

USOS PRÁCTICOS DE LA INTELIGENCIA ARTIFICIAL EN LA INSPECCIÓN EDUCATIVA

PRACTICAL USES OF ARTIFICIAL INTELLIGENCE IN EDUCATION INSPECTION

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Resumen

La Inteligencia Artificial (IA) está transformando diversos sectores, incluyendo la Inspección Educativa. Este artículo explora los usos prácticos de la IA en este ámbito, destacando su potencial para optimizar las funciones de supervisión, evaluación y asesoramiento. Se aborda la definición y evolución de la IA y se desmitifican sus capacidades, enfatizando que no posee inteligencia humana ni juicio moral, y que puede amplificar sesgos si los datos de entrenamiento son sesgados. Se presentan aplicaciones prácticas como la automatización de informes, la generación de resúmenes de documentos normativos y recursos multimedia, análisis e interrogación sobre normativa, y la predicción del fracaso escolar mediante minería de datos educativos. Se detalla la importancia de elaborar «buenos *prompts*» para interactuar eficazmente con la IA, proporcionando ejemplos y claves para su construcción. Asimismo, se discuten casos prácticos con GPT personalizados de ChatGPT de OpenAI y herramientas especializadas como NotebookLM de Google para la búsqueda de normativa personalizada y la síntesis de información. Finalmente, se analizan las consideraciones éticas y el marco de uso responsable de la IA, subrayando el papel crucial de la Inspección Educativa como garante de una implementación ética y alineada con los principios de equidad e inclusión. Las conclusiones proponen líneas de acción futuras en formación, desarrollo de herramientas adaptadas, establecimiento de marcos normativos y éticos, investigación, colaboración y promoción de un uso responsable de la IA para una educación de calidad y equitativa.

Palabras clave: *Inteligencia Artificial, Inspección Educativa, Machine Learning,*

Educación, Ética, Supervisión.

Abstract

Artificial Intelligence (AI) is transforming various sectors, including Educational Inspection. This article explores the practical uses of AI in this field, highlighting its potential to optimize supervision, evaluation, and advisory functions. It addresses the definition and evolution of AI and demystifies its capabilities, emphasizing that it does not possess human intelligence or moral judgment, and that it can amplify biases if training data is biased. Practical applications are presented, such as the automation of reports, the generation of summaries of regulatory documents and multimedia resources, analysis and interrogation of regulations, and the prediction of school failure through educational data mining. The importance of creating "good prompts" for effective interaction with AI is detailed, providing examples and keys for their construction. Likewise, practical cases with custom GPT from OpenAI ChatGPT and specialized tools such as Google NotebookLM for personalized regulation search and information synthesis are discussed. Finally, ethical considerations and the framework for responsible use of AI are analyzed, underscoring the crucial role of Educational Inspection as a guarantor of ethical implementation aligned with the principles of equity and inclusion. The conclusions propose future lines of action in training, development of adapted tools, establishment of regulatory and ethical frameworks, research, collaboration, and promotion of responsible use of AI for quality and equitable education.

Keywords: *Artificial Intelligence, Educational Inspection, Machine Learning, Education, Ethics, Supervision.*

INTRODUCTION

The irruption of Artificial Intelligence (AI) in various areas of society has generated a significant impact, and the education sector is no exception. As Moreno Padilla (2019) points out, the use of AI is becoming increasingly evident in our daily lives, and although there are still elements to be organised for its full implementation in education, it represents a great advantage and aid in the delivery and generation of knowledge. UNESCO Director-General Audrey Azoulay stated in 2019 that AI will profoundly transform education, revolutionising teaching methods, ways of learning, access to knowledge and teacher training.

The Education Inspectorate, as a fundamental pillar of the system, cannot remain on the sidelines of this transformation. Tébar Cuesta (2020) stresses that the massive incorporation of Information and Communication Technologies (ICT) and social immersion in a stage where everything is measured, raise the need for adaptation and specialisation of the Inspectorate. AI not only enhances inspection and training, but also requires ethics, digital competence and critical thinking for its proper use, giving the inspectorate a key role in ensuring responsible use.

This article aims to explore the practical uses of artificial intelligence in educational inspection, identifying opportunities to improve teaching-learning processes and educational management through AI. It will address how the Education Inspectorate can take advantage of these tools to optimise its supervision, evaluation and assessment functions.

The relevance of AI in education has been accentuated by the increasing availability of data and the development of more sophisticated algorithms. UNESCO,

through its Beijing Council on AI and Education, has urged education sectors to integrate Digital Competency in Education (DCE) on AI into ICT competency frameworks in order to support teacher training in educational environments increasingly permeated by AI (Forero-Corba & Negre Bennasar, 2024). This digital transformation, driven by Machine Learning (ML), promises a more convenient educational system for all stakeholders, including managers, teachers and families, who are important references in any educational community.

This article is structured in several sections that comprehensively address the impact and applications of AI in educational inspection. After this introduction, the conceptual framework and evolution of AI will be explored in depth, breaking down its components and its historical development. Subsequently, the limitations and demystification of AI will be addressed, highlighting the importance of understanding its scope and constraints. Practical applications for educational inspection will form a central section, detailing concrete examples of how AI can optimise inspection functions. A specific section will be devoted to the development of "good prompts", a crucial skill to interact effectively with AI tools. Case studies and specialised tools will provide an applied view of available solutions. Finally, ethical considerations and the framework for responsible use will be discussed, concluding with future proposals for the integration of AI in educational inspection, always under a continuous improvement and accountability approach.

2. CONCEPTUAL FRAMEWORK AND EVOLUTION OF ARTIFICIAL INTELLIGENCE

AI has established itself as a field of study and application of growing relevance in contemporary society. According to Mira Mira et al. (1995), "The purpose of Artificial Intelligence (AI) is to make non-analytical human knowledge

computational by symbolic, connectionist or hybrid procedures. For analytical knowledge there are other branches of computer science that study the methods and techniques suitable for its formal representation and subsequent development of the corresponding computer programs". A more operational definition describes it as the "Set of computing techniques that enable machines to perform tasks that normally require human intelligence". This conception is in line with the definition of the Royal Spanish Academy (RAE), which conceives it as "the scientific discipline that deals with the creation of computer programmes that execute operations comparable to those performed by the human mind, such as learning or logical reasoning". Russell Stuart and Norvig Peter (cited in Camacho Holgado et al., 2024) define it as "the combination of algorithms designed for the purpose of creating machines that have the same capabilities as humans".

The origin of the term AI dates back to a 1956 workshop at Dartmouth College, where it was described as "the science and engineering of creating intelligent machines, especially intelligent computer programs" (McCarthy et al., 2006, p. 2, cited in Camacho Holgado et al., 2024). Since then, AI has experienced intermittent development, with periods of rapid progress and others of slower progress. Moreno Padilla (2019) highlights that, although AI was once considered science fiction, today it is a reality with a myriad of computational and technological tools that have transformed the world.

The evolution of AI has been driven by progress in computing efficiency, the development of new algorithms and the availability of vast amounts of data. Within this field, Machine Learning is a branch of AI that has experienced exponential growth in recent years (Forero-Corba & Negre Bennasar, 2024). ML focuses on systems learning from data, while AI allows systems to perform tasks autonomously. Both fields, however, share the goal of creating systems capable of executing tasks

that are normally considered human tasks, using mathematical and statistical techniques to analyse and process data.

The advent of *Big Data*, i.e., datasets whose size, complexity and speed of growth make them difficult to capture, manage, process or analyse with conventional tools, has been fundamental for the advancement of AI and ML (Luhn HP, 1958, cited in Moreno Padilla, 2019). This has enabled the creation of more powerful algorithms adapted to different user profiles, which in turn has led to the reinvention and redefinition of traditional educational processes.

The history of AI, albeit with periods of stagnation, has been marked by significant milestones, tracing the beginning of a larger philosophical and computational approach to Alan Turing's 1950 question: "can a machine think?". This was the germ of what would later become known as the Turing test, an approach to AI as mimicking human behaviour. It was not until 1956 that John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon named the study of thinking machines as AI. McCarthy proposed the development of a new language to endow machines with intelligence, laying the foundations for high-level programming languages.

The advance of AI was boosted in 1987, when Martin Fischles and Oscar Firschein described the attributes of an intelligent agent, which included the ability to gain knowledge, solve problems, understand ambiguous ideas, plan, predict consequences, evaluate alternatives, know the limits of its own abilities, distinguish despite similarity of situations, be original, generalise, perceive and model the outside world, and use language and its symbols. These attributes made it possible to integrate structures for machines to simulate human characteristics such as learning, adaptation, reasoning, self-correction and implicit improvement.

In the 1990s, the construction of the first intelligent agents, such as supercomputers capable of performing complex tasks, paved the way for AI as we know it today. A prime example is *Deep Blue*, the IBM supercomputer that defeated chess player Gary Kasparov in 1997, marking a milestone in the ability of AI to outperform human intelligence in specific tasks.

AI is commonly classified into *Artificial Narrow Intelligence* (ANI) and *Artificial General Intelligence* (AGI). Weak AI refers to systems designed and trained for a particular task, such as speech recognition or language translation. Strong AI, on the other hand, is a hypothetical AI that would have the intellectual capacity of a human being, being able to understand, learn and apply knowledge to a wide range of problems. Currently, most AI applications fall under the umbrella of weak AI.

Machine Learning is a subfield of AI that focuses on the development of techniques that allow computers to learn from data without being explicitly programmed (Moreno Padilla, 2019). As we have highlighted above, ML has had an exponential increase in recent years and focuses on systems learning from data. Within ML, Deep Learning (DL) is a subcategory that uses multi-layered artificial neural networks to learn data representations with various levels of abstraction. These networks are able to identify complex patterns in large data sets, which has driven significant advances in areas such as image recognition and natural language processing.

The relationship between AI, ML and DL is hierarchical: AI is the broader concept, ML is a subset of AI, and DL is a subset of ML. This interconnection of fields has enabled the development of generative AI tools, such as OpenAI's ChatGPT, Microsoft's Copilot and Google's Gemini -- examples of the application of ML, Natural Language Processing (NLP) and DL -- that are able to create original

content, from text to images to code, based on patterns learned from training data. The ability of these tools to generate coherent and relevant content has opened up new possibilities in a variety of sectors, including education and educational inspection. These tools, along with others such as intelligent conversational software agents (customised GPTs) and online platforms for self-learning, are beginning to have a significant impact on training (Moreno Padilla, 2019).

3. LIMITATIONS AND DEMYSTIFICATION OF AI

Despite the advances and transformative potential of AI, it is crucial to demystify its nature and understand its inherent limitations. AI is not "smart" like humans. It operates by learning statistical patterns from large volumes of data, which allows it to predict more accurately the more data it is given. However, this predictive ability does not imply understanding, reasoning or awareness. AI lacks professional and moral judgement, and its "intelligence" differs fundamentally from human intelligence.

One of the most significant limitations of AI is its susceptibility to amplifying biases present in the data it has been trained on. If the input data is biased, the AI can reproduce and sometimes exacerbate those biases in its results. This highlights the imperative need for constant human supervision. AI does not have full autonomy; the human expert is ultimately responsible for the outcome and must use AI as an efficiency tool, not as a substitute for professional judgement.

Another critical aspect to consider is the tendency of AI to "hallucinate", i.e. to invent data or generate information that does not correspond to reality. The uncritical or naïve use of AI entails considerable risks, such as the generation of erroneous reports, the infringement of rights (including the Organic Law on Personal

Data Protection and guarantee of digital rights (Organic Law 3/2018, 2018), and the incorrect interpretation of regulations. Therefore, the fundamental recommendation is the rigorous verification of the results obtained with AI, the maintenance of a critical sense and an ethical conscience in its application.

Moreno Padilla (2019) points out that, although AI has a strong potential to accelerate the development of global goals in education, there are human qualities that cannot yet be replicated by AI, such as creativity, the ability to generate new ideas or the ability to improvise and constantly evolve. While these limitations are progressively being overcome, it is essential to recognise that AI is a tool, not an end in itself, and its value lies in how it integrates and complements human intelligence in educational and inspection processes.

Demystifying AI involves recognising that, despite its sophistication, it operates on mathematical and statistical principles, not a genuine understanding of the world. Its ability to process and correlate large volumes of data allows it to identify patterns and make predictions, but it lacks the intuition, common sense and capacity for abstract reasoning that characterise human intelligence. This distinction is vital to avoid unrealistic expectations and to encourage responsible use of technology.

The issue of bias in AI is of paramount importance. AI algorithms learn from the data they are trained on. If this data reflects existing biases or inequalities in society, AI can perpetuate or even amplify them. For example, an AI system trained on historical academic performance data that reflects socio-economic disparities could, without appropriate intervention, generate recommendations that reinforce those disparities. The Education Inspectorate, in overseeing the implementation of AI in schools, must be alert to these potential biases and ensure that the AI tools used

promote equity and inclusion, rather than the opposite.

The need for human oversight is not just a precaution, but a fundamental principle in the use of AI. The education inspector, as an expert in the field of education, must maintain an active role in validating the results generated by AI. This implies not only reviewing the accuracy of the information, but also assessing its relevance, its appropriateness to the specific educational context and its possible ethical implications. AI is a support tool, and the ultimate responsibility for decisions and actions always lies with the human practitioner.

In addition to biases, AI can present what are known as "black boxes", where the internal process by which an algorithm arrives at a conclusion is opaque and difficult to interpret. This lack of transparency can make it difficult to identify errors or biases, and poses challenges in terms of accountability. In the context of Educational Inspection, where decision-making can have a significant impact on the lives of students and professionals, the transparency and explainability of AI systems are crucial aspects to consider.

Demystifying AI involves understanding that it is a powerful but limited tool, requiring constant and critical human oversight. Its potential to amplify biases and its lack of genuine understanding make ethics and accountability fundamental pillars of its implementation in educational inspection. Recognising these limitations is the first step in harnessing its benefits safely and effectively, ensuring that the technology serves educational goals and does not compromise them.

4. PRACTICAL APPLICATIONS FOR EDUCATIONAL INSPECTION

The integration of AI in Educational Inspection offers a range of practical

applications that can significantly optimise monitoring, evaluation and assessment functions. We highlight several key areas where AI can be of great use, showing useful and realistic applications.

4.1. AUTOMATION AND DOCUMENT EFFICIENCY

One of the most direct applications of AI is the automation of repetitive tasks and improving efficiency in document management. This includes automating the writing of recurring reports, filling in the site visitors' book and assisting in the drafting of minutes. AI can also assist in the generation of summaries and analysis of long texts, such as regulations, plans and educational projects. This NLP capability allows inspectors to quickly access relevant information and reduce time spent on administrative tasks.

4.2. PREDICTING SCHOOL FAILURE

One area of application with significant social impact is the prediction of school failure. Álvarez Aguilar (2020) proposes the use of educational data mining techniques to predict educational failure at early stages. Educational data mining, a branch of data mining applied to the field of education, seeks to discover behavioural patterns in large volumes of educational data in order to predict future actions (Álvarez Aguilar, 2020). This would allow the Education Inspectorate to provide early advice to schools where possible cases of school failure are detected. The information obtained from anonymised data such as grades, absences, delays and family environment can be of great interest to students, teachers, pedagogical experts and education inspectors, who could anticipate possible dropouts or failures in the qualification and offer support or reinforcement resources (Álvarez Aguilar, 2020).

4.3. CUSTOMISED POLICY SEARCH AND ANALYSIS

More specialised AI tools, such as NotebookLM, can enhance regulatory search and analysis. By uploading normative documents (LOE, LODE, regional decrees, etc.), inspectors could make direct queries such as "What does the Order of 30 May 2023 of the Upper Secondary Education say about competence assessment" or "How many students can there be at most in a mixed primary class? This offers an advantage in terms of accuracy, focus and time saving.

4.4. SYNTHESIS OF INFORMATION AND TRAINING

AI can also facilitate the synthesis of information from a variety of sources, including multimedia content. For example, the ability to extract main ideas, key quotes and possible discussion questions from a video of a day, and even generate an audio of the synthesised summary, is a practical application for preparing reports or synthesising training information.

4.5. REORGANISATION OF THE EDUCATION INSPECTION SERVICE

Tébar Cuesta (2020) argues that AI and ICT in general imply a reorganisation of the Educational Inspection Service (EIS) for the 21st century. Adaptation to these technologies and specialisation are crucial. The Inspectorate, due to its position in the education system, its presence in schools and its working tools, cannot remain on the sidelines of this changing reality. Generic ICT training in the inspectorate is good, but there is clearly room for improvement, and it is necessary for inspectors to be aware of the changes and realities that are taking place in areas such as Big Data, AI and ML (Tébar Cuesta, 2020).

The application of AI in educational inspection is not limited to the automation of tasks, but extends to improving decision-making and optimising management processes. The ability of AI to process and analyse large volumes of data (Big Data)

is fundamental in this context. As Moreno Padilla (2019) points out, Big Data allows for the collection of an enormous amount of specific data, and although information alone does not generate new processes, ML allows for the creation of more powerful algorithms adapted to different user profiles.

4.6. OPTIMISING EDUCATIONAL MANAGEMENT

AI can contribute significantly to the optimisation of educational management at all levels. A key objective is to identify opportunities to improve teaching-learning processes and educational management through the application of ML and AI. This includes the possibility for AI to assist all sectors of the educational community (inspectorate, management, teachers, students) in multiple aspects. For example, Microsoft Copilot, already integrated into Microsoft 365 and Microsoft Edge, or Gemini for Google Workspace integrated into Gmail, Documents, Presentations, Spreadsheets and so on have the potential to boost and optimise the productivity and creativity of tasks specific to the education sector.

4.7. SUPPORTING SCHOOL AND TEACHER EVALUATION

AI can offer valuable support in evaluation processes. While we should mention support for school and teacher evaluation within legal limits, it is important to look more closely at how this support is realised. AI can analyse data on academic performance, attendance, participation in extracurricular activities and other indicators to identify trends, strengths and areas for improvement in schools. This would allow inspectors to have a more complete and objective view of how schools are performing, facilitating more accurate and informed evaluation reports. In the case of teachers, AI could analyse data on methodologies used, student learning outcomes and student feedback to provide personalised recommendations for professional development.

4.8. STRATEGIC DECISION SUPPORT

AI can provide the Education Inspectorate with valuable information for strategic decision-making at system level. By analysing large-scale data, AI can identify educational trends, assess the impact of public policies and foresee future needs. This would allow the Inspectorate to advise the Education Administration in formulating more effective policies and allocating resources more efficiently. AI, in this sense, becomes an ally in the planning and development of a more robust education system adapted to the challenges of the 21st century.

4.9. DIGITAL TRANSFORMATION AND SPECIALISATION OF THE INSPECTORATE

The integration of AI in the Education Inspectorate is part of a broader process of digital transformation that requires adaptation and specialisation of the EIS. Tébar Cuesta (2020) emphasises that the inspectorate cannot remain on the sidelines of the changing reality driven by ICT, Big Data, AI and ML. The Inspectorate's generic ICT training, although good, can clearly be improved, and it is crucial that inspectors acquire knowledge of these new realities. The professional updating of teachers in IA and ML is a challenge for educational institutions, and teaching managers must take on the challenge of leading the updating of the CDD (Forero-Corba & Negre Bennasar, 2024). This need for specialisation refers not only to the technical knowledge of AI tools, but also to the understanding of their ethical and pedagogical implications, to ensure a responsible and beneficial use for the education system as a whole.

5. HOW TO MAKE A GOOD PROMPT

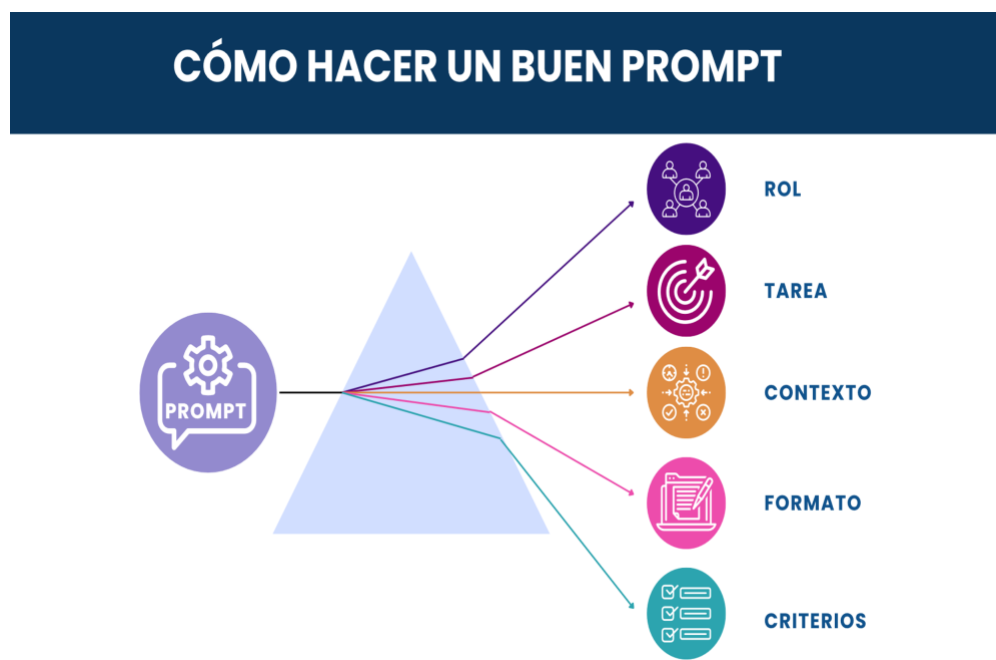
To maximise the usefulness of AI tools in Educational Inspection, it is essential to understand and apply the techniques for making a "good prompt". A prompt is, in

essence, the instruction given to the AI to perform a specific task. The quality of the prompt directly affects the relevance and accuracy of the response generated by the AI.

Keys to constructing an effective prompt include:

- ▣ **Role:** Assigning a specific role to the AI (e.g., inspector, advisor, teacher) helps the tool adopt the right perspective and tone for the response. This ensures that the information generated is consistent with the desired role.
- ▣ **Task:** It is crucial to indicate exactly what is expected from the AI. The more detailed and precise the request, the better the AI's ability to generate a relevant response.
- ▣ **Context:** Providing relevant background information makes it easier for the AI to understand the scenario and adapt its response to the specific circumstances. This is particularly important in the educational setting, where the context may vary significantly between centres or situations.
- ▣ **Format:** Specifying the desired format for the output (report, outline, table, etc.) allows the IA to structure the information in a way that is directly usable by the inspector.
- ▣ **Criteria:** Indicate the type of language (plain, scientific, ...), tone (formal, informal), citation rules, etc.

Figure 1: *How to make a good prompt*



A useful template for making prompts could be: "Act as..., I need you to help me with..., in the context of ..., the format should be..., the criteria are..."

A practical example illustrates the difference between a basic and an elaborated prompt:

- ❑ **Basic Prompt:** "Make me a rubric to evaluate a school principal."
- ❑ **Elaborated Prompt:** "You are an education inspector from the Educational Inspection Service of the Territorial Delegation of Educational Development and Vocational Training in Cordoba. You are going to meet with members of the educational community of several schools (separately) to carry out the continuous evaluation of the management function. To do this, you must

analyse the performance criteria that are grouped into professional competences, which in turn are grouped into dimensions, present in a PDF file that I am going to attach, corresponding to Annex V of the Order of 9 November 2020, which develops the evaluation of Andalusian school heads. In order not to make the meeting with the members of the educational community too dry, develop a maximum of 3 questions for each professional competence to be asked at the meeting. The questions should try to cover the maximum number of performance criteria, and should be in clear language for non-experts in education".

This contrast demonstrates how a well-structured prompt, incorporating role, task, context, format and criteria, can transform a generic request into a precise instruction leading to much more useful results tailored to the needs of the Education Inspectorate.

Prompt engineering, while it may seem like a technical concept, is actually a fundamental communication skill in the age of AI. A well-designed prompt is the key to unlocking the true potential of AI tools, transforming them from mere text generators into efficient and accurate collaborators. In the following, each of the keys to crafting effective prompts is explored in more detail:

5.1. ROLE: THE EXPERT'S PERSPECTIVE.

Assigning a role to the AI is a powerful technique for influencing the tone, style and focus of the response. By asking the IA to "act like an education inspector", you are instructing it to adopt the perspective, knowledge and terminology of an inspection professional. This is essential in order to generate documents that are consistent with the language and expectations of the education domain. Other roles

could be: "act as a pedagogical advisor", "act as an expert in educational legislation", or "act as an innovative teacher". The choice of role should be strategic and depend on the type of information or document you want to generate.

5.2. TASK: ACCURACY AS A FOUNDATION

Specificity is the cornerstone of a good prompt. In the context of the Education Inspectorate, this means going beyond generic requests. For example, instead of asking for "a report on a school", a specific prompt could be: "Generate a draft inspection visit report for *CEIP 'XXXX'*, focusing on compliance with regulations on educational inclusion and the use of active methodologies in the second cycle of Primary School. It includes a section on strengths and a section on areas for improvement, and uses formal and objective language'. Precision in the request reduces ambiguity and guides the IA to the desired information and format, avoiding vague or irrelevant answers. This is crucial when handling sensitive information or when adherence to specific regulatory frameworks is required.

5.3. CONTEXT: PROVIDING THE FRAME OF REFERENCE

Context is the background information that allows the IA to understand the scenario in which it must operate. In Education Inspection, the context may include: the type of school (public, subsidised, private), the educational level (Pre-school, Primary, Secondary), the applicable regulations (LOE, LODE, royal decrees, regional decrees, specific orders), historical data of the school, or even the purpose of the document being generated (e.g. a report for the school management or for the Education Administration). By providing this frame of reference, the AI can adapt its response to be relevant and useful, avoiding generalisations and offering solutions that fit the specific reality of each situation. A contextualised prompt allows the AI to act as an informed expert, rather than a mere information seeker.

FORMATTING: STRUCTURING THE DESIRED OUTPUT

The format specifies how you want the AI to structure its response. This can range from a "structured report with introduction, development and conclusions", to a "bulleted outline", a "comparative table", or a "list of questions". Defining the format in advance saves time in the subsequent editing and organisation of the information. For the Education Inspectorate, where clarity and organisation of documents are essential, specifying the format ensures that the IA output is directly usable and integrates smoothly into existing workflows.

5.5. CRITERIA: DEFINING QUALITY PARAMETERS

Criteria are guidelines that specify the quality characteristics that the AI-generated response must meet. These may include the type of language (clear, scientific, technical, informative), the tone (formal, informal, objective, persuasive), the desired length, the citation standards (APA, ISO, etc.), or the inclusion of specific elements (examples, case studies, statistical data). In the field of educational inspection, the specification of criteria is essential to ensure that the documents generated by the IA are professional, rigorous and fit for purpose. For example, if a technical report is requested, criteria might include the need for precise and objective language, reference to current regulations and presentation of data in a structured manner. If a document is required to communicate information to the education community, the criteria could emphasise clear and accessible language, avoiding unnecessary technicalities. By explicitly defining these criteria, AI is guided to produce an output that is not only relevant in content, but also meets the standards of quality and formality required in the educational environment. This transforms the IA into a tool capable of generating final products that require minimal revision and editing, thus optimising the inspector's time and resources.

5.6. EXAMPLES AND CONSTRAINTS: GUIDING GENERATION

In addition to the keys mentioned above, the inclusion of examples and the specification of constraints can further improve the quality of prompts. Providing an example of the desired output can be extremely useful for the AI, as it gives it a concrete model to follow. Constraints, on the other hand, define the limits within which the AI must operate. For example, "the report should not exceed 1000 words", "use only sources cited in the accompanying document", or "avoid using excessive technical jargon". These guidelines help the AI to stay within the desired parameters and to produce results that meet the specific requirements of the task.

Crafting a good prompt is an art and a science that combines clarity in communication with a strategic understanding of the AI's capabilities. By mastering these techniques, education inspectors can transform AI tools into powerful allies, capable of generating accurate, relevant and structured information, thus optimising their work and contributing to more efficient and effective education management.

CASE STUDIES AND SPECIALISED TOOLS

The application of AI in Education Inspection is materialised through case studies and the use of specialised tools that optimise the efficiency and quality of the work.

6.1. CASE STUDY WITH PERSONALISED GPT: AUTHORISATION OF COMPLEMENTARY ACTIVITIES

"My GPTs" are customised versions of ChatGPT, often referred to as "custom GPTs", which users can create for specific tasks or topics. They allow the behaviour of OpenAI conversational models to be adapted to particular contexts, without the need for programming knowledge.

The technical operation is composed of:

- ▣ Model Base: A custom GPT is a tweaked version of ChatGPT language models (such as GPT-4), which have already been pre-trained on vast datasets and tuned with human feedback.
- ▣ Custom Instructions: The creator defines detailed instructions on how the GPT should behave, its tone, and the functionalities it should prioritise or avoid. These instructions act as a layer of persistent and specific "prompting" for the base model.
- ▣ Additional Knowledge: Specific documents, manuals, databases or texts can be loaded. The GPT uses this information as a source of contextual knowledge to generate more accurate and relevant answers for its purpose. This is similar to a form of "generation-augmented retrieval", where the model queries this internal database before formulating an answer.
- ▣ Capabilities: GPTs can enable or disable specific functionalities of the underlying model, such as web browsing (to search for real-time information), image generation (using DALL-E 3) or code interpretation.
- ▣ Interaction: When interacting with a custom GPT, the model combines its internal instructions, additional knowledge and enabled capabilities to process user input and generate an adapted response.

To create one, a ChatGPT Plus subscription is required and is done through a conversational interface or a configuration panel in ChatGPT.

A good example of the use of this technology is the development of customised GPTs for the management of recurrent tasks, such as the authorisation of payments in private schools. In this scenario, the Education Inspectorate must issue a report on the authorisation of the charging of complementary activities that

imply a cost. A customised GPT trained with a report template, the specific regulations (LOE, LODE, instructions, decrees, sentences) and previous cases, can generate a near-final draft of the report. The advantages of this application are agility in the process, consistency in the answers and significant time savings. However, it is crucial to remember to always review the draft before signing or issuing the document.

In the paper that inspired this article, the authors demonstrated how two customised GPTs can be developed:

6.1.1. CUSTOMISED GPT 1: COMPLEMENTARY ACTIVITIES OF SUBSIDISED PRIVATE SCHOOLS.

This customised GPT is designed to assist Education Inspectors in issuing official reports on complementary school activities in subsidised private schools. Its main function is to automate the collection, verification and generation of reports based on the regulations in force (Decree 162/2021 in the case of the Autonomous Community of Andalusia). The customised GPT guides the user through a structured workflow, requesting specific documentation (Annex 1-A, Annex 1-B, Minutes of the School Council), extracting key data from the detail of the activities, and verifying compliance with regulatory requirements, including the calculation of the effective cost per pupil. The process is interactive, requiring user confirmation at each step before proceeding to the final report generation in Markdown or PDF format. This customised GPT represents a practical application of AI to optimise efficiency and ensure regulatory compliance in Education Inspectorate processes, reducing the administrative burden and minimising human errors in the evaluation of complex requests. It should be noted that all documents provided to ChatGPT must be suitably anonymised, in compliance with Organic Law 3/2018, of 5 December, on Personal Data Protection and guarantee of digital rights.

6.1.2. CUSTOMISED GPT 2: DISTANCE COST CALCULATOR

The second customised GPT has as its main objective to determine the conformity of the costs of complementary activities incurred, specifically with regard to public transport costs, with the Decree 162/2021 of the Autonomous Community of Andalusia. It acts as an assistant to the education inspector, requesting Annex I-B, to extract relevant data such as the number of pupils, items of expenditure (staff, transport, entrance fees, other) and pupil contribution. A key feature is its ability to verify the reasonableness of the cost of transport by calculating the price per kilometre and comparing it with a predefined threshold ($\text{€/km} \leq 5$). In addition, it calculates the effective unit cost of the activity by adding up all accepted cost items and dividing them by the number of pupils, and verifies that the pupils' contribution does not exceed this cost. Finally, it issues a favourable or unfavourable opinion, citing article 9.3 of Decree 162/2021 if there are non-compliances. This customised GPT illustrates how IA can be used for the audit and verification of expenditures in the educational field, ensuring transparency and compliance with financial regulations.

6.2. EXAMPLES WITH NOTEBOOKLM: REGULATORY SEARCH AND CONTENT SUMMARY

The NotebookLM architecture is organised around the creation of "Notebooks", which act as workspaces dedicated to specific projects. Within each notebook, the user can upload a variety of document formats, including PDF files, text documents, Google *Slides* presentations, links to web pages, and even transcripts of YouTube videos. This flexibility in data ingestion allows users to consolidate all information relevant to a topic or project into a single digital environment.

Once sources are uploaded, NotebookLM offers three main functionalities

that facilitate interaction and content analysis:

1. Chat: This section allows users to ask direct questions to the AI about the content of the uploaded sources. The AI processes the questions and generates answers that are strictly based on the information present in the documents. This capability is invaluable for quickly extracting specific data, understanding complex concepts or synthesising information scattered across multiple documents. Interaction is conversational, facilitating intuitive exploration of the material.
2. Summaries and Content Generation: NotebookLM can generate concise summaries of long documents or collections of documents. In addition to textual summaries, the tool has the ability to create "audio summaries" that emulate a podcast format. This functionality is particularly useful for quick review of material or for auditory learning, allowing users to assimilate information while doing other activities. The AI can also generate different types of text, such as article drafts, presentation ideas or study questions, all based on the content of the sources.
3. Studio: This feature focuses on the creation of audio summaries. Users can generate, play and download these summaries, adding an auditory dimension to the research and study process. The quality of these summaries is comparable to that of a podcast, making them a versatile tool for information consumption.

In the paper that inspired this article, the authors demonstrated how to use this tool with two basic examples:

6.2.1. REGULATORY CONSULTATION

A NotebookLM notebook was populated with the following regulations in PDF

format:

- ☐ Organic Law 8/1985 of 3 July regulating the Right to Education (LODE)
- ☐ Consolidated text.
- ☐ Royal Decree 2377/1985, of 18 December 1985, approving the Regulation of Basic Rules on Educational Agreements. Consolidated text.
- ☐ Organic Law 2/2006, of 3 May, on Education (LOE). Consolidated text.
- ☐ Decree 128/1986, of 20 October 1986 of the Council of the Valencian Regional Government, which regulates the complementary activities and services provided by publicly funded private schools in the Valencian Community.
- ☐ Instructions of 1 July 2013 of the Autonomous Secretariat for Education and Training on the regulation of extracurricular, complementary and school services activities by subsidised private schools (Comunidad Valenciana).
- ☐ Order of 13 February 1987, issued by the Regional Ministry of Culture, Education and Science, developing Decree 128/1986 of 20 October, which regulates complementary activities and services provided by publicly funded private schools in the Valencian Community.
- ☐ Ruling 49/2023 of the Constitutional Court, 10 May 2023. Appeal of unconstitutionality 1828-2021.

In the Chat section, the following question was asked: "Can the complementary activities offered by subsidised private schools be of a profit-making nature? NotebookLM analysed all the regulations provided, taking into account that they were in both Spanish and Valencian, generating an argumentative answer, quoting the regulation and the articles on which it was based, which, once checked by a human being, coincided perfectly with the answer that an inspector should

have given.

6.2.2.2. GENERATING A PODCAST SUMMARY OF A PRESENTATION

In this case, NotebookLM was provided with the URL of a video hosted on YouTube within the channel of the Andalusian School of Educational Inspection about a speech given by the inspector Mr. Samuel Crespo Ramos during the VII Training Conference of USIE Andalucía, focused on the impact of social and technological transformation in education and the role of educational inspection. The video is 1 hour, 33 minutes and 46 seconds long, and NotebookLM was able to generate a podcast in Spanish as a radio programme with two speakers, one male and one female, summarising and specifying the most important aspects of the video provided with a fluency of conversation typical of the medium and a duration of 20 minutes and 20 seconds.

6.3. OTHER EMERGING TOOLS AND APPLICATIONS

Beyond the specific examples, the field of AI in education is constantly evolving, offering new tools and applications that could be of interest to the Education Inspectorate. These include:

- ▣ **Recommender systems:** Based on the analysis of performance data and preferences, they could recommend educational resources, methodologies or in-service training programmes to teachers and schools, adapting to their specific needs.
- ▣ **Sentiment analysis in communications:** AI could analyse tone and sentiment in written communications (e.g. education community surveys, discussion forums) to identify areas of concern or satisfaction, providing a qualitative view complementary to quantitative data.

- ▣ **Educational content generation:** Generative AI tools could assist in the creation of customised teaching materials, adapted to different levels and learning styles, which could be useful for the development of guides or support resources by the inspectorate.
- ▣ **Simulations and virtual environments:** AI can enhance simulation environments for the training of inspectors or teachers, allowing them to practice complex situations in a safe and controlled environment, such as conflict management or the implementation of new regulations.

The key for the Education Inspectorate is to keep abreast of these innovations, assess their relevance and potential, and actively participate in their development and implementation. The adoption of AI is not a passive process, but an opportunity to lead the digital transformation in education, always with a focus on improving quality and equity.

7. ETHICAL CONSIDERATIONS AND RESPONSIBLE USE FRAMEWORK

The increasing integration of AI in the educational field, and specifically in educational inspection, calls for a deep reflection on ethical considerations and the need to establish a framework for responsible use. As noted, AI has no professional or moral judgement, and its operation is based on statistical patterns, which makes it susceptible to amplifying biases present in training data. This characteristic underlines the importance of constant and critical human supervision.

The Education Inspectorate, in this context, takes on a crucial role. Camacho Holgado et al. (2024) emphasise that schools cannot ignore the influence of technologies or move forward without addressing the mistrust that the rapid

progress of AI generates in society. The current social model, influenced by EU policies, advocates AI deployment based on ethical design of algorithms, the primacy of digital rights and social cohesion. The inspectorate should ensure that the implementation and development of AI in education is in line with the values and principles enshrined in existing education laws. This involves monitoring how schools define their strategies to ensure that AI is conducive to equal opportunities and how they promote ethical reflection among the educational community.

The education inspector is not expected to be an AI specialist, but they are expected to be aware of the risks associated with unthinking use. Their role is crucial in advising schools, ensuring that the use of AI does not compromise the education necessary for students to actively participate in society. The ethical aspect of AI implementation is a field that still requires a great deal of literature and reflection, and the main problem lies in establishing regulations and standards for its ethical and responsible use by teachers and students (Camacho Holgado et al., 2024).

The implementation of AI in the field of education, and in particular in educational inspection, cannot be separated from a rigorous ethical analysis and the construction of a framework for responsible use. AI, as a tool, lacks the capacity for moral discernment inherent to human beings, operating on the basis of statistical patterns that, while efficient, can replicate and amplify pre-existing biases in the training data. This reality underscores the imperative need for constant and critical human oversight, where the education inspector assumes a central role as a guarantor of equity and fairness.

PRIVACY AND DATA PROTECTION

One of the fundamental pillars in the ethical use of AI in education is privacy and data protection. AI, especially in applications such as educational data mining for

the prediction of school failure (Álvarez Aguilar, 2020), handles large volumes of sensitive information about students, teachers and schools. It is crucial to ensure that the collection, storage, processing and use of this data strictly comply with Organic Law 3/2018 of 5 December on Personal Data Protection and guarantee of digital rights and other privacy regulations. Data anonymisation, informed consent, purpose limitation and system security are non-negotiable aspects. The Education Inspectorate should ensure that schools implement robust data protection policies and that the AI tools used respect the confidentiality and privacy of all members of the educational community.

7.2. TRANSPARENCY AND EXPLAINABLE AI (XAI)

The "black box" of AI, where the internal decision-making processes of an algorithm are opaque, represents a significant ethical challenge. In a context such as Educational Inspection, where decisions can have a direct impact on people's lives, transparency and explainability of AI systems are essential. Explainable Artificial Intelligence (XAI) seeks to make the inner workings of algorithms understandable, allowing users to understand why an AI has reached a certain conclusion. The Inspectorate should promote the use of AI systems that are transparent and explainable, making it easier to audit their results and identify possible biases or errors. This is crucial to build trust in the technology and to ensure accountability.

7.3. RESPONSIBILITY AND ACCOUNTABILITY

Although AI can perform complex tasks and generate sophisticated results, the final responsibility for decisions and their consequences always lies with the human being. The education inspector, when using AI tools, must take full responsibility for the reports generated, recommendations issued and actions taken. This implies rigorous verification of the information provided by the AI and informed

professional judgement. It is essential to establish clear accountability mechanisms to ensure that, in the event of errors or undesirable outcomes, the cause can be identified and appropriate corrective action taken. The Education Inspectorate, in its supervisory role, should ensure that schools also establish clear accountability frameworks for the use of AI.

7.4. EQUITY AND INCLUSION

AI has the potential to amplify existing inequalities if it is not designed and implemented with a focus on equity and inclusion. Biases in training data can lead to discriminatory outcomes, negatively affecting specific groups of students or communities. The Education Inspectorate must be proactive in identifying and mitigating these biases, ensuring that AI tools promote equal opportunities and do not perpetuate discrimination. This involves constant evaluation of the algorithms and data used, as well as promoting AI design that is inclusive and equitable from its conception. AI should be a tool for narrowing the education gap, not widening it.

7.5. ETHICS AND AI LITERACY TRAINING

To ensure responsible use of AI, it is essential that education professionals, including inspectors, acquire strong ethical training and AI literacy. This goes beyond technical knowledge of the tools and encompasses an understanding of the ethical principles that should guide their use, the associated risks and social implications. The Education Inspectorate, as a leader in the promotion of educational quality, should promote training programmes that train teachers and managers in the ethical and responsible use of AI, fostering a critical sense and awareness of the responsibilities involved in interacting with these technologies.

The framework for responsible use of AI in the Education Inspectorate is based on privacy and data protection, transparency and accountability, responsibility

and accountability, equity and inclusion, and strong ethical training. The Inspectorate, with its oversight and advisory role, is a key player in ensuring that AI becomes a positive force in the service of quality and equitable education, always under human control and ethical judgement.

8. CONCLUSIONS AND PROPOSALS FOR THE FUTURE

AI is no longer a futuristic promise but a transformative reality in many spheres, and the Education Inspectorate is no stranger to this change. As has been explained throughout this article, AI is already having an impact on professional educational practice, offering tools that, far from replacing inspection work, enhance and optimise it.

One of the fundamental conclusions is that AI, and in particular ML, has a strong impact on the education sector, evidenced by the increase in research and the use of various intelligent techniques in educational contexts (Forero-Corba & Negre Bennasar, 2024).

In the field of educational inspection, the application of educational data mining techniques, as proposed by Álvarez Aguilar (2020), can generate substantial improvements in the functions of supervision, evaluation and counselling. The ability to predict school failure at early stages, for example, allows for proactive intervention and more effective advice to teachers, contributing to the improvement of school organisation and a clearer vision of the origin of school failure.

However, the adoption of AI in educational inspection is not without its challenges. Educators' lack of knowledge and skills in ML and AI limits the optimal implementation of these technologies. This underlines the need for continuous

professional updating and strengthening of teachers' digital competence, including AI literacy (Forero-Corba & Negre Bennasar, 2024; Camacho Holgado et al., 2024).

AI's limitations, such as its inability to understand, reason or have awareness, and its potential to amplify biases or "hallucinate", call for critical and responsible use. Human supervision is indispensable, and the human expert must always be ultimately responsible for the outcome.

Looking ahead, the following lines of action are proposed:

- ▣ **Training and capacity building:** It is imperative to develop specific training programmes for education inspectors in the use of AI tools, the understanding of their principles and limitations, and the application of critical thinking in their interaction with these technologies. This training should go beyond technical knowledge, covering ethical implications and the framework for responsible use.
- ▣ **Development of adapted tools:** Encourage the creation and adaptation of AI tools specific to the needs of the Education Inspectorate, enabling the automation of administrative tasks, the analysis of educational data and support in decision-making, always under an ethical and transparent design.
- ▣ **Establishment of regulatory and ethical frameworks:** Continue the reflection and development of clear regulatory and ethical frameworks to guide the use of AI in education. The Education Inspectorate should be actively involved in defining these frameworks, ensuring that they are aligned with the principles of equity, inclusion and data protection.
- ▣ **Research and collaboration:** Promote research in the field of AI applied to educational inspection, as well as collaboration between inspectors, AI experts and education professionals. This will identify new opportunities,

address emerging challenges and share good practices.

- ▣ **Promoting responsible use:** The Education Inspectorate should take the lead in promoting responsible use of AI in schools, advising principals and teachers on best practices, associated risks and the importance of verification and critical thinking. This will help build a culture of AI literacy throughout the education community.

AI represents an unprecedented opportunity to transform and improve educational inspection. However, its success will depend on a strategic approach that combines technological innovation with an unwavering commitment to ethics, continuous training and human oversight. The Inspectorate, with its fundamental role in the education system, is set to be a key player in shaping a future where AI is a tool at the service of quality and equitable education.

The integration of AI in Education Inspection is not an option, but an imperative need in an increasingly digitalised world. AI, with its ability to process large volumes of data and automate tasks, offers immense potential to optimise inspection work, freeing up time for professionals to focus on more complex aspects and human judgement. However, this path towards digitisation must be guided by sound ethical principles and a thorough understanding of AI's capabilities and limitations.

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