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Impact of Artificial Intelligence on Academic Integrity: Perspectives of Faculty Members in Spain

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Abstract
This chapter delves into the growing role of artificial intelligence (AI) within the context of academic integrity, focusing on the perceptions of university faculty in Spain. It highlights the importance of AI tool training for educators, illustrating how such training can not only enhance teaching and learning processes but also address ethical challenges related to using advanced technologies. Through a descriptive methodology based on survey data collection, the study uncovers a significant gap in understanding and effectively applying AI in educational settings, emphasizing the urgency for implementing specific training programs. Furthermore, the ethical implications of AI use, such as plagiarism, are discussed, proposing comprehensive strategies to prevent academic dishonesty. This analysis demonstrates the need for ongoing dialogue between technology and ethics, advocating for a more conscious and responsible integration of AI in higher education.

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1.1. Introduction

The phenomenon of digitalization, together with the emergence of generative artificial intelligence (GAI), constitutes a formidable challenge for teaching and learning paradigms within higher education. Despite the obvious advantages and promising perspectives, they offer, these technological advances introduce profound complexities in terms of academic integrity, an indispensable cornerstone in the construction and dissemination of knowledge (Cotton, Cotton & Shipaway, 2023; Liao, Palvia & Lin, 2021; UNESCO, 2019b). In this scenario, teacher training for the effective and ethical use of AI becomes an essential component to maximize the educational benefits of these tools while simultaneously mitigating the risks associated with their implementation.

UNESCO (2019a, 2021b) emphasizes the need for a deep understanding of how AI can support learning objectives without compromising academic ethics and intended learning outcomes. Thus, the organization sees AI's potential to address some of today's education challenges: innovating teaching-learning practices and advancing towards achieving Sustainable Development Goal 4, which aims to ensure inclusive, equitable quality education and promote lifelong learning opportunities for all. However, it is also crucial to acknowledge that the impact of AI in Education presents various facets and challenges. Research by Tal Waltzer et al. (2023) offers a critical view of the ethical implications of AI in the educational context, highlighting the increasingly present dilemma between innovation and ethics in university classrooms. This theoretical discussion underscores the importance of developing pedagogical strategies and institutional policies that balance these aspects.

The analysis of AI's role in promoting academic integrity has gained increasing relevance. Studies like those by Rodriguez et al. (2023) and Dupps (2023) explore how advanced tools can assist in plagiarism detection and the maintenance of academic integrity, while research by Chan (2023) introduces the term "AI-giarism", highlighting the need to develop effective strategies against this form of academic dishonesty.

The relationship between AI and plagiarism is inherently complex (Sarkar, 2023; Yeo, 2023; Quidwai, Chunhui and Dube, 2023). On the one hand, AI serves a facilitating role that naturally integrates into academic practices; recent research suggests that plagiarism of AI-generated content is perceived as less unethical (Longoni, Tully, and Sharif, 2023). On the other hand, it acts as a control tool; studies like that by Santra (2023) propose an AI vs. AI showdown in plagiarism detection, moving towards more sophisticated systems for identifying plagiarized content. Therefore, to combat plagiarism and promote academic integrity, it is crucial to integrate AI tools with pedagogical approaches, in order to leverage their facilitative value in the learning experience while reinforcing academic integrity.

It is essential to highlight the importance of focusing efforts on education about the ethical use of artificial intelligence (AI) and its application to preserve the authenticity and educational value of academic activities. The studies conducted by Sullivan et al. (2023) and Perkins (2023) emphasize the urgency of adapting educational policies to effectively address the various challenges and opportunities arising from the integration of AI in higher education.[1]

In this study we aimed to explore and analyze the perceptions and experiences of faculty members in Spain about the impact of Artificial Intelligence on academic integrity, focusing especially on the prevention and detection of plagiarism. We sought to understand how educators perceive the relationship between AI and academic ethics, identifying both the benefits and challenges that this technology introduces in the context of higher education, and evaluate current strategies used to integrate AI into teaching practices.

1.2. Methodology

In this research, a descriptive methodology was used with the purpose of analyzing the perceptions and opinions of faculty

1. UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021b) is an essential reference, as is the Beijing Consensus on Artificial Intelligence and Education (2019b) and the guide on Artificial Intelligence and education for those responsible politicians (UNESCO,2021a).

members in Spain about AI and the challenges it presents for higher education. The methodological approach was designed to obtain a detailed and systematic view of teachers' attitudes and views in this specific context. The main methodological aspects of the research are described below:

- Survey design: A structured questionnaire was designed, addressing relevant aspects related to the faculty's perception of AI and its impact on university education. The questionnaire was constructed with reference to existing academic literature and adapted to the characteristics and needs of the target population, Spanish university faculty. The design was validated by a group of experts comprising specialists in AI, in educational research methodologies, and in the sociology of education.
- Sample selection: In Spain, for the 2021-22 academic year, the teaching and research staff comprised 133,484 faculty members, thus the sample considered 95% confidence margin and 9% margin of error. The target population were faculty members of different disciplines and categories recognized in the Spanish university. The sample was selected through an open invitation to participate in the survey, without stratified restrictions. A total of 140 responses were received from faculty members from various areas of knowledge and different public and private academic institutions, which, after screening, amounted to 135. The stratification was as follows: 74 women and 61 men, from 16 universities.
- Data collection: The survey was administered online through a digital platform, allowing participants to respond conveniently. The responses were obtained by inviting the teachers to participate voluntarily.
- Data analysis: For data analysis, descriptive statistical techniques were used. In addition, statistical software tools were used to process and visualize the results effectively.
- Ethical considerations: Informed consent was obtained from all participants, and the confidentiality of their responses was guaranteed. The study was conducted in compliance with the applicable ethical and legal standards in research with human beings. The survey was reviewed and validated by the Research Ethics and Animal Welfare Committee of the University of La Laguna.

This framework proposes an inclusive strategy, inviting faculty members from a wide range of disciplines and universities in Spain to participate without applying stratified restrictions. While this approach might introduce some variability in the representativeness of the sample, it is important to recognize its potential to capture a wide diversity of perspectives and experiences. This approach allows us to obtain a valuable preliminary insight into the perceptions and opinions of the faculty, establishing a starting point for future research.

1.3. Results and discussion

We break down our analysis into three sections that we determine are critical to appreciating both the opportunities and challenges introduced by AI in academia. The first section explores faculty training in AI tools, as this is an imperative for the effective integration of this technology in the teaching and learning processes, and for the promotion of academic integrity. The second section delves into the risks associated with implementing AI in education, especially as it relates to plagiarism, examining how, despite its advantages, AI can facilitate dishonest academic behavior. Through the analysis of the risks and benefits indicated by faculty, we sought to understand how to use AI in a way that it promotes academic integrity without undermining educational quality. Finally, in the last section, we discuss the strategies used to prevent plagiarism in student work and how educators can prepare to detect the use of AI among students, thus ensuring the preservation of academic integrity.

Teacher education: experience and training

In the survey conducted, we investigated teachers' knowledge and mastery of a variety of artificial intelligence tools. Table 1.1 presents the responses, providing valuable information about the extent of these skills among educators.

Table 1.1. Experience with AI tools

Application	Women	Men	Total
Conversational AI	73.77%	76.00%	75.00%
AI that transforms text into scientific reasoning	1.64%	1.33%	1.47%
AI for literary writing	31.15%	26.67%	28.68%
AI for medical advice	0.00%	5.33%	2.94%
Creating travel itineraries	8.20%	6.67%	7.35%
Extracting information from documents	21.31%	24.00%	22.79%
Translation	75.41%	72.00%	73.53%
Image editing	0.00%	8.00%	4.41%
Artistic creation from texts	11.48%	28.00%	20.59%
From text to video	6.56%	6.67%	6.62%
From text to 3D	0.00%	1.33%	0.74%
From text to code	1.64%	12.00%	7.35%
From text to spoken speech	1.64%	8.00%	5.15%
From spoken speech to spoken speech: voice imitators	0.00%	2.67%	1.47%
From spoken speech to text	1.64%	12.00%	7.35%
From images to texts	1.64%	0.00%	0.74%
From video to text	0.00%	2.67%	1.47%
From text to music	1.64%	1.33%	1.47%
Music editing	3.28%	4.00%	3.68%

Source: developed by authors.

Table 1.1 reveals a high valuation of tools that facilitate communication and access to information in different languages, with conversational AI and translation tools standing out in particular, with 75% and 73.53% total usage, respectively.

On the other hand, certain AI tools show very low adoption, such as AI that transforms text into scientific reasoning and the conversion of text to 3D, with only 1.47% and 0.74% usage, respectively. This could indicate a perception of lesser practical relevance or a lack of knowledge about these applications among teachers. However, there is moderate interest in creative and productivity applications, such as literary writing, extracting infor-

mation from documents, and artistic creation from texts, underscoring the potential seen in AI to facilitate creative tasks and information management.

Regarding gender distribution, participation in the use of AI tools shows variability between men and women, with areas of significant disparity suggesting unequal preference or access. For example, in artistic creation from texts, a higher male participation was observed. Moreover, certain tools were not used by the surveyed women. Despite these differences, in applications such as conversational AI, nearly equal participation between genders was noted, indicating areas of inclusion and equity in the use of these technologies.

This analysis reflects a complex panorama of how AI tools are being integrated into the educational field, with clear preferences towards applications that support communication and access to information, while identifying opportunity areas to increase awareness and training in less used AI tools. The gender distribution in the adoption of these tools also underscores the need to investigate and address the barriers that limit equitable participation in the use of AI.

When teachers were asked about the specific AI training they had received, the data revealed a concerning scenario. The percentage distribution of the training received is presented below (Table 1.2).

Table 1.2. Training received

Training received	Women	Men	Total
No, I have not received	70.49%	77.33%	74.26%
Yes, quite a bit	4.92%	1.33%	2.94%
Yes, but insufficient	24.59%	21.33%	22.79%

Source: developed by authors.

As is evident from the data, a substantial majority of educators, comprising 70.49% of women and 77.33% of men, had not received any form of AI training. This disparity underscores a notable deficiency in the preparation required for effective AI integration within educational contexts.

Conversely, a minority of faculty members, representing 4.92% of women and 1.33% of men, reported having received

extensive AI training. However, despite this, the overall percentage of educators equipped with comprehensive training remains strikingly low, standing at merely 2.94%.

Moreover, a significant segment of the teaching cohort, encompassing 24.59% of women and 21.33% of men, admits to receiving some level of AI training but deems it insufficient. This underscores the urgent imperative for educational institutions to enhance existing AI training initiatives, ensuring that educators are adequately equipped with the requisite skills for proficient AI integration into their teaching methodologies.

Ethical challenges

The analysis of faculty responses regarding the risks associated with AI education highlights a diversity of concerns. The following table provides a detailed breakdown of these perceived risks, highlighting notable differences in the perspectives of men and women (Table 1.3).

Table 1.3. Risk of AI education

Type of risk	Women	Men	Total
Displacement of teachers	3.28%	9.33%	6.62%
Plagiarism	29.51%	44.00%	37.50%
Overuse of technology	14.75%	2.67%	8.09%
Access to technology gap	27.87%	32.00%	30.15%
Algorithmic discrimination	16.39%	14.67%	15.44%
Digital skills gap to use AI	32.79%	20.00%	25.74%
Excessive dependence on technology	32.79%	42.67%	38.24%
Lack of transparency of its decisions	11.48%	29.33%	21.32%
Loss of important skills	45.90%	46.67%	46.32%
Privacy and data security	31.15%	28.00%	29.41%
Biases	29.51%	28.00%	28.68%
I do not perceive medium-term risks	1.64%	0.00%	0.74%

Source: developed by authors.

Table 1.3 shows that plagiarism is considered one of the main risks by the faculty members, with 37.5% of respondents indicating this concern. This percentage demonstrates the perception that AI tools can facilitate dishonest practices. The loss of critical skills (46.32%) and the excessive dependence on technology (38.24%) are also worrying aspects, but in terms of academic integrity, it is plagiarism that stands out as a particularly relevant challenge.

Addressing this concern involves developing strategies for the detection and sanctioning of plagiarism, but also preventive measures. This includes integrating ethical principles into the educational curriculum, promoting a deep understanding of intellectual property, and cultivating critical skills that allow students and faculty members to evaluate and create content responsibly and originally.

Moreover, the response requires multidisciplinary collaboration, involving technologists, educators, and legislators, to create a framework that not only addresses the consequences of plagiarism but also fosters a culture of honesty and respect for intellectual property. This joint effort can include the development of more sophisticated plagiarism detection technologies, the implementation of educational policies that emphasize originality and ethics in academic work, and the creation of training programs for teachers and students on the ethical use of AI.

In the inquiry regarding the advantages that artificial intelligence contributes to the academic assignment preparation process, the faculty's responses exhibit a complex and varied perspective, as detailed in Table 1.4.

Table 1.4. Benefits of AI for completing assignments

Response	Men	Women	Total
Depends on the type of work	88.52%	61.33%	73.53%
Not sure	1.64%	10.67%	6.62%
No, never	16.39%	5.33%	10.29%
Yes, always	16.39%	4.00%	9.56%

Source: developed by authors.

The responses reveal that a majority of teachers, 88.52% of men and 61.33% of women, agree that the effectiveness of AI in education is contingent on the specific type of academic task. This stance suggests a careful valuation of the technology, emphasizing the importance of applying it in a way that aligns with specific pedagogical objectives.

A significant difference was detected regarding uncertainty about the benefits of AI, with 10.67% of women showing indecision, in contrast to only 1.64% of men. On the other hand, a higher percentage of men (16.39%) expressed a negative stance towards the incorporation of AI in academic tasks, compared with 5.33% of women. The unconditional acceptance of AI as a pedagogical tool turns out to be less common, with small fractions of both genders (16.39% of men and 4.00% of women).

This spectrum of responses underscores the predominance of an attitude that considers the specific context in the application of AI in academia, while revealing significant variations in the level of certainty and openness towards the technology between men and women. Collectively, these findings reinforce the need for a reflective and adaptive approach towards the integration of AI in the educational realm, promoting a balance between innovative possibilities and ethical and pedagogical considerations.

To the question of whether AI for academic work can encourage plagiarism, the responses offer an insightful view into the ethical and practical implications of this technology in the field of education (Table 1.5).

Table 1.5. Perceptions on AI and the promotion of plagiarism in academic works

	Women	Men	Total
I'm not sure.	8.20%	2.67%	5.15%
No, I don't think it encourages plagiarism.	3.28%	2.67%	2.94%
Yes, definitely.	45.90%	48.00%	47.06%
Maybe, depends on the type of work.	42.62%	46.67%	44.85%

Source: developed by authors.

The data show that a significant majority of the surveyed participants believe that the use of AI in academic work can encour-

age plagiarism, either definitively (47.06%) or depending on the type of work (44.85%). A smaller number of educators are not sure or do not believe that AI encourages plagiarism in academic work.

This concern reflects an awareness of the possible ethical and practical implications of using AI in education, particularly in relation to plagiarism. These responses suggest the need for clear guidelines, education on the ethical use of AI, and effective tools to detect and prevent plagiarism in the academic context. The ambivalence or uncertainty of some educators also underlines the importance of further discussion and training on the issue.

A pertinent issue examined was how often faculty members encounter plagiarism in student assignments. When questioned on this matter, we received a wide array of responses, which are documented in Table 1.6:

Table 1.6. Detection of plagiarism cases in student assignment

Responses	Women	Men	Total
I have suspected it in some cases, but could not confirm.	16.39%	8.00%	11.76%
No, I have never detected plagiarism.	8.20%	6.67%	7.35%
Yes, at some point.	45.90%	54.67%	50.74%
Yes, although very few times.	1.64%	6.67%	4.41%
Yes, on many occasions.	27.87%	24.00%	25.74%

Source: developed by authors.

The analysis of the data reflects that plagiarism is a situation that educators face frequently face. A total of 50.74% of the respondents had identified cases of plagiarism at least once, and 25.74% indicated having detected it many times. The existence of suspected plagiarism that could not be confirmed suggests a gap in the tools or methods available for effective detection and verification of plagiarism.

The diversity in the detection and management of plagiarism points to the need to strengthen training in this area, ensuring that educators are better prepared to identify and address these situations appropriately, thus contributing to the preservation of academic integrity.

Prevention and detection strategies

Upon inquiring about the strategies implemented to deter plagiarism in student assignments, the responses indicated a diverse range of preventive measures, as outlined in Table 1.7.

Table 1.7. Measures employed to prevent plagiarism

Strategy	Men	Women	Total
I inform about the effects of dishonest practices.	76.00%	76.67%	76.30%
I use anti-plagiarism tools for most of the assignments.	8.00%	6.67%	7.41%
I use anti-plagiarism tools only for dissertations I supervise (FYP and FMP).	36.00%	33.33%	34.81%
I am able to detect it without the need for anti-plagiarism tools.	2.67%	3.33%	2.96%
I do nothing.	2.67%	3.33%	2.96%

Source: developed by authors.

Table 1.7 reveals a multifaceted and holistic approach in the fight against this practice. Since respondents could select multiple options, the data reflect a combination of strategies used by educators. The most notable option, chosen by approximately 76% of participants, is to inform about the effects of dishonest practices. This high selection underscores the importance that educators place on education and ethical awareness as key tools in preventing plagiarism.

Despite the possibility of choosing multiple answers, the use of anti-plagiarism tools in a generalized manner for all types of work is notably lower, with around 7.41% of respondents indicating their use in most of the assignments and approximately 34.81% in final degree or master's projects. This suggests that, while technological tools are valued, they are possibly not seen as the only or main line of defense. The preference for educational approaches and personal assessment before resorting to technological solutions becomes evident.

Furthermore, a smaller percentage of educators, around 3%, trust their ability to detect plagiarism without the assistance of tools, which, although low, becomes significant in the context of multiple responses. This could be interpreted as a backup approach that complements other measures taken.

The fact that only a minority admit to not taking specific measures against plagiarism is somewhat concerning. This indicates that the majority of educators are actively involved and concerned about preventing plagiarism.

In summary, the results reflect a general preference for a diversified approach in plagiarism prevention, where education and awareness hold a central place, complemented by the selective use of technological tools and trust in personal judgment. This multidimensional approach is indicative of the complexity of the plagiarism problem and the need for a comprehensive approach to combat it effectively.

When inquired about their capability to identify and mitigate plagiarism, the responses unveiled a varied spectrum of confidence and readiness within the academic personnel (Table 1.8).

Table 1.8. Preparation for detecting AI usage

Level of preparedness	Women	Men	Total
1. Not prepared at all	27.87%	16.00%	21.32%
2. Slightly prepared	31.15%	33.33%	32.35%
3. Partially prepared	22.95%	36.00%	30.15%
4. Prepared	16.39%	10.67%	13.24%
5. Fully prepared	1.64%	4.00%	2.94%

Source: developed by authors.

In aggregate terms, an inclination towards moderate to low levels of preparation is evident, with the majority of participants classifying themselves in the areas of "slightly prepared" (32.35%) and "partially prepared" (30.15%). A noteworthy observation arises from the marked minority of respondents who classify themselves as "fully prepared" (2.94%), indicating a possible inadequacy of resources, knowledge or confidence in relation to competently identifying and managing applications of AI.

When disaggregating the data by gender, noticeable disparities emerged. Women tend to exhibit lower levels of preparedness compared to men: 27.87% identify as "not at all prepared," in contrast to 16.00% of men within the same category. On the contrary, men show a greater propensity to feel "partially prepared", representing 36.00% compared to 22.95% among women. These delin-

eations may connote different perceptions of personal competence or disparate levels of exposure to AI technologies between genders.

Furthermore, at the top of the preparedness continuum, the proportion of men who perceive themselves as "fully prepared" is almost triple that of women (4.00% versus 1.64%), suggesting a dichotomy based on gender in the perception of comprehensive competence regarding AI detection. However, it is worth noting that both genders present relatively modest percentages within this category, underscoring a widespread opportunity to increase educational and training efforts in the field of AI.

This analysis highlights the imperative requirement to strengthen teachers' competencies in relation to the expert use of advanced technological tools and pedagogical methodologies for the competent detection of plagiarism.

1.4. Conclusion

The study highlights the critical importance of developing specific training programs for educators. These programs should adequately prepare them to face the challenges associated with the use of AI and plagiarism prevention. Training should address not only the technical skills necessary to effectively use AI tools, but also foster a deep understanding of the ethical implications of their use in educational contexts. The approach must be holistic, considering the impact on the most vulnerable groups and the possibility that AI technology, especially generative AI, could undermine the authority of educators and promote greater automation of education, which could lead to scenarios in which personalized teaching and learning are compromised.

Stefania Giannini (2023) emphasizes the need to remain vigilant to these powerful technologies to avoid unintended consequences, such as the depersonalization of education and the exacerbation of inequalities. Teacher training is essential not only to equip them with the tools to detect and prevent plagiarism, but also to ensure that they can guide students towards the ethical and responsible use of AI, thus promoting academic integrity and originality in the academic work.

This position underscores the need for a collaborative effort among technologists, educators, and policymakers to create an

educational environment that respects and promotes academic integrity while harnessing the benefits of AI to enrich the learning experience.

Study limitations

Methodologically, by employing an open invitation without stratified restrictions to select university faculty from different disciplines and universities in Spain, the study might face a bias in the representativeness of the sample. This means that the results obtained may not adequately reflect the diversity of opinions and perceptions among university faculty at a national level, limiting the generalization of the findings to the entire target population. However, we consider it can offer useful results to focus on the topic and guide future studies where more specific and controlled sampling methods are applied, which can ensure a more equitable and diverse representation of the faculty.

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