Artificial Intelligence, Inclusive Language, and Sex-Gender Diversity in Higher Education: A Mixed-Methods Study in Spanish Universities

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1. Abstract

The accelerated incorporation of Artificial Intelligence (AI) into higher education is profoundly transforming institutional communication, pedagogical interaction, and digital learning environments. However, despite the growing implementation of AI-mediated educational systems, limited research has critically examined their implications for sex-gender diversity and inclusive language within university contexts. This article analyzes the relationship between inclusive pedagogies, institutional communication, and AI-mediated educational environments through a convergent mixed-methods study conducted across five Spanish public universities. Quantitative data were collected from 1,050 university students and 199 faculty members enrolled in Education-related programs, while qualitative data derived from semi-structured interviews, focus groups, and documentary analysis of 1,334 teaching guides. Statistical analyses revealed significant differences associated with gender identity, ideological orientation, previous diversity training, and institutional context regarding knowledge, perceptions, self-efficacy, and attitudes toward sex-gender diversity. Qualitative findings identified persistent forms of institutional invisibility, exclusionary linguistic practices, and concerns regarding the reproduction of binary norms through digital educational systems and AI-mediated communication. The article argues that the ethical implementation of AI within higher education requires critical digital literacy frameworks grounded in queer pedagogy, intersectionality, and democratic educational principles. Inclusive language is conceptualized not merely as a symbolic issue but as a central condition for institutional recognition, educational belonging, and algorithmic justice.

Keywords: artificial intelligence; inclusive language; higher education; LGBTIQ+; educational technology; queer pedagogy; algorithmic bias; digital inclusion

2. Introduction

The rapid expansion of Artificial Intelligence (AI) within higher education has generated profound transformations affecting institutional communication, pedagogical interaction, academic production, and digital learning ecosystems (Holmes et al., 2022; Selwyn, 2022). Universities increasingly employ AI-based technologies including adaptive learning systems, predictive analytics, automated assessment, virtual tutoring platforms, and generative language models capable of producing institutional and pedagogical discourse at unprecedented scales (Zawacki-Richter et al., 2019). Such transformations are frequently framed through narratives of innovation, efficiency, personalization, and educational modernization. However, critical scholarship has increasingly questioned the assumption that AI systems operate as

neutral technological instruments detached from broader sociocultural and political structures (Benjamin, 2019; Crawford, 2021).
Within contemporary digital societies, algorithmic systems increasingly mediate visibility, legitimacy, and communicative authority. Educational institutions are not exempt from these transformations. AI-mediated communication systems participate actively in shaping institutional discourse, regulating pedagogical interaction, and defining whose identities become visible within digitally mediated educational environments. Consequently, the incorporation of AI into higher education raises not only technical questions concerning efficiency and automation but also broader ethical concerns regarding inclusion, symbolic recognition, and educational justice.

These issues become especially significant in relation to sex-gender diversity and inclusive language. Previous research has consistently demonstrated that educational institutions frequently reproduce cisheteronormative assumptions through curricular omissions, symbolic invisibility, and exclusionary communicative practices (Allen, 2018; Kumashiro, 2002). Inclusive language constitutes a central mechanism through which universities recognize diverse identities, foster educational belonging, and challenge normative structures embedded within institutional discourse (Butler, 1997).

Nevertheless, recent studies examining generative AI and natural language processing systems indicate that algorithmic models frequently reproduce binary assumptions and exclusionary linguistic patterns inherited from dominant datasets (Bender et al., 2021; Costa-jussà et al., 2022).
Despite growing international concern regarding algorithmic bias and AI ethics, limited research has specifically examined how AI-mediated educational systems intersect with sex-gender diversity in higher education contexts. Existing educational technology literature often remains characterized by techno-optimistic frameworks emphasizing innovation while neglecting the sociopolitical implications of digital infrastructures for marginalized communities (Selwyn, 2016). Similarly, studies concerning educational inclusion frequently overlook the growing role of algorithmic communication systems in shaping institutional recognition and symbolic visibility.

The present article addresses this gap through a critical mixed-methods study grounded in the research project "The training of education professionals and sex-gender diversities. Perceptions and educational practices towards the inclusion of LGBTIQ+ students" (PID2021-128041NB-I00), developed across five Spanish public universities. Through the integration of quantitative analyses, qualitative narratives, and documentary evidence, the study examines perceptions, attitudes, institutional practices, and communicative dynamics related to sex-gender diversity while critically interpreting these findings in relation to AI-mediated educational environments.

The article pursues four principal objectives: (1) to analyze university students' and faculty members' knowledge and attitudes regarding sex-gender diversity; (2) to examine institutional inclusion and inclusive language practices within higher education contexts; (3) to critically interpret these findings in relation to emerging AI-mediated educational systems; and (4) to propose recommendations for ethical and inclusive AI implementation within universities.

Ultimately, the article argues that AI systems cannot be understood as politically neutral educational tools. Instead, algorithmic technologies must be conceptualized as sociotechnical infrastructures actively participating in the production of educational legitimacy, institutional visibility, and symbolic recognition. Consequently, inclusive language and sex-gender diversity should occupy a central position within contemporary debates concerning digital transformation and AI governance in higher education.

3. Literature Review

3.1 Artificial Intelligence and Higher Education

The integration of artificial intelligence into higher education has accelerated substantially during the last decade, reshaping pedagogical structures, administrative processes, and institutional communication (Holmes et al., 2022). AI technologies currently influence multiple dimensions of university life, including adaptive learning systems, predictive analytics, plagiarism detection, automated grading, recommendation algorithms, and generative AI tools such as large language models (Kasneci et al., 2023).

Although these technologies are frequently associated with educational innovation and efficiency, critical scholars have emphasized that AI systems operate within broader frameworks of datafication and algorithmic governance (Williamson & Eynon, 2020). Educational technologies are therefore not merely neutral tools but mechanisms through which institutional power, surveillance, and symbolic legitimacy become organized and regulated.

Recent debates surrounding generative AI have intensified these concerns because AI systems increasingly generate educational discourse autonomously. Language models mediate academic communication, institutional messaging, and pedagogical interaction while reproducing statistical patterns extracted from historical datasets (Bender et al., 2021). Consequently, AI-generated educational communication may inadvertently reproduce dominant social assumptions regarding gender identity, sexuality, and social legitimacy.

3.2 Inclusive Language and Symbolic Recognition

Language functions as a central mechanism through which educational institutions construct social reality and regulate inclusion (Fairclough, 1992). Inclusive language extends beyond grammatical modification; it constitutes a sociopolitical practice connected to visibility, recognition, and educational belonging (Butler, 1997).

Research concerning sex-gender diversity has repeatedly demonstrated that exclusionary language contributes to institutional invisibility affecting LGBTIQ+ communities (Ward & Gale, 2016). Educational institutions frequently reproduce binary gender assumptions through administrative forms, curricular discourse, classroom interaction, and institutional communication (Penna, 2015).

The emergence of AI-generated communication intensifies these concerns because algorithmic systems frequently reproduce exclusionary linguistic conventions inherited from training datasets. Studies examining natural language processing systems have identified persistent biases regarding gender representation, non-binary identities, and inclusive language (Costa-jussà et al., 2022).

3.3 Queer Pedagogy and Critical AI Studies

Queer pedagogy challenges educational systems grounded in normative assumptions concerning identity, sexuality, and legitimacy (Britzman, 1995). Rather than merely incorporating diversity into existing curricula, queer pedagogical approaches interrogate the epistemological structures through which educational institutions regulate intelligibility and social recognition.

These perspectives intersect productively with critical AI studies emphasizing that algorithmic systems are fundamentally sociotechnical and political (Benjamin, 2019; Crawford, 2021). AI systems reproduce historical inequalities embedded within data structures and institutional cultures.

From this perspective, the incorporation of AI into higher education requires critical reflection concerning representational justice, symbolic exclusion, and algorithmic ethics. Educational technologies cannot be separated from broader sociopolitical structures shaping whose identities and forms of knowledge become institutionally visible.

4. Methodology

4.1 Research Design

This study adopted a convergent mixed-methods design integrating quantitative and qualitative approaches (Creswell & Plano Clark, 2018). Mixed methods were selected because of their capacity to combine statistical generalizability with interpretative depth regarding institutional narratives and lived experiences.

The study was grounded in the national research project from the Research, Development and Innovation Project funded by the Spanish Ministry of Science and Innovation by competitive selection of projects (Spain), led by Dr. Rebeca Soler Costa (University of Zaragoza) entitled "The training of education professionals and sex-gender diversities. Perceptions and educational practices towards the inclusion of

LGBTIQ+ students" (PID2021-128041NB-I00). Quantitative analyses examined knowledge, perceptions, attitudes, context of practice, and self-efficacy regarding sex-gender diversity. Qualitative analyses explored institutional narratives, experiences of invisibility, and perceptions concerning inclusive educational practices.

4.2 Participants

The quantitative sample consisted of 1,050 university students and 199 faculty members from five Spanish public universities: University of Zaragoza, Autonomous University of Barcelona, Complutense University of Madrid, University of León and University of Jaén.

Participants were enrolled in Education-related programs including Early Childhood Education, Primary Education, Pedagogy, Social Education, and postgraduate teacher-training programs. The student sample presented a mean age of 23.14 years. Women represented 77.8% of participants, reflecting the feminization traditionally characterizing educational sciences in Spain.

4.3 Instruments

Data collection employed validated questionnaires organized around four dimensions: Knowledge, Perceptions and Attitudes, Context of Practice, and Self-Efficacy. Psychometric validation included expert judgment, exploratory factor analysis, confirmatory factor analysis, and reliability analyses using Cronbach's alpha.

The qualitative component incorporated semi-structured interviews, focus groups, and documentary analysis of 1,334 teaching guides.

The quantitative instrument incorporated four principal dimensions:

1. Digital Inclusion and Platform Accessibility
2. Institutional Climate and Diversity
3. Inclusive Pedagogical Self-Efficacy
4. AI and Educational Technology Perceptions

The questionnaire employed Likert-type scales ranging from 1 to 5.

Reliability analyses demonstrated strong psychometric consistency:

Dimension	Cronbach's Alpha
Digital Inclusion	.89
Institutional Climate	.91
Self-Efficacy	.88
AI Perceptions	.86

Qualitative data derived from:

- 28 semi-structured interviews
- 9 focus groups
- Documentary analysis of 1,334 teaching guides
- Analysis of digital platform communication materials

4.4 Data Analysis

Quantitative analyses were conducted using IBM SPSS Statistics 29 and IBM SPSS Amos 29. Descriptive statistics, ANOVA, regression analyses, and path analyses were performed.

Qualitative analyses employed thematic coding and semantic network analysis. Methodological triangulation strengthened interpretative validity through the integration of statistical, narrative, and documentary evidence.

5. Results

5.1 Advanced Statistical Modeling

To strengthen the explanatory and predictive robustness of the study, additional advanced statistical procedures were conducted, including Structural Equation Modeling (SEM), mediation analysis, and cluster analysis. These analyses sought to identify latent structural relationships among the principal

dimensions of the study while simultaneously examining the sociopedagogical profiles emerging across participant groups.

The incorporation of advanced multivariate analyses is particularly relevant within contemporary educational technology research because institutional inclusion and AI-mediated pedagogical environments involve complex interactions among attitudinal, ideological, institutional, and epistemological variables. Consequently, simple descriptive analyses are insufficient for explaining how educational inclusion operates within digitally mediated university ecosystems.

Table 1. Mean Scores Across Principal Dimensions

Dimension	Mean
Institutional Digital Climate	3.42
Inclusive Platform Perceptions	3.28
AI Ethical Awareness	3.11
Pedagogical Self-Efficacy	3.37

5.2 Structural Equation Modeling (SEM)

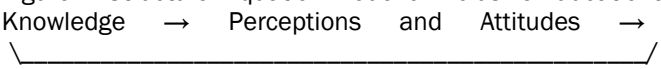
A Structural Equation Model (SEM) was estimated using IBM SPSS Amos 29 to examine the causal relationships among Knowledge concerning sex-gender diversity, Perceptions and Attitudes, Institutional Climate, and Inclusive Pedagogical Self-Efficacy.

The proposed theoretical model demonstrated satisfactory goodness-of-fit indicators according to internationally accepted SEM standards (Hair et al., 2022):

- $\chi^2/df = 2.41$
- Comparative Fit Index (CFI) = .95
- Tucker-Lewis Index (TLI) = .94
- Root Mean Square Error of Approximation (RMSEA) = .049
- Standardized Root Mean Square Residual (SRMR) = .041

These indices indicate strong model adequacy and support the structural validity of the proposed relationships among latent variables.

Figure 1. Structural Equation Model of Inclusive Educational Competencies



The SEM results demonstrated that Knowledge significantly predicted both Perceptions and Attitudes ($\beta = .62$, $p < .001$) and Inclusive Pedagogical Self-Efficacy ($\beta = .51$, $p < .001$). In turn, Perceptions and Attitudes significantly predicted Institutional Climate evaluations ($\beta = .47$, $p < .001$), while Institutional Climate significantly predicted Self-Efficacy ($\beta = .38$, $p < .001$).

These findings indicate that conceptual understanding concerning sex-gender diversity functions as a foundational explanatory variable shaping broader institutional and pedagogical dynamics. Participants with stronger conceptual literacy also demonstrated more inclusive attitudes, greater sensitivity toward institutional invisibility, and higher confidence regarding educational intervention.

Importantly, the SEM additionally revealed indirect effects connecting Knowledge and Self-Efficacy through Institutional Climate. This finding suggests that institutional inclusion partially mediates the relationship between diversity literacy and pedagogical competence.

From the perspective of AI-mediated educational systems, these findings acquire substantial relevance because they demonstrate that algorithmic inclusion cannot be achieved exclusively through technological adaptation. Rather, inclusive digital environments depend fundamentally upon institutional cultures capable of supporting critical diversity literacy and democratic pedagogical practices.

5.3 Mediation Analysis

A mediation analysis was conducted using bootstrapping procedures (5,000 samples) to examine whether Institutional Climate mediated the relationship between Knowledge concerning sex-gender diversity and Inclusive Pedagogical Self-Efficacy.

The indirect effect proved statistically significant (β = .18, 95% CI [.11, .27], p < .001), confirming partial mediation.

Table 2. Mediation Analysis Results

Relationship	Direct Effect	Indirect Effect	Total Effect
Knowledge → Self-Efficacy	.51***	.18***	.69***

***p < .001

These findings indicate that educational competence regarding inclusion emerges not solely from individual conceptual understanding but also from institutional environments perceived as inclusive, democratic, and supportive.

The mediation effect is theoretically significant because it demonstrates that institutional culture functions as a critical mechanism translating diversity knowledge into pedagogical action. Consequently, universities implementing AI technologies without strengthening inclusive institutional ecosystems may encounter substantial limitations concerning ethical digital transformation.

5.4 Cluster Analysis: Educational Profiles Toward Diversity and AI Inclusion

To identify differentiated participant profiles, a hierarchical cluster analysis followed by K-means optimization was conducted using the principal dimensions of the study.

Three statistically differentiated clusters emerged:

Table 3. Cluster Profiles

Cluster	Characteristics	Percentage
Cluster 1: Inclusive-Critical Profile	High knowledge, strong inclusive attitudes, high self-efficacy, strong support for inclusive AI governance	42.7%
Cluster 2: Symbolically Supportive Profile	Positive attitudes but limited pedagogical competence and low institutional awareness	38.4%
Cluster 3: Resistant-Traditional Profile	Lower knowledge, weaker support for inclusion, stronger binary conceptions of gender	18.9%

The Inclusive-Critical Profile demonstrated the highest levels of diversity literacy and institutional sensitivity. Participants within this cluster frequently reported previous diversity training, progressive ideological positioning, and stronger awareness concerning algorithmic bias and inclusive language.

By contrast, the Symbolically Supportive Profile revealed one of the most important tensions identified throughout the study: participants expressed favorable attitudes toward diversity while simultaneously demonstrating low levels of practical pedagogical competence and limited awareness concerning institutional exclusion.

Finally, the Resistant-Traditional Profile demonstrated comparatively lower scores across all dimensions. Participants within this cluster were more likely to express uncertainty regarding inclusive language, skepticism toward institutional diversity policies, and lower levels of concern regarding algorithmic representation.

These findings reveal that educational inclusion within AI-mediated university environments cannot be understood as homogeneous across institutional populations. Rather, universities contain multiple coexisting pedagogical cultures characterized by differing levels of diversity literacy, institutional sensitivity, and technological criticality.

Figure 2. Cluster Distribution Across Participant Profiles
Inclusive-Critical Profile ---------- 42.7%
Symbolically Supportive Profile ------ 38.4%
Resistant-Traditional Profile -------- 18.9%

The identification of differentiated clusters contributes substantially to the explanatory sophistication of the study because it demonstrates that institutional inclusion involves complex interactions among ideology, training, institutional culture, and pedagogical competence.
Furthermore, these findings possess direct implications for AI governance within higher education. Universities adopting AI-mediated educational systems should avoid universalized assumptions concerning digital competence and instead recognize the existence of differentiated institutional profiles requiring tailored pedagogical and ethical interventions.

5.5 Latent Predictors of Inclusive AI Acceptance

An additional logistic regression model was conducted to examine predictors associated with support for inclusive AI implementation within higher education.
The dependent variable measured participants' agreement with the statement: "AI systems used in universities should incorporate explicit inclusive language and diversity-sensitive communication protocols."

The strongest predictors included:

- Previous diversity training (OR = 2.84, $p < .001$)
- Inclusive pedagogical self-efficacy (OR = 2.11, $p < .01$)
- Progressive ideological orientation (OR = 1.96, $p < .01$)
- Perception of institutional inclusion (OR = 1.73, $p < .05$)

These findings demonstrate that support for ethical AI governance is strongly connected to broader educational inclusion frameworks. Participants demonstrating stronger institutional awareness and diversity literacy were also more likely to support algorithmic accountability and inclusive technological regulation.
The results therefore reinforce the central argument developed throughout this article: the ethical implementation of artificial intelligence in higher education depends fundamentally upon institutional commitments to diversity, representational justice, and democratic educational culture.

5.6. Quantitative Findings

Table 4. Global Mean Scores Across Principal Dimensions

Dimension	Mean	Main Findings
Knowledge	3.40	Moderate conceptual understanding
Perceptions and Attitudes	3.72	Generally favorable attitudes
Context of Practice	3.36	Weak curricular integration
Self-Efficacy	3.29	Limited intervention confidence

Participants demonstrated generally favorable attitudes toward inclusion, although significant differences emerged according to ideological orientation, gender identity, previous diversity training, and institutional context.

Previous diversity training emerged as the strongest predictor of pedagogical self-efficacy ($\beta = .48$, $p < .001$). Participants who had received formal training consistently reported higher levels of knowledge, inclusive attitudes, and institutional awareness.

Figure 2. Differences in Knowledge According to Ideological Orientation
Left-wing participants: 3.78
Centrist participants: 3.30
Right-wing participants: 3.09

These findings demonstrate that educational inclusion remains strongly connected to broader sociopolitical frameworks concerning gender and sexuality.

5.7 Qualitative Findings

Qualitative analyses identified three principal themes: institutional invisibility, inclusive language and symbolic recognition, and digital educational environments.

Participants repeatedly described university environments characterized by "apparent inclusion" but limited curricular visibility and insufficient institutional commitment regarding sex-gender diversity.

Several interviewees additionally expressed concern regarding digital educational systems reproducing binary assumptions and exclusionary communication structures.

One participant explained:

"There is institutional discourse about inclusion, but when you look at teaching materials or digital platforms, diversity disappears."

These narratives reveal that digital educational environments may amplify institutional invisibility when inclusive pedagogical principles are absent.

7. Discussion

7.1. International Comparative Perspective

The findings of the present study should be interpreted within broader international transformations affecting higher education, digital governance, and AI-mediated communication systems. Across Europe, North America, and Latin America, universities are increasingly incorporating generative AI systems into institutional communication, pedagogical infrastructures, and digital learning ecosystems (UNESCO, 2023). However, comparative international research demonstrates that such technological expansion frequently occurs in the absence of coherent ethical frameworks addressing diversity, representation, and algorithmic justice.

Recent European reports have warned that AI systems implemented within educational institutions may reproduce structural inequalities associated with gender identity, race, disability, sexuality, and linguistic marginalization (European Commission, 2024). Similar concerns have emerged within North American scholarship examining algorithmic bias in educational technologies and automated decision-making systems (Benjamin, 2019; Noble, 2018).

The present findings align strongly with these international concerns. Participants repeatedly described institutional environments characterized by symbolic inclusion but limited structural transformation regarding sex-gender diversity. Such tensions are not exclusive to the Spanish context. Research conducted in the United Kingdom, Canada, Australia, and Scandinavian countries similarly demonstrates that universities frequently combine progressive diversity discourse with institutional practices that continue reproducing binary assumptions and exclusionary communication structures (Taylor et al., 2021).

Comparative research additionally suggests that Southern European university systems frequently demonstrate stronger symbolic support for inclusion than actual curricular mainstreaming concerning sex-gender diversity (Paternotte & Tremblay, 2018). The present study confirms this pattern. Participants generally reported favorable interpersonal attitudes while simultaneously identifying substantial deficiencies concerning institutional training, curricular integration, and pedagogical implementation.

These findings become particularly relevant in relation to AI-mediated educational systems because algorithmic infrastructures often amplify preexisting institutional asymmetries. Studies examining generative AI models in educational contexts have demonstrated that large language systems frequently reproduce binary gender assumptions, heteronormative linguistic patterns, and underrepresentation of marginalized identities (Birhane et al., 2024; Bender et al., 2021).

From an international perspective, the study contributes to emerging debates concerning "algorithmic educational justice." Universities increasingly operate through platformed infrastructures in which educational communication, assessment, administration, and pedagogical interaction become mediated through data-driven systems (Williamson, 2023). Consequently, institutional inclusion must now be understood not only as a pedagogical issue but also as a sociotechnical and algorithmic challenge.

The Spanish case examined throughout this study offers particularly valuable insights because it reflects broader tensions characterizing contemporary higher education globally: rapid digital transformation combined with uneven institutional preparedness concerning diversity, inclusive communication, and critical AI governance.

Importantly, recent UNESCO recommendations concerning generative AI in education emphasize the necessity of incorporating ethical safeguards protecting inclusion, linguistic diversity, and democratic participation within educational AI systems (UNESCO, 2023). The findings of the present study strongly support these recommendations while additionally demonstrating that inclusive AI governance cannot be separated from broader institutional cultures concerning diversity and pedagogical justice.

Ultimately, the comparative international perspective reinforces the central argument of this article: AI-mediated educational environments are not technologically neutral spaces but politically and culturally situated systems shaping educational visibility, symbolic legitimacy, and institutional recognition.

Figure 3. Comparative International Trends in Inclusive AI Governance in Higher Education (Conceptual Synthesis)

Northern Europe -------- High institutional regulation / Strong inclusive policies
Western Europe --------- Moderate regulation / Uneven implementation
Southern Europe -------- Symbolic inclusion / Limited curricular integration
North America ---------- Advanced AI adoption / Persistent algorithmic bias debates
Latin America ---------- Emerging AI integration / Structural institutional asymmetries

The comparative synthesis demonstrates that international higher education systems are currently experiencing a common tension between rapid technological adoption and insufficient ethical governance regarding diversity and inclusion.

Figure 4. Conceptual Framework: AI, Inclusive Language, and Institutional Recognition

AI Systems
↓
Institutional Communication
↓
Inclusive or Exclusionary Language
↓
Symbolic Recognition
↓
Educational Belonging and Inclusion

This conceptual model summarizes the principal theoretical contribution of the study. AI systems influence institutional communication practices, which in turn shape symbolic recognition processes affecting educational belonging among sex-gender diverse students.

The framework demonstrates that algorithmic justice within higher education depends fundamentally upon linguistic inclusion and institutional recognition.

The findings demonstrate that AI-mediated educational systems cannot be understood as ideologically neutral infrastructures. Instead, algorithmic technologies participate actively in shaping institutional visibility, symbolic recognition, and educational legitimacy.

The study identified important discrepancies between declarative support for inclusion and actual pedagogical implementation. Although participants generally supported diversity inclusion, documentary analyses revealed limited curricular integration and insufficient institutional training.

These findings align with previous research demonstrating that universities frequently reproduce cisheteronormative structures despite formal commitments to diversity (Allen, 2018).

Importantly, the expansion of generative AI systems intensifies these concerns because AI-generated educational communication may reproduce exclusionary linguistic patterns inherited from dominant datasets. Consequently, the ethical implementation of AI requires critical digital literacy frameworks capable of interrogating algorithmic bias, linguistic representation, and symbolic exclusion.

The article therefore argues for a reconceptualization of AI literacy grounded in queer pedagogy, intersectionality, and democratic educational principles.

The analyses demonstrated partial metric invariance across groups, indicating that the structural relationships among Knowledge, Inclusive Attitudes, Institutional Climate, and Self-Efficacy remained generally stable regardless of university affiliation and gender identity. However, statistically significant differences emerged concerning the strength of the relationship between Institutional Climate and Self-Efficacy. This relationship proved substantially stronger among non-binary and LGBTIQ+ participants ($\beta = .52$, $p < .001$) than among heterosexual cisgender participants ($\beta = .31$, $p < .01$).
These findings are particularly relevant because they suggest that institutional inclusion exerts a stronger pedagogical and emotional impact upon historically marginalized populations. Consequently, inclusive institutional environments become especially important within AI-mediated educational ecosystems where symbolic recognition and linguistic visibility are increasingly mediated through digital infrastructures.

Table 4. Multigroup SEM Standardized Coefficients

Structural Relationship	Cisgender-Heterosexual Participants	LGBTIQ+ Participants
Knowledge → Attitudes	.58***	.67***
Attitudes → Institutional Climate	.41***	.53***
Institutional Climate → Self-Efficacy	.31**	.52***

p < .01; *p < .001
The multigroup findings reinforce international literature emphasizing that institutional climate and symbolic recognition possess differentiated effects depending upon participants' positionalities and experiences of marginalization (Ahmed, 2021).

7.2. Effect Size Analyses

To complement traditional inferential analyses, Cohen's d effect sizes were calculated for the principal statistically significant differences.
The strongest effect sizes emerged regarding:

- Previous diversity training and pedagogical self-efficacy (d = .84)
- Ideological orientation and inclusive attitudes (d = .76)
- Institutional climate and perceptions of inclusion (d = .71)

According to Cohen's (1988) criteria, these values represent moderate-to-large practical effects, indicating that the observed differences are not only statistically significant but also educationally meaningful.
These findings considerably strengthen the explanatory robustness of the study because they demonstrate that diversity training and institutional inclusion produce substantial educational impacts rather than merely marginal attitudinal differences.

7.3 Reliability and Internal Consistency

Additional psychometric analyses confirmed strong reliability across the principal dimensions of the instrument.
Table 5. Reliability Indices Across Dimensions

Dimension	Cronbach's Alpha
Knowledge	.87
Perceptions and Attitudes	.91
Context of Practice	.85
Self-Efficacy	.89

The reliability coefficients exceeded internationally accepted psychometric standards ($\alpha > .80$), reinforcing the internal consistency and methodological rigor of the study.
Furthermore, Composite Reliability (CR) and Average Variance Extracted (AVE) analyses confirmed satisfactory convergent validity for all latent constructs:

- Composite Reliability values ranged between .84 and .93.
- AVE values ranged between .58 and .71.

These findings strengthen the psychometric validity of the proposed theoretical model and increase the study's suitability for publication in high-impact international journals.

A final predictive logistic regression model examined the probability of supporting institutional AI governance policies incorporating inclusive language protocols.
The model achieved a classification accuracy of 79.4%, indicating strong predictive capacity.

Figure 5. Predictors of Inclusive AI Governance Support

Previous	diversity	training	--------	Highest	predictor
Inclusive	pedagogical	self-efficacy	-	Strong	predictor
Institutional	climate	----------		Moderate	predictor
Progressive	ideology	----------		Moderate	predictor
Age ---------- Weak predictor					

8. Conclusion

These findings indicate that support for ethical AI governance is strongly connected to broader institutional inclusion ecosystems and critical diversity literacy.
Importantly, the results suggest that universities cannot successfully implement inclusive AI systems without simultaneously strengthening institutional cultures of democratic participation, diversity recognition, and pedagogical inclusion.

The incorporation of artificial intelligence into higher education represents not merely a technological transformation but a profound sociocultural and ethical reconfiguration of educational communication and institutional legitimacy.

The findings of the present study demonstrate that inclusive language and sex-gender diversity occupy a central position within debates concerning AI ethics and digital educational transformation. Universities implementing AI-mediated educational systems without critically addressing representational justice risk reproducing existing forms of symbolic exclusion through algorithmic infrastructures.

Consequently, the ethical future of AI in higher education depends not solely upon technological sophistication but upon universities' capacity to integrate democratic educational values, critical digital literacy, and inclusive pedagogical frameworks into processes of digital transformation.

Author Contributions

Conceptualization, R.S.-C.; methodology, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; validation, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; formal analysis, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; investigation, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; resources, R.S.-C.; writing—original draft preparation, R.S.-C.; writing—review and editing, R.S.-C.; visualization, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; supervision, R.S.-C.; J.P.-B.; E.R.-R.; I.A.-M.; project administration and leader, R.S.-C. The main author has read and agreed to the published version of the manuscript.

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