

Chat GPT Challenges in Higher Education Assessment Methodologies

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Abstract

We are currently experiencing one of the most challenging revolutions, the technological one, in which universities, traditionally seen as the center of innovation, have difficulty keeping up. Chat GPT (Generative Pre-Trained Transformer) is based on a language model based on deep learning, one of the branches of artificial intelligence (AI). This platform uses an algorithm based on neural networks, which allows computers to be taught to process data in a way that is “analogous” to the human brain, enabling conversations with the user by processing a large volume of data. In this context, there are several challenges that (Chat GPT) poses to higher education. We will certainly have to reinvent ourselves in teaching and assessment methodologies. We intend to carry out a reflection on the use of this technology in Higher Education in Law, seeking to understand the performance of this tool in “teaching to learn” and in the assessment of the skills that are intended to be acquired. We will take a look at the main uses of GPT Chat in Higher Education, namely as a “learning assistant”, allowing us to understand concepts and answer specific questions, helping to consolidate knowledge; as a “writing tool”, improving writing skills; as a “source of information” enhancing research and, consequently, the expansion of knowledge on a given subject; and as a “translation tool”.

Keywords: Learn, GPT Chat, Skills, University Education, Technology

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1. Introduction

The aim of this work is to alert the legal scientific community and society in general to the role of law schools in the context of globalization and the changes implemented in the last two decades. It is a provocative, opinion paper, based mostly in anecdotal experience by its authors.

The teacher's vision can no longer be anchored in the discourse of “eloquence”, closed to reality and centered on the teacher's unilateral, supposedly knowledgeable vision.

The world has changed, and the development of technology has provided and accelerated profound changes in the Higher Education landscape.

The current tools available to everyone have caused and continue to cause a change in teaching, in the way it unfolds, in teaching methodologies and, inevitably, in assessment methodologies.

The autism of Law teaching in the face of this “Copernican” revolution is somewhat frightening, which is why we believe that a reflection on the Portuguese reality would be extraordinarily timely.

We intend to highlight new ways of teaching how to learn, taking advantage of technology tools and the positive aspects they present, appealing to a critical spirit and learning focused on reality and solving problems.

The assessment must be student-centered, taking into account the various aspects of their work, their personal performance and their pace.

Universities must, naturally, adapt, restructuring their educational policies, their goals and even their logistics.

2. The Legal Education Context

2.1 The Case of Law Teaching/Learning Programs

The Legal Scholars

The traditional lecture in law teaching still plays a preponderant role in law faculties, particularly in Portuguese universities. Protagoras, not Socrates, is in fact the raw model most Law Schools faculty tend to follow, in Portugal and pretty much in most of the world (Heffernan, 1980): as Heffernan puts it, the basis of legal education is Sophistic, not Socratic. This was certainly true in the eighties, when the Heffernan's article was published and, to a too large extent, remains true to this day.

There is a strong focus of the class around the Teacher's speech. He plays the role of a speaker, rejoicing in reading the law out loud, in a rhythmic tone, alerting to its interpretative details.

Students are required to master, singularly, all the details, knowing the dominant doctrinal opinions.

The goal is to create dogmatic legal professionals who promote and perpetuate the status quo by extolling the legal minds of the past.

From this perspective, only a few will reach the level of “a great legal mind of the future” developed and improved through completing a doctorate, which will also undergo endless laudatory reviews.

These are the eternal “Old People of Restelo”. This expression intends to emphasize one of Luis de Camões' most important characters, in song IV of “*Os Lusíadas*” due to its symbolism. For the Poet it means the demonstration against the expedition of Portuguese ships to India, the implementation of Portuguese expansionist policy – the symbol of pessimism. Currently, this expression, and in the context in question, reflects resistance to change.

The traditional method is also known as expository or lecture (Sophistic we would say), focusing the learning process on the Teacher. The latter is recognized as having an active role, in the capacity of speaker/lecturer, while its recipients appear as passive agents, participating, sporadically, in what would be a dialogue, but which presents itself as a monologue. This type of class does not take into account student participation, nor their characteristics in the learning process, nor their knowledge and/or skills, and does not contribute to the teaching/learning that the Bologna process implemented, centered above all on the student (Mimoso et al., 2018). This method is used to “teach” in amphitheaters with a large number of students, beneficial for institutions, as it does not require large didactic investments. Students are expected to become followers of a chosen star or demi-god, in waiting for their turn to become, hopefully, stars and demi-gods when their time comes. This is the culture rooted in legal courses for centuries, if not millennia (Protagoras lived and worked during the 5th century BC), (Curd, 2007) and, although some denouncing and repudiation, reality shows that little has really changed in the Kingdom of Denmark.

We are currently witnessing a struggle for a paradigm shift, seeking to implement an understanding of the legal world based on reality, exalting rational and critical thinking. The agents of change are Type 2 Legal Scholars (Table below). Seen as radicals, outsiders, or “dissidents”, questioning the system, dogmas, the law, in short, almost everything, in fact by their Type 1 Sophistic colleagues, they use the Socratic teaching method, aiming to stimulate critical thinking in students, future legal professionals, cultivating the interpretation and application of Law in accordance with the canons of social reality and its evolution.

Table 1: The case of Law teaching/learning programs. (The Legal Scholars [anecdotal])

Type	Preferred Teaching method	Preferred Assessment method
Type 1	Magister dixit, authority style lectures	Written exams and Viva voce
Type 2	Socratic method and case study	Written papers and participation

The revolution brought about by the Bologna process, and the model centered on student learning, naturally led to a change in teaching methodologies, aiming to overcome the traditional methodology, known as expository.

Methodologies are called for that focus on the promotion and development of learning, appealing to student participation, confronting them with real issues. This will necessarily have

repercussions on the assessment models implemented, seeking to ensure that they consider the student's journey, their development, that assessment is not limited to a single moment, disintegrated from any real, dialoguing contact, between teacher/student (Borrvalho, n/a).

2.2 What are the Objectives of Teaching/Learning Law?

Globalization required Universities to rethink their role in the education landscape. Law faculties did not escape this restructuring. These must be able, through their agents, to meet the ever-increasing demands of society.

Legal education plays a fundamental role in raising social awareness of certain realities. We speak, in particular, of respect for elementary principles of social justice.

It is necessary to provide future legal professionals with operative capacity, whether in the field of substantive law, as a set of norms that regulate legal facts, events, or in the procedural domain, with this regard to the principles and norms that regulate judicial procedures, the activity of the courts.

In short, the aim is for the student to acquire knowledge and understanding of substantive and procedural law and the national, international and transnational institutions that develop and apply Law.

It is crucial that the Law student, future professional, is able to link legal facts with the consequence that the Law establishes for the situation, also taking as a reference the positions of doctrine and jurisprudence.

The legal agent must know how to interpret the facts and qualify them from the perspective of positive law, as legal norms in force at a given time and place or even according to flexible law (soft law).

The training of legal professionals must also seek to develop the values and responsibilities specific to the professional community. This will involve respect for diversity and inclusion, social and corporate responsibility, interpersonal relationships and the implementation of ethical values.

Only in this way can the acquisition of professional skills be achieved, going through the vectors of legal and factual research, communication, presentation and problem solving.

2.3 What are the Objectives of Teaching/Learning Law (The Portuguese/Southern European Way)

The Degree in Law aims to provide the Graduate with a broad and robust theoretical base, which allows him to identify and understand the principles that inform the legal system of a Rule of Law, without neglecting the acquisition of the skills necessary for the practical application of the theoretical knowledge taught.

Hence, the essential objectives focus on developing the student's ability and argumentative power, cultivating a critical spirit, regarding legislation, doctrine and jurisprudence.

To respond to the growing specialization of the job market and the challenges of new branches of Law, the Graduate will be able to successfully continue subsequent professional legal training, to be developed in a 2nd cycle, as well as acquire specific skills in specialized training. (University of Harvard, Harvard Law School, 2023-2024 Handbook of Academic Policies)

2.4 Short Version of the Objectives of Teaching/Learning Law

(Based on University of Washington School of Law, Law program aims and objectives).

The graduate will be able to:

1. *Legal Reasoning*
Reach a solution to a dispute, through the application of standards, without neglecting the necessary reasons and justification.
2. *Legal Research*
Develop legal arguments. The objective of legal research is to find support for a given legal question or decision, going beyond the blind application of the law, anchored in the traditional legal syllogism.
3. *Written Communication*
Know how to prepare a written document, be it a procedural document, a contract or a simple letter to a client. Clarity, synthesis and assertiveness must be a hallmark of legal culture when conveyed to reality.
4. *Oral Communication*
Express yourself through legal language, seeking clarity, coherence and objectivity of expression, as you will communicate with others who do not have legal knowledge, nor master the language of Law.
5. *Problem Solving*
Be able to solve the questions asked through the models acquired throughout the training. Such instruments will facilitate the search for solutions, including structuring the strategy to be adopted in favor of a result that is desired to be achieved.
6. *Ethical Conduct*
Guarantee the dignity of the legal profession, observing individual, social and professional ethical and moral duties towards society and, especially, towards those who seek it.
7. *Collaborate Effectively*
Possess social and human skills, communication and relationships with others.
8. *Contextualize Law*
Have a global perception of the Law, as the application of Law requires this global knowledge and understanding.

Law schools must reflect and re-analyze their curricula in order to open up to other areas of knowledge, given the multidisciplinary nature that Law encompasses, as a normative and regulatory system of social conduct.

2.5 What are the Objectives of Teaching/Learning Law (The Portuguese/Southern European Way)

The Degree in Law aims to provide the Graduate with a broad and robust theoretical basis that allows him to identify and understand the principles that inform the legal system of a Rule of Law, without neglecting the acquisition of the skills necessary for the practical application of the theoretical knowledge taught.

Graduates from Universidade Portucalense will be able to exercise, with competence and ethics, any of the professional opportunities in which legal training is relevant.

The scientific and technical quality of the legal training offered will allow the Graduate to achieve a competitive position in the job market.

To respond to the increasing specialization of the job market and the challenges of new branches of Law, the Graduate will be able to successfully continue subsequent professional legal training, to be developed in the 2nd cycle, as well as acquiring specific skills in specialized training.¹

3. Artificial Intelligence, Present and Si-Fi (Courtesy of ChatGPT)

3.1 Artificial Intelligence Concept

Simulation of Human Intelligence in Computer Systems

Narrow or Weak AI: performs specific tasks or solve problems. It operates within a limited domain and doesn't possess general intelligence or consciousness.

General or Strong AI: General AI refers to a theoretical form of AI that possesses human-like intelligence and can perform a wide variety of tasks that a human being can do. It will possess consciousness. This level of AI has not been achieved yet, and it remains a subject of ongoing research and speculation. (CHat GPT)

Artificial Intelligence Fundamental Concept

"Neural computing" typically refers to the field of neural networks and artificial neural networks, which are a fundamental concept within the broader field of artificial intelligence and machine learning. Neural networks are computational models inspired by the structure and functioning of the human brain. They are composed of interconnected nodes, or "neurons," organized in layers. Neural computing is a subset of AI and machine learning that focuses on these neural network models. Here are some key aspects of neural computing:

¹ Universidade Portucalense. www.upt.pt

Neurons: In artificial neural networks, each neuron is a mathematical function that takes input data, applies weights and biases to it, and produces an output. These artificial neurons are loosely inspired by the biological neurons in the human brain.

Layers: Neural networks typically consist of multiple layers of neurons. The first layer is the input layer, where data is fed into the network. The intermediate layers are called hidden layers, and the final layer is the output layer, which produces the network's predictions or classifications.

Activation Functions: Activation functions introduce non-linearity into the network, allowing it to model complex relationships in data. Common activation functions include sigmoid, ReLU (Rectified Linear Unit), and tanh (hyperbolic tangent).

Training: Neural networks learn from data through a process called training. During training, the network adjusts its weights and biases based on the error between its predictions and the actual target values. Techniques like backpropagation and gradient descent are commonly used for this purpose.

Deep Learning: Neural networks with multiple hidden layers are referred to as deep neural networks, and the field that focuses on them is called deep learning. Deep learning has been particularly successful in tasks such as image recognition, natural language processing, and reinforcement learning.

Applications: Neural computing has found applications in a wide range of fields, including computer vision, speech recognition, natural language processing, recommendation systems, autonomous vehicles, and many more. Neural networks have achieved state-of-the-art results in numerous AI tasks.

Neuroscience Inspiration: While artificial neural networks are inspired by the brain's structure, they are highly simplified models. Advances in neural computing often draw inspiration from neuroscience, but they don't fully replicate biological processes.

(CHat GPT)

3.2 Artificial Intelligence Techniques and Approaches

Machine Learning: A subset of AI that involves training algorithms on data to improve their performance. This includes supervised learning, unsupervised learning, and reinforcement learning.

Deep Learning: A subset of machine learning that uses neural networks with multiple layers to analyse and process data, particularly useful for tasks like image and speech recognition.

Natural Language Processing (NLP): The field of AI that focuses on enabling machines to understand, interpret, and generate human language. NLP is used in chatbots, language translation, and sentiment analysis.

Computer Vision: The application of AI and deep learning to process and interpret visual information from images and videos, allowing machines to "see" and understand the visual world.

(CHat GPT)

3.3 General Artificial Intelligence Hardware Requirements (An Educated Guess by Chatgpt)

Processing Power: AGI would require massively parallel processing capabilities to handle complex computations and deep learning tasks. This might involve custom-designed hardware optimized for AI workloads, such as advanced GPUs or TPUs (Tensor Processing Units).

Memory: AGI systems would need a vast amount of memory to store knowledge, models, and data. This could involve large-scale RAM and storage solutions.

Data Storage: AGI would need access to extensive datasets for learning and knowledge acquisition. High-capacity, high-speed storage solutions would be essential.

Connectivity: AGI would benefit from high-speed internet connectivity to access and exchange information with other AI systems and databases globally.

Energy Efficiency: Considering the immense computational demands of AGI, energy-efficient hardware solutions would be crucial to make such systems practical and sustainable.

Parallelism: AGI systems may require the ability to process information in parallel across a vast number of cores or nodes to simulate human-like cognitive processes effectively.

3.4 Disruptive Computing Technologies Being Researched

Quantum Computing: Quantum computing holds the promise of solving complex problems exponentially faster than classical computers. Researchers are working on building more stable and scalable quantum hardware and developing quantum algorithms for applications in cryptography, optimization, and material science.

Neuromorphic Computing: Neuromorphic computing seeks to mimic the architecture and function of the human brain in hardware. This technology has the potential to revolutionize AI and machine learning by enabling more energy-efficient and brain-like processing.

Photonic Computing: Photonic or optical computing leverages light instead of electrical signals for computation. It has the potential to dramatically increase processing speed and reduce energy consumption, especially in data centers and high-performance computing.

DNA Data Storage: Research into DNA-based data storage is ongoing. DNA molecules can store vast amounts of data in a compact and durable form, potentially addressing long-term data storage challenges.

3.5 Expected Impact of Disruptive Computing Technologies in General AI

Acceleration of Research: Advanced computing technologies, such as quantum computing and high-performance AI accelerators, can speed up the training and development of complex AGI models. This acceleration can lead to faster progress in AGI research.

Enhanced Model Training: Quantum computing's ability to handle complex mathematical operations and simulations may enable the training of larger and more sophisticated AGI models. This could result in AGI systems with improved cognitive abilities.

Improved Neural Network Architectures: Neuromorphic computing, which mimics the brain's architecture, could inspire more biologically inspired neural network architectures. These architectures might better capture the complexity of human cognition and lead to more human-like AGI.

Real-time Processing: Edge computing and photonic computing can provide real-time processing capabilities, allowing AGI systems to make decisions and adapt to their environments with minimal latency. This is crucial for applications like autonomous vehicles and robotics.

Data Efficiency: Advanced computing technologies can enable AGI models to process and learn from data more efficiently, potentially reducing the need for massive datasets and accelerating learning and adaptation.

Security and Privacy: Blockchain and quantum-resistant cryptography can enhance the security and privacy of AGI systems. These technologies can protect AGI models from adversarial attacks and ensure data privacy.

Energy Efficiency: Energy-efficient computing technologies, such as graphene-based components and neuromorphic hardware, can reduce the energy consumption of AGI systems, making them more sustainable and practical.

Scalability: Scalable quantum computing and distributed ledger technologies can support AGI systems that can grow and adapt to handle increasing complexity and scale.

Interconnectivity: 5G, 6G, and quantum internet technologies can provide AGI systems with high-speed, low-latency communication capabilities, enabling collaboration and information exchange across a network of AGI agents.

Biological Inspiration: Research into bio-inspired computing, including DNA-based computing and cellular automata, can provide insights into new AGI models that take inspiration from natural biological processes.

3.6 Back to Reality: Legal Professions Tasks Most Affected by Narrow (Weak) IA

Legal Research: AI-powered legal research tools, such as Westlaw and LexisNexis, can quickly search and analyze vast databases of legal documents, statutes, case law, and regulations. This assists legal professionals in finding relevant precedents and legal information efficiently.

Document Review: AI-based document review platforms use natural language processing (NLP) and machine learning algorithms to review and categorize documents for relevance to legal cases, significantly reducing the time and effort required for manual document review.

Contract Analysis: AI can extract key information from contracts and legal agreements, flagging important clauses, dates, obligations, and potential risks. This is valuable for due diligence, compliance, and contract management.

Legal Writing Assistance: AI-powered writing assistants help lawyers and legal professionals draft legal documents, such as contracts, briefs, and legal memos. These tools can check for grammar, style, and legal writing conventions.

Predictive Analytics: AI can be used to predict case outcomes and assess the probability of success in litigation. Legal professionals can make more informed decisions based on data-driven insights.

E-Discovery: AI-driven e-discovery platforms can quickly identify and extract electronically stored information (ESI) relevant to legal cases, reducing the time and cost associated with e-discovery processes.

Due Diligence: AI can assist in due diligence investigations for mergers and acquisitions by analyzing financial documents, corporate records, and other data sources to identify potential risks and opportunities.

Legal Analytics: AI-powered legal analytics tools can help lawyers and law firms track case law trends, judge rulings, and litigation strategies to inform legal strategies and decisions.

Intellectual Property (IP) Management: AI is used in IP law to automate patent searches, trademark monitoring, and copyright enforcement, helping legal professionals protect intellectual property.

Legal Chatbots: Chatbots and virtual assistants can provide answers to frequently asked legal questions, assist with intake forms, and offer basic legal guidance to clients and the public.

Compliance and Regulatory Analysis: AI can assist in monitoring changes in regulations, identifying compliance issues, and providing guidance on adhering to evolving legal requirements.

Legal Market Research: Legal professionals can use AI to gather market intelligence, analyze competitors, and assess potential opportunities for their practice areas.

Mediation and Alternative Dispute Resolution (ADR): AI-powered tools can help streamline dispute resolution processes, facilitating negotiation and settlement in legal disputes.

Legal Education: AI can enhance legal education through virtual simulations, automated grading, and personalized learning tools.

4. Where Two Worlds Collide

4.1 The Teaching/Learning of Law

In traditional Law teaching, two discourses are intertwined: legal hegemony and conservative pedagogical discourse.

This conservative approach implies for the student a high absorption of information, concentrated on collecting notes in Magister dixit classes, a predisposition towards the cult of memorization, motivating student passivity, with a total absence of critical spirit, nurturing absolute respect for the sources (unquestionable).

It also reveals a lack of articulation between theory and practice. Even though there are practical classes, these are limited to the application of the knowledge acquired in theoretical classes to purely academic practical cases, often out of step with practical (social) reality.

Traditional, conservative teaching is based on the individualistic rationalism with which the Magister dixit is imbued, with a strong focus on speculation/investigation, predominantly theoretical, with a total absence of problematization of reality.

In this way, “cultural agency” combined with pedagogical authority is emphasized (Hagino, 2017).

4.2 Narrow AI and Teaching/Learning Law

As stated, artificial intelligence concerns computing systems that perform tasks, which usually require human knowledge.

The learning process in higher education can currently be challenging, thanks to the advancement of technology, especially artificial intelligence (AI), making it possible to create more interesting and appealing content for students.

AI already plays an important role in personalizing content as it caters to students’ individual needs.

Through the use of algorithms, artificial intelligence can capture information about the student's learning level, weaknesses, interests and likes. AI can, in this way, personalize materials, making them more attractive to each student.

AI through virtual reality and augmented reality technologies will provide experiences, respectively in a fictional and mixed environment. In the latter, augmented reality takes as a basis the material environment and combines it with virtual elements to create a mixed reality (e.g. video game):

Technologies linked to teaching will allow students to explore complex situations from a practical and visually attractive perspective. This will undoubtedly spark greater interest and dynamism in the learning process.

AI also uses “educational chatbots” allowing certain content to become more appealing. Such virtual assistants can identify questions and provide accurate and objective answers. Immediate and personalized interaction will facilitate access to content, facilitating learning.

It is important to explore the full potential of AI in a learning environment, which will contribute to greater student training.

Such a relationship requires proficiency in “knowing how to ask” and will be useful for the Law student to develop legal reasoning, carry out legal research, improve written and oral communication, facilitating a preview of problem solutions and a better contextualization of Law.

4.3 Chat GPT Challenges in Higher Education Assessment Methodologies

With AI, nothing will be the same in the learning process, whether in terms of teaching methodologies or assessment methodologies.

Access to technology, the personalization operated, will certainly contribute to the evolution of teaching and learning.

The application of artificial intelligence and the Chat GPT model in education is a growing and promising trend with the potential to significantly transform how we teach and learn.

The Chat GPT model, in particular, has stood out for its ability to understand and produce natural language, facilitating interaction with users.

There are countless benefits that can be observed through the use of this type of technology in education.

However, in addition to the benefits already highlighted, there are a series of challenges and ethical and technical issues that must be considered before the wide application of this type of tool in school organizations and other educational institutions.

Furthermore, it is essential that technology is seen as a tool to complement and improve teaching and learning.

However, a concerted effort is needed to ensure that technology is used ethically, responsibly, and accessible to all students.

5. Conclusions

On the positive side:

- The use of technologies can provide access to a large amount of information and educational resources, which can enrich the teaching and learning process.
- The use of interactive technologies can make classes more dynamic and engaging, increasing student involvement and participation.
- Technologies can be used to personalize learning, allowing students to learn at their own pace and learning style.
- Technologies can be used to stimulate students' creativity and innovation, allowing them to create projects and work using different digital resources and tools.
- Technologies can be used to promote collaborative learning, allowing students to work as a team and share ideas and resources to achieve a common goal.

On the negative side:

- Excessive dependence on technologies can hinder the development of skills and competencies that are important for the learning process, e.g., reading, writing and oral communication.
- Excessive use of technology can lead to a reduction in human contact and social isolation, which can have a negative impact on students' social and emotional development.

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