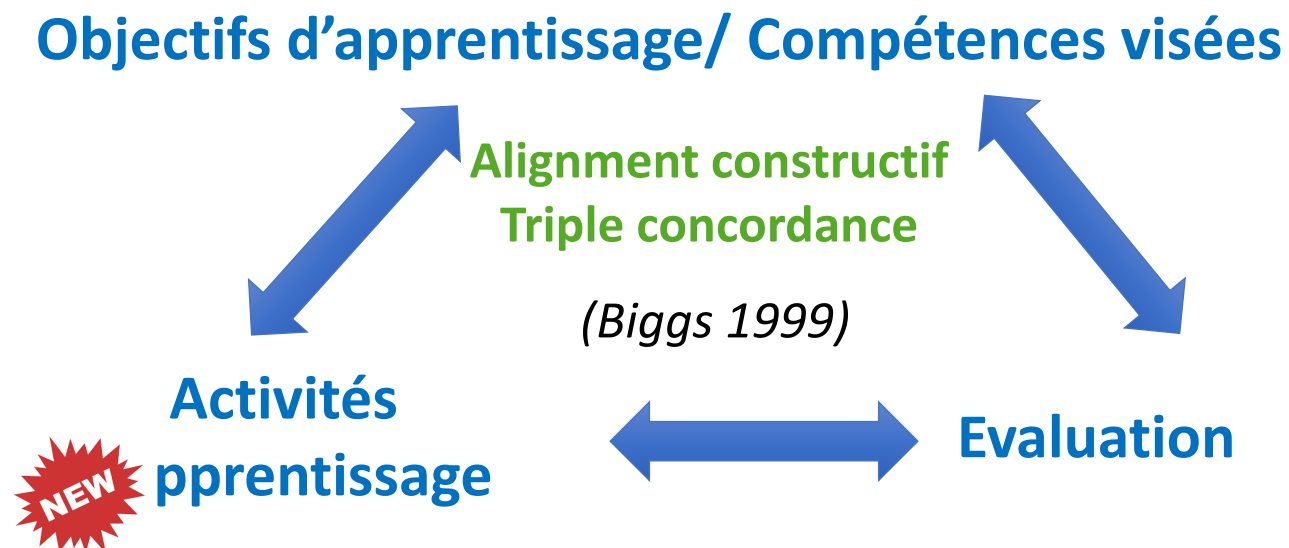
« C'est une opportunité de changer nos *méthodes d'évaluation*, de s'éloigner de la restitution pure et simple »

Pr Marc Romainville UNamur,
RTBF, 11 Janvier 2023

«*Que peuvent faire mes étudiants que l'IA générative ne sait pas faire?* »

Discussion avec Pr Eric Mazur
Harvard Février 2023

 On doit **changer/adapter** nos objectifs d'apprentissages



A new tool

Use of a jigsaw

Simply wood cutting



Make **art** out of it



Have an **accident**
if the tool is not
used properly

A new tool

A tool for

→ Teachers

→ Students ... supervised by teachers

A new tool for teachers

Provide the outline of a lecture



What would be an outline for a lecture on plasmonics ?

I. Introduction

- Definition of plasmonics
- Historical background and current state of the field
- Overview of applications and potential future uses

II. Basic Principles

- Electromagnetic waves and the behavior of metals
- Surface plasmon polaritons and their properties
- Dispersion relations and wave equations

III. Plasmonic Materials

- Metals and alloys commonly used in plasmonics
- Synthesis and characterization methods
- Comparison of different types of materials and their properties

IV. Plasmonic Devices

- Surface plasmon resonance sensors
- Plasmonic waveguides and nanolasers
- Plasmonic nanoantennas and their applications
- Plasmonic metamaterials

V. Challenges and Limitations

- Losses in plasmonic systems
- Temperature effects
- Interaction with the environment

VI. Conclusion

- Summary of key points
- Future directions and ongoing research in the field

Not happy with this one?

Luc Henrard, 13 Janvier 2023

A new tool for teachers

Provide the outline of a lecture



What would be an outline for a lecture on plasmonics ?

I. Introduction

- Definition of plasmonics and its importance in modern technology
- Brief overview of the history of plasmonics research

II. Fundamentals of Plasmonics

- Explanation of the physics of plasmons
- Description of the different types of plasmonic systems (metals, metal-dielectric interfaces, etc.)
- Overview of the different plasmonic phenomena (surface plasmon resonance, localized surface plasmon resonance, etc.)

III. Plasmonic Applications

- Discussion of plasmonic applications in sensing, imaging, and photonics
- Description of plasmonic nanostructures and their properties
- Explanation of plasmon-enhanced spectroscopies
- Discussion of plasmonic solar cells, energy harvesting and conversion.

Generate a new one in 2 seconds!

IV. Challenges and future directions

- Overview of current challenges in the field of plasmonics
- Discussion of future research directions in plasmonics
- Explanation of potential new applications for plasmonics.

V. Conclusion

- Summary of the key points covered in the lecture
- Discussion of how plasmonics is expected to play a key role in future technologies
- Encourage for further research and development in this area.

Luc Henrard, 13 Janvier 2023

A new tool for teachers

Design a course



Design a syllabus for a class on plasmonics

Course Title: Plasmonics

Course Description:

Plasmonics is an interdisciplinary field that studies the interaction of light with metal nanostructures. This class will introduce students to the fundamental concepts of plasmonics, including the properties of metal nanostructures, the physics of plasmonic resonances, and the applications of plasmonics in areas such as sensing, imaging, and energy harvesting. Students will also learn about the latest research in the field and will have the opportunity to work on a project related to plasmonics.

Course Objectives:

- Understand the basic concepts of plasmonics and the properties of metal nanostructures
- Learn about the physics of plasmonic resonances and the different types of plasmonic modes
- Understand the various applications of plasmonics in areas such as sensing, imaging, and energy harvesting
- Learn about the latest research in the field of plasmonics
- Develop the skills to work on a project related to plasmonics

A new tool for teachers

Design a course



Design a syllabus for a class on plasmonics

Course Outline: *see before*

Project work

- Selection of a topic
- Literature review
- Data analysis and interpretation
- Presentation and report

Assessment:

- Quizzes (30%)
- Midterm exam (30%)
- Final exam (30%)
- Project work (10%)

Prerequisites:

- Basic understanding of optics and electromagnetic waves
- Familiarity with the mathematical concepts of vector calculus and complex numbers

Textbook:

"Introduction to Plasmonics" by Thomas P. Graham and Mark L. Brongersma

References:

"Plasmonics: Fundamentals and Applications" by Stefan A. Maier
"Nanoplasmonics" by K. John Geddes

A new tool for teachers

Prepare an in-class activity

"Plan three lessons to explain how volcanoes are formed. Each lesson needs an introductory activity, information input, a student task and a plenary."

Lesson 1: Introduction to Volcanoes

Introductory activity: Show students a picture of a volcano and ask them to describe what they see. Discuss their observations as a class.

Information input: Explain that a volcano is a mountain with a hole at the top (the crater) from which magma (molten rock), ash, and gas can erupt. Volcanoes are formed when molten rock (magma) from deep within the Earth rises up and collects in magma chambers near the surface. When the pressure in the magma chamber becomes too great, the magma is forced up and out through the crater, creating an eruption.

Student task: Have students work in small groups to create a diagram showing the different parts of a volcano (e.g., magma chamber, crater, lava flow) and the process of an eruption.

Plenary: As a class, discuss the different parts of a volcano and the process of an eruption. Ask students to share their diagrams and explain their understanding of how volcanoes are formed.

Tweet from Stephen Lockyer
[@mrlockyer](#) [12:51 PM · 31 déc. 2022](#)

A new tool for teachers

Prepare an in-class activity

"Plan three lessons to explain how volcanoes are formed. Each lesson needs an introductory activity, information input, a student task and a plenary."

Lesson 2: Types of Volcanoes

Introductory activity: Show students pictures of different types of volcanoes (e.g., stratovolcano, shield volcano, cinder cone volcano) and ask them to describe the differences they see.

Information input: Explain that there are three main types of volcanoes: stratovolcanoes, shield volcanoes, and cinder cone volcanoes. Stratovolcanoes are tall, conical volcanoes made up of layers of ash, lava, and other volcanic debris. Shield volcanoes are broad, flat volcanoes made up of thin layers of lava. Cinder cone volcanoes are small, steep-sided volcanoes made up of loose, volcanic debris.

Student task: Have students research one of the three types of volcanoes and create a presentation to share with the class. The presentation should include information about the characteristics of the volcano, examples of where it is found, and any interesting facts.

Plenary: As a class, have students present their research on different types of volcanoes. Ask students to share what they learned about the characteristics, location, and facts about their chosen volcano.

Tweet from Stephen Lockyer
[@mrlockyer](#) [12:51 PM · 31 déc. 2022](#)

A new tool for teachers

Prepare an in-class activity

"Plan three lessons to explain how volcanoes are formed. Each lesson needs an introductory activity, information input, a student task and a plenary."

Lesson 3: The Effects of Volcanoes

Introductory activity: Show students pictures of volcanoes before and after an eruption and ask them to describe the differences they see.

Information input: Explain that volcanoes can have both positive and negative effects on the environment and people living nearby. Some positive effects include the creation of new land, the fertilization of soil with ash, and the development of geothermal energy sources. Negative effects include destruction of property and loss of life, the release of harmful gases into the atmosphere, and the disruption of air travel.

Student task: Have students work in small groups to research a specific volcano and its effects on the environment and people living nearby. Each group should create a report summarizing their findings and identifying any potential risks or benefits of living near a volcano.

Plenary: As a class, discuss the different effects of volcanoes on the environment and people living nearby. Ask students to share their findings from their group research and discuss the potential risks and benefits of living near a volcano.

Tweet from Stephen Lockyer
[@mrlockyer](#) [12:51 PM · 31 déc. 2022](#)

A new tool for teachers

Prepare an in-class activity

"Oh, can we tabulate this? "

Lesson	Introductory Activity	Information Input	Student Task	Plenary
Lesson 1: Introduction to Volcanoes	Show students a picture of a volcano and ask them to describe what they see. Discuss their observations as a class.	Explain that a volcano is a mountain with a hole at the top (the crater) from which magma (molten rock), ash, and gas can erupt. Volcanoes are formed when molten rock (magma) from deep within the Earth rises up and collects in magma chambers near the surface. When the pressure in the magma chamber becomes too great, the magma is	Have students work in small groups to create a diagram showing the different parts of a volcano (e.g., magma chamber, crater, lava flow) and the process of an eruption.	As a class, discuss the different parts of a volcano and the process of an eruption. Ask students to share their diagrams and explain their understanding of how volcanoes are formed.

Tweet from Stephen Lockyer
[@mrlockyer](#) [12:51 PM · 31 déc. 2022](#)

A new tool for teachers

Create personalized exercises



Can you generate an exercise on the plural of names in English?



Exercise:

Choose the correct plural form for each of the following words:

1. Child
 - a. Children
 - b. Childs
 - c. Childes
2. Tooth
 - a. Teeth
 - b. Tooths
 - c. Tooths
3. Foot
 - a. Feet
 - b. Foots
 - c. Footh

A new tool for teachers

*Generate quizzes
or tests...*



Can you generate 10 multiple choice questions on geometrical optics, with 5 propositions and only one correct?



1. What is the name of the phenomenon where light bends as it passes through a medium with a different refractive index?
 - a) Diffraction
 - b) Refraction
 - c) Dispersion
 - d) Reflection
 - e) None of the above
2. What is the formula used to calculate the focal length of a concave mirror?
 - a. $f = R / 2$
 - b. $f = R / (n - 1)$
 - c. $f = R$
 - d. $f = 2R$
 - e. None of the above

A new tool for teachers

...and get the answers!



Thanks! Can you highlight the correct answers ?



1. b) Refraction
2. d) $f = 2R$
3. d) Parabolic mirror
4. b) Incidence angle
5. d) $M = d / f$
6. c) Dispersion
7. c) Angle of reflection
8. b) $\sin(c) = n1 / n2$
9. a) Convex lens
10. a) Refraction angle

A new tool for teachers

Design rubric



Design a rubric to grade a master thesis

Criteria	Excellent (90-100%)	Good (80-89%)	Satisfactory (70-79%)	Poor (0-69%)
Research question and objectives	Clearly defined and well-focused	Adequately defined and mostly focused	Somewhat defined and somewhat focused	Not defined or focused
Methods	Appropriate and well-executed	Appropriate but with some minor flaws	Somewhat appropriate but with major flaws	Inappropriate or poorly executed
Results and Analysis	Clearly presented and thoroughly analyzed	Clearly presented but with some minor flaws in analysis	Somewhat presented and analyzed	Poorly presented and analyzed
Discussion and Implications	Thorough and well-supported by evidence	Adequate and mostly supported by evidence	Somewhat discussed and supported by evidence	Not discussed or supported by evidence
Conclusion	Clear and well-supported by evidence	Adequate and mostly supported by evidence	Somewhat clear and supported by evidence	Not clear or supported by evidence
Writing and Organization	Clear, concise, and well-organized	Adequate but with some minor flaws in organization	Somewhat clear and organized	Poorly written and disorganized
References	Complete and correctly cited	Mostly complete and correctly cited	Somewhat complete and correctly cited	Incomplete and/or incorrectly cited

A new tool

A tool for

→ Teachers

→ Students ... supervised by teachers

Examples of teaching activities

Study partner

Type “*learn*”. Then paste a link to your online textbook (or individual chapters). Ask Chatbot to provide questions based on your textbook.

Ask me 10 questions about the chapter I just provided.

Sure, here are 10 questions based on the chapter summary of Chapter 3 of the "Introduction to Psychology" textbook you provided:

1. What is the difference between sensation and perception?
2. How do the sensory systems work, and what are some examples of stimuli they detect?
3. What is sensory adaptation, and how does it affect our perception of stimuli?
4. What is signal detection theory, and how does it explain how we perceive stimuli?
5. What is attention, and how does it affect our perception of stimuli?
6. How do past experiences, expectations, and cultural context influence our perception?

Generate personalized exercises for your students about your chapter

M. Lobet, S. Poukens & S. Saint-Amand

Tweet from Joe Speiser
[@jspeiser](#) 3:00 PM · 2 Janv. 2023

Examples of teaching activities

Code

It can provide code & it can de-bug your existing code for you

```
code me a computer game of tic-tac-toe in python

Sure! Here is a Python code snippet that implements a simple tic-tac-toe game:

# define the board as a list of strings
board = [" " for i in range(9)]

def print_board():
    row1 = "|".join(board[0:3])
    row2 = "|".join(board[3:6])
    row3 = "|".join(board[6:9])
    print()
    print(row1)
    print("-----")
    print(row2)
    print("-----")
    print(row3)
    print()

def player_move(icon):
    if icon == "X":
        number = 1
```



You can ask ChatGPT to explain what an existing code does

Ask to code with 5 mistakes

+

ask your students to spot them

(using chatGPT or not, they will have to learn to find them, by comparing with the right code)

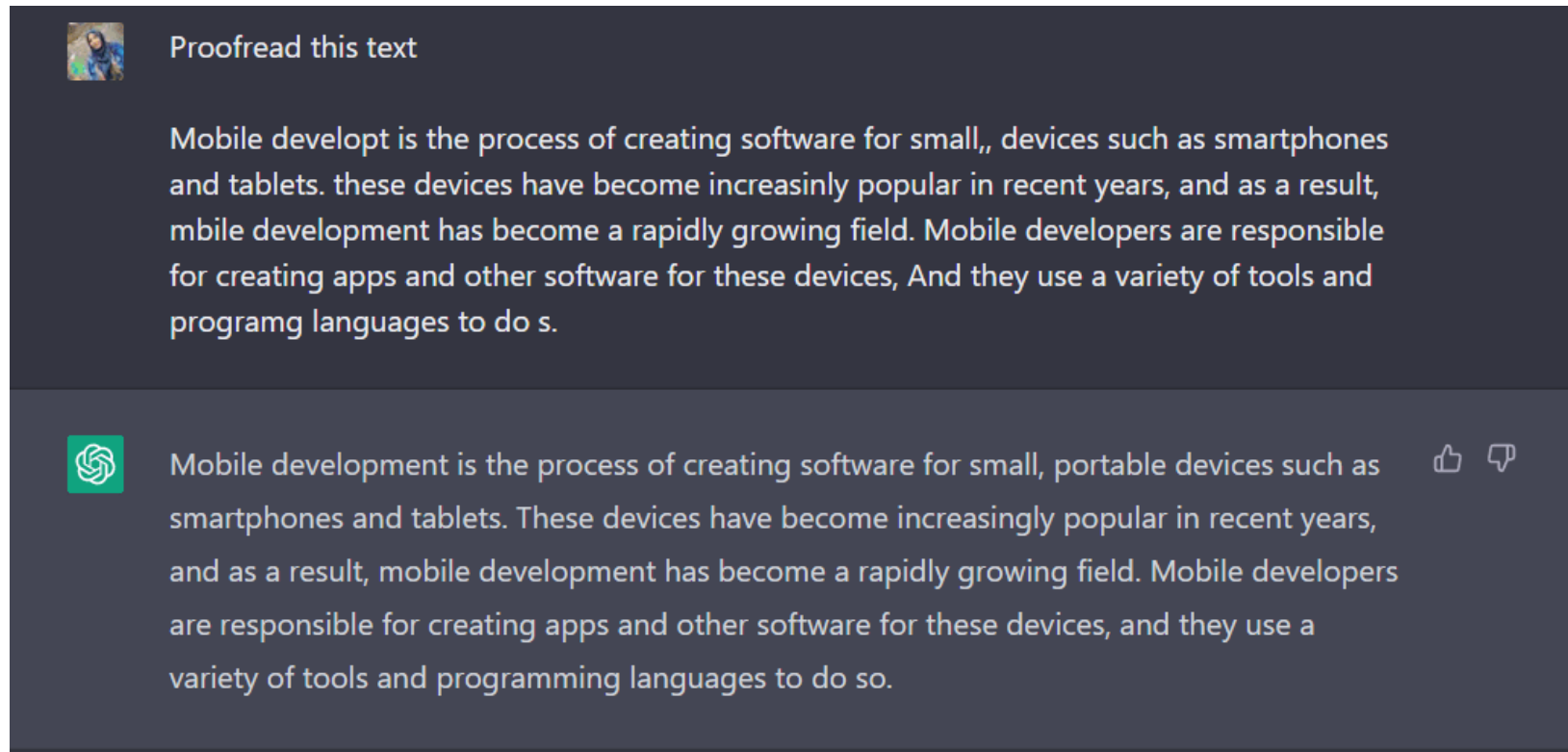
Find mistakes

Tweet from Joe Speiser
@jspeiser [3:00 PM · 2 janv. 2023](#)

Examples of teaching activities

Writing assistant

It provides students with feedback on their writing. It can provide suggestions for revisions, such as grammar and style corrections



The screenshot shows a dark-themed interface with two sections. The top section has a small profile picture of a person and the text "Proofread this text". Below this is a paragraph of text with several errors: "Mobile developt is the process of creating software for small,, devices such as smartphones and tablets. these devices have become increasinly popular in recent years, and as a result, mbile development has become a rapidly growing field. Mobile developers are responsible for creating apps and other software for these devices, And they use a variety of tools and programg languages to do s." The bottom section features the OpenAI logo and a corrected version of the text: "Mobile development is the process of creating software for small, portable devices such as smartphones and tablets. These devices have become increasingly popular in recent years, and as a result, mobile development has become a rapidly growing field. Mobile developers are responsible for creating apps and other software for these devices, and they use a variety of tools and programming languages to do so." To the right of the corrected text are thumbs-up and thumbs-down icons.

Find mistakes, help to improve writing

Wowtechy.com + Times Higher
education

In my class?

Design of activities

- + 300 students in biology and veterinary sciences
- First bachelor
- Optics 101

- **Pedagogical goals?**
 - ✓ Discover a new approach to learning (here optics) using AI tools
 - ✓ Develop critical thinking
 - ✓ Initiate to AI

In my class?

Design of activities

- + 300 students in biology and veterinary sciences
- First bachelor
- Optics 101

- **How?**

- ✓ Chapter 1 → Ask ChatGPT to *summarize*
- ✓ Chapter 2 → Ask ChatGPT to *exemplify*
- ✓ Chapter 3 → Ask ChatGPT to *suggest experiments*
- ✓ Chapter 4 → Ask ChatGPT to *define*
- ✓ Chapter 5 → Ask ChatGPT to *solve an exercise*

*Different levels in
Bloom's taxonomy*

In my class?

Design of activities

- + 300 students in biology and veterinary sciences



120 students motivated at first lecture



25 students showed up at first meeting



6 students registered and performed the activity



In my class?

Multiple reasons for failure

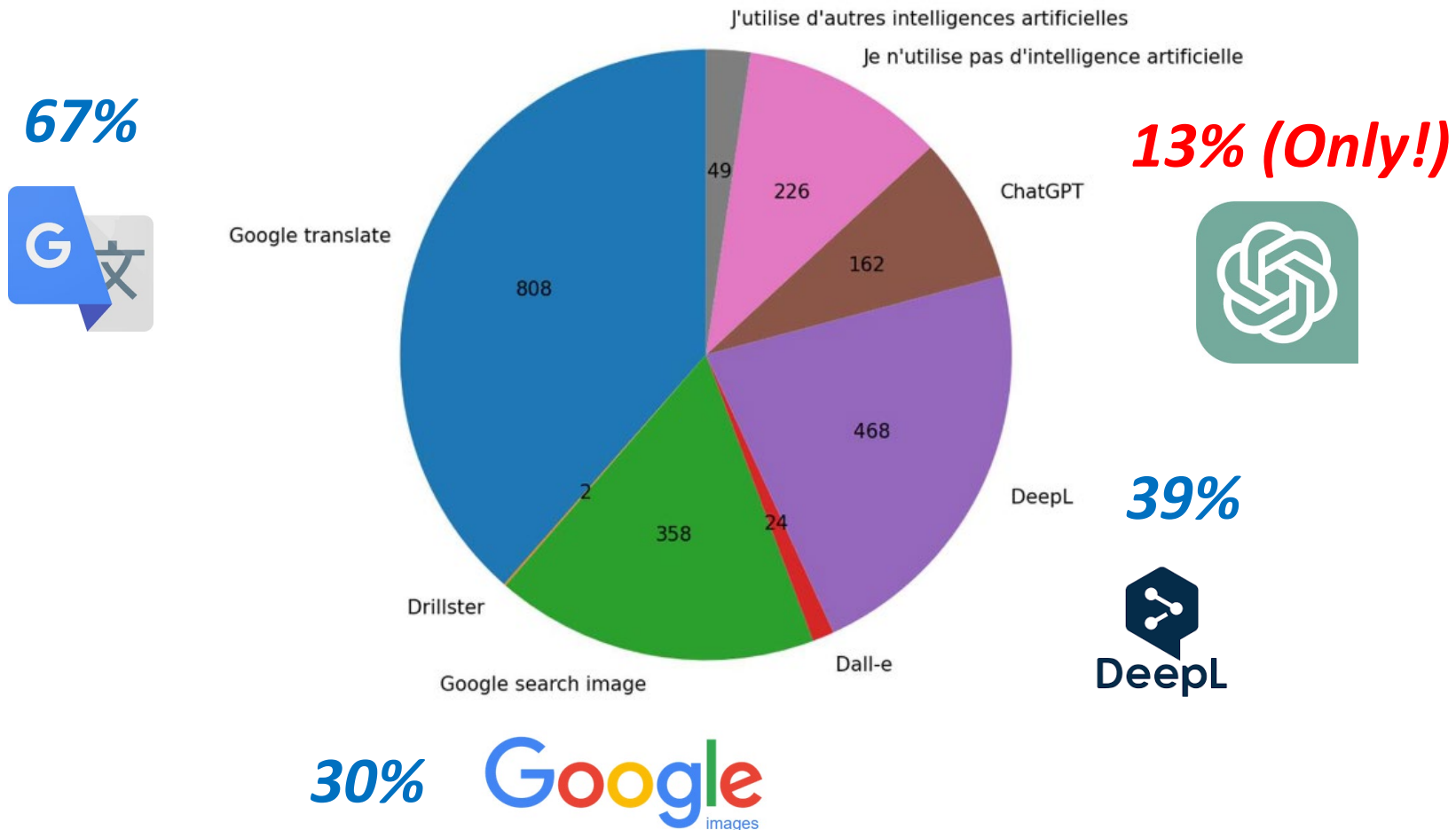
- first bachelor → They must discover this new life (and if they made the right choice)
- It was not rewarded in any way (points at exams, bonus,...)
(not good alignment with goals, only extra work, not enough time)



- **Students does not know AI!**

- ✓ Study led by Marie Lobet, Valérie Wathelet & Antoine Honet, Service de pédagogie universitaire, UNamur
- ✓ 1233 students – first bachelor – all faculty (sciences, med, economy, law...) – anonymous survey
- ✓ Done between February 1st and March 8th 2023

Do you use AI for your studies?



Study at UNamur (SPU)

- ✓ Only **13% of the UNamur students** used Chat GPT as a help for their lecture
- ✓ Consistent with Pew Research survey in the US

*“Just **14% of all U.S. adults** say they have used it **for entertainment, to learn something new, or for their work**”*

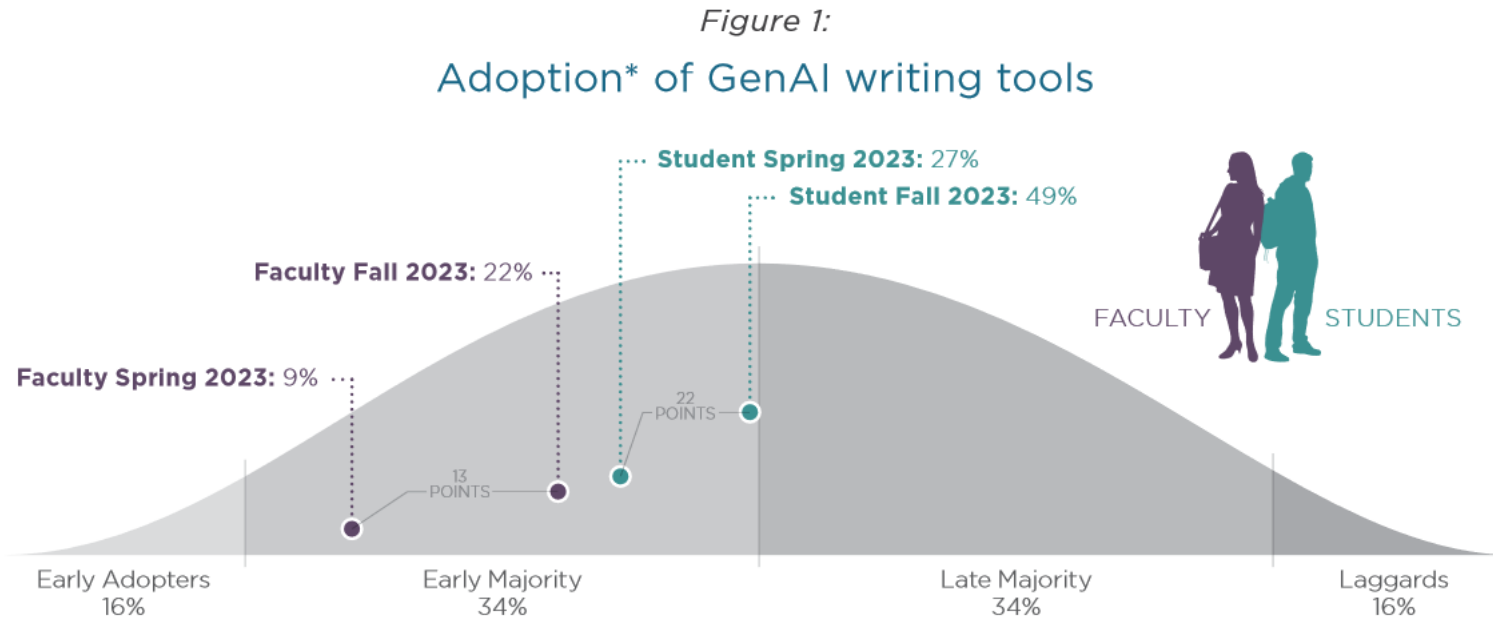
<https://www.pewresearch.org/short-reads/2023/05/24/a-majority-of-americans-have-heard-of-chatgpt-but-few-have-tried-it-themselves/>



5 students out of 6 does not know about Chat GPT

We must **TEACH** them how to use it properly!

Study at UNamur (SPU)



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

Half of students are regular (at least once a month) users of GenAI, putting higher education student adoption into the late majority on the adoption curve and yet, their use cases are relatively unsophisticated (apart from 12% of students identifying as daily users)

Shaw, C., Yuan, L., Brennan, D., Martin, S., Janson, N., Fox, K., & Bryant, G. (2023, October 23). Tyton Partners. tytonpartners.com/time-for-class-2023/GenAI-Update

Why do students use Chat GPT?

- ✓ Define a concept (65%)
- ✓ Understand a part of a lecture (51%)
- ✓ Illustrate a concept (46%)
- ✓ ***Solve an exercise*** (34%)

In my class? bis

- **Pedagogical goals?**

- ✓ Discover a new approach to learning (here optics) using AI tools

- ✓ Develop critical thinking

- ✓ Initiate to AI

- **How?**

- ✓ Chapter 1 → Ask ChatGPT to *summarize*

- ✓ Chapter 2 → Ask ChatGPT to *exemplify*

- ✓ Chapter 3 → Ask ChatGPT to *suggest experiments*

- ✓ Chapter 4 → Ask ChatGPT to *define*

- ✓ Chapter 5 → Ask ChatGPT to *solve an exercise*

*Different levels in
Bloom's taxonomy*

In my class? bis

- *How?*

Students must *prepare their exercise session* on undulatory optics with chat GPT before coming to class.

- *Aim of the study?*

Study how much *hindsight/ critical thoughts* they have once in front of an answer provided by ChatGPT



Bonjour, pourrais-tu me résoudre l'exercice d'optique ondulatoire suivant?



On observe une source S monochromatique rectiligne d'une longueur d'onde valant 546 nm, placée à 10 mètres de l'observateur au travers d'une fente F (diaphragme) disposée tout contre l'oeil (de cristallin C et rétine R). Les fente et source sont verticales. La position de la source coïncide avec le zéro d'une règle horizontale graduée centrée sur S. Sur la rétine, on voit apparaître des franges de diffraction causées par la fente du diaphragme et qui se superposent sur l'image de la règle graduée que l'on observe.

Les deux premières franges d'intensité nulle bordant le maximum central coïncident avec les divisions plus ou moins 27 cm de la règle. Quelle est la largeur de la fente ?

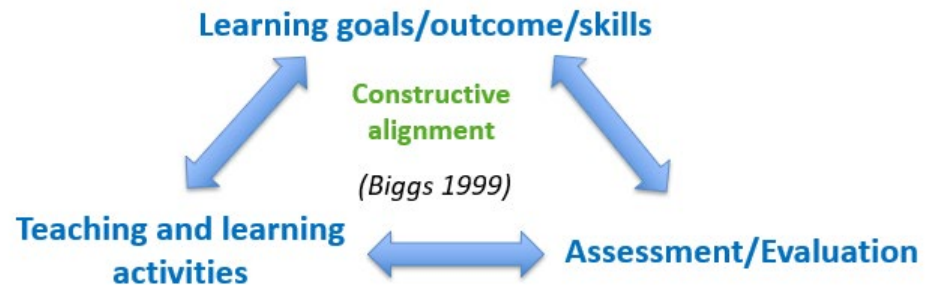
→ Answer an anonymous survey after the exercise session

Nouvelle expérience en TD

Some results

Q2: Why didn't you use ChatGPT to prepare your exercise session? *Multiple answers possible*

- Not enough time: 63 %
- Not comfortable with AI: 25,9 %
- Do not see any interest: 22,2 %
- Extra work: 14,8 %
- Not interested: 12,3 %



In my class? bis

Some results

We consider a student has a *critical thought/take a step back*

- If they check the final answer suggested by ChatGPT once it's correct
- If they find the mistake in the final answer suggested by ChatGPT once it's incorrect



About **60% of the students** have critical thoughts (either correct or incorrect)

LE SOIR

Le Soir
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L'IA au quotidien

L'intelligence artificielle pénètre progressivement dans notre quotidien. Durant toute cette semaine, « Le Soir » entreprend de la suivre dans notre environnement immédiat, le monde du travail, les soins de santé, la voiture, la culture ou encore l'enseignement. Demain, l'IA et la culture.

4/5

Comment ChatGPT va révolutionner le travail de l'étudiant

Il y a les enseignants qui préfèrent nier l'existence de l'IA générative, et d'autres qui se font une joie de l'intégrer dans leurs cours. Les étudiants, eux, n'attendent pas pour saisir la balle au bond. En Belgique francophone, le mot d'ordre est le même dans toutes les universités : il faut encadrer l'outil, sans le bannir des amphis.

rapidement adopté l'intelligence artificielle générative dans leurs cours,

CHARLOTTE HUTIN

et conseiller au recteur en stratégies numériques (UMons). « Au départ, il y avait des levées de boucliers, avant d'admettre qu'il était impossible de tout contrôler. »

Dès le mois de janvier 2023 pourtant, des écoles interdisent formellement l'utilisation de ChatGPT et Co. C'est notamment le cas de Sciences Po Paris. Chez nous, pas de grande déclaration. « Dans ces surgissements de nouvelles technologies, il faut éviter ce que les sociologues anglais appellent la panique morale », soutient Dominique Verpoorten. « La panique morale a deux formes d'expression : ne rien changer du tout à sa pratique ou vouloir tout changer. Entre les deux, il y a la responsabilité morale qui consiste à s'interroger sur les tenants et les aboutissements d'une nouvelle technologie »

Plusieurs professeurs de l'UNamur encouragent l'utilisation de ChatGPT dans leurs cours

Parallèlement à leur initiative, une grande enquête va être lancée afin de voir la manière dont les étudiants utilisent ChatGPT.



Jessica Flament | Responsable de "La Libre Etudiant"



LE SOIR

24 Opinions Podcasts Politique Société Monde Économie

ACCUEIL • OPINIONS • CARTES BLANCHES

Pourquoi mes étudiants rédigent mes questions d'examen avec l'IA ?

La question des IA génératives en milieu académique se pose de plus en plus. Un professeur a réalisé une expérience pédagogique avec 300 étudiants en 1^{re} bachelier sciences biologiques et médecine vétérinaire, pour un cours d'optique. Ceux-ci ont été invités à concevoir des questions d'examen via l'IA générative de leur choix, après avoir été entraîné à l'esprit critique nécessaire tout un quadrimestre durant. Bilan.



Carte blanche -

Par Michaël Lobet, chercheur qualifié FNRS Instituts NISM/IRDENA, Associate Harvard University

Nouvelle expérience (Février- Mai 2024)

- Apprentissage en classe durant le semestre: critique de questions générées par IA, vérifications des sources, génération de prompts complets,...
- Activités en Mai 2024:
 - 2h, facultatif, **1 point bonus** à l'examen si participation
 - Critiquer une question générée (avec erreur), similaire à ce qui a été fait en classe. (1) Seul, (2) En groupe
 - Présentation de **questions de l'examen de Juin 2021**
 - Générer une question choix multiple comme à l'examen en groupe sur concept de son choix
 - Justification pourquoi itérations nécessaires
 - Question finale récoltée sur un document partagé (G. Docs)
 - Reviewing professeur: Acceptée A, minor m, Major M or Rejected R
 - Une **question reprise à l'examen**



203 participants!



LE MOT DE LA FIN

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La taxonomie de Bloom à l'ère de l'intelligence artificielle

Regard sur les activités classiques
d'apprentissage et d'évaluation

🔄 À revoir 🛠️ À modifier



Adaptation
Ecampus de l'Université d'Oregon State (2023)

	Capacités de l'IA générative	Compétences humaines distinctives
CRÉER 	Suggérer une gamme d'alternatives, énumérer les inconvénients et avantages potentiels, décrire des cas réels.	Formuler des solutions originales intégrant le jugement humain, collaborer spontanément.
ÉVALUER 	Identifier les avantages et les inconvénients des différentes possibilités d'action, développer des grilles d'évaluation.	S'engager dans une réflexion métacognitive , évaluer de manière holistique les conséquences éthiques des différentes possibilités d'action.
ANALYSER 	Comparer et différencier les données, déduire les tendances et les thèmes, calculer, prédire.	Penser et raisonner de manière critique dans les domaines cognitif et affectif, interpréter et rapporter des problèmes, prendre des décisions et faire des choix.
APPLIQUER 	Utiliser un processus, un modèle ou une méthode pour illustrer comment résoudre un problème de nature quantitatif.	Opérer, mettre en œuvre, conduire, exécuter, expérimenter et tester dans le monde réel ; mettre en œuvre la créativité et l' imagination pour le développement d'idées et de solutions.
COMPRENDRE 	Décrire un concept avec d'autres mots, reconnaître un exemple lié, traduire.	Contextualiser les réponses en tenant compte des considérations émotionnelles, morales ou éthiques.
MÉMORISER 	Rappeler une information factuelle, énumérer les réponses possibles, définir un terme, construire une chronologie.	Se rappeler de l'information dans des situations où la technologie n'est pas facilement accessible.

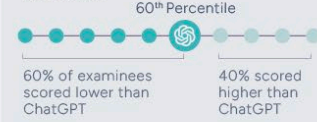


How Smart is ChatGPT?

OpenAI's latest large language model, GPT-4, is capable of human-level performance in many professional and academic exams.

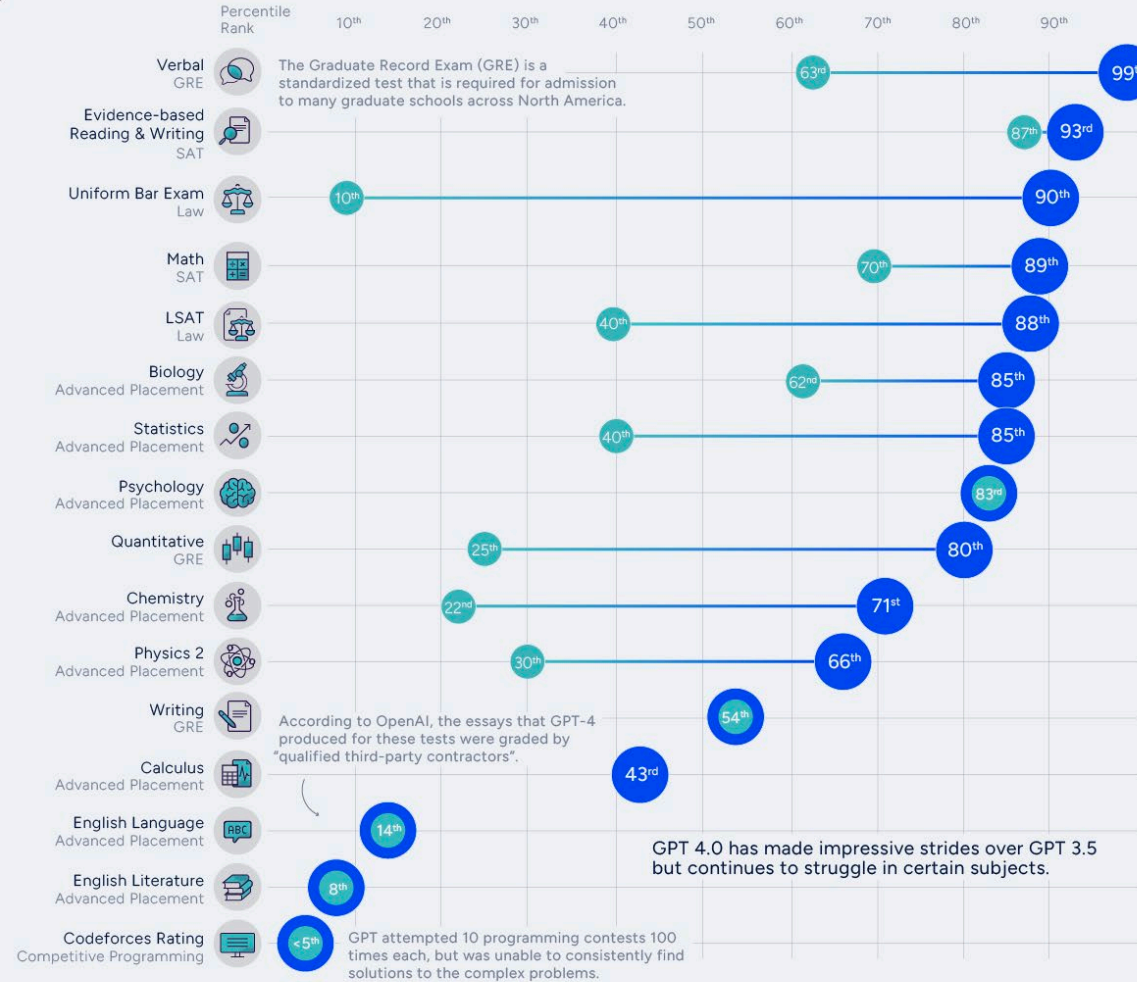
A percentile describes how an examinee's score ranks in comparison to others.

For example



Exam Results

● ChatGPT 3.5 ● ChatGPT 4.0



GPT 4.0 has made impressive strides over GPT 3.5 but continues to struggle in certain subjects.



Note: Percentiles are based on the most recently available score distributions for test takers of each exam type.

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