The Influence Of Artificial Intelligence On Diversity And Inclusion In The School Units

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Abstract:
Background: *Artificial Intelligence (AI) is a powerful tool to promote diversity and participation of all students in education, eliminating barriers related to social, learning and cultural differences. Through adaptive algorithms and personalized learning tools, it can respond to the specific needs of all students, enhancing equal access to knowledge. At the same time, supports the creation of learning processes that strengthen inclusion and encourage collaboration between students from different cultural backgrounds. Its effective implementation requires transparent and fair algorithms, ethical frameworks, to prevent bias and discrimination. With the appropriate support of teachers, it can make a substantial contribution to shaping a fair and inclusive education system.*

Materials and Methods: *This study falls under exploratory research and aims to capture the current situation in the field of Primary and Secondary Education teachers regarding Artificial Intelligence. It was carried out through data collection through an anonymous questionnaire. The questionnaire was sent to all schools in the country through the Directorates of Primary and Secondary Education in Greece in December 2023. The data were collected through the Google Form platform and the statistical processing was done with SPSS v 29 software. The sample of the survey was initially formed by the voluntary participation of N=1736 teachers. A unique aspect of our research was that after demographic information, participants were asked not to proceed with filling out the questionnaire if they answered "Not at all" to question A1: How well do you know what Artificial Intelligence (AI) is? Thus, the first data showed that 51% of participating teachers knew nothing about artificial intelligence, while 49% knew little, much or too much. The follow-up survey was based on participants (49%) who had declared partial or total knowledge of AI. The final sample was formed from 862 participants and the processing of the data was based on it.*

Results: *The findings of this research study show that AI can significantly enhance the educational process, creating synergies between differentiation of teaching, inclusion and adaptation to students' needs. This holistic approach highlights it as a catalyst for improving quality and equity in education. Participants recognize its potential as a valuable ally in learning. May to bring significant changes to the educational process, promoting differentiation of teaching, inclusion and the creation of personalized learning experiences. Despite these possibilities, its implementation comes with significant challenges that cannot be ignored. The need for teacher training, a better understanding of the functionality of its applications and ensuring that it is used in an ethical and fair manner are priorities for maximizing its benefits. Moreover, concerns about bias in algorithms, data management and its potential to reinforce existing social and educational inequalities raise concerns that need to be addressed immediately. Differences in participants' views may reflect the diversity of experiences and levels of access to its technologies, making continuous evaluation and adaptation necessary. Divergent views on its ability to reduce inequalities underline the need for clear regulations and fair policies to ensure its proper implementation. While a part of teachers recognises the potential of AI to reduce inequalities, a significant proportion are concerned about possible negative outcomes, such as reinforcing inequality and cultural discrimination. At the same time, the results highlight that some technologies, such as standardised responses through algorithms, may limit the possibility of personalisation, highlighting the need for adjustments to enhance their effectiveness.*

Conclusion: *Artificial Intelligence (AI) offers excellent prospects for adapting teaching, enhancing inclusion and creating personalized learning experiences, enhancing interculturality and the overall quality of education. Its exploitation requires the development of innovative tools, the strengthening of infrastructures and the formation of ethical frameworks that will reduce inequalities and enhance trust in its use. Although there are challenges, Like concerns about social and ethical implications, it can act as a lever for justice and equity in education. Transparency, fair policies and support for teachers remain central issues for the success of this effort.*

Key Word: *Diversity, Interculturality, Inclusion, Students, Artificial Intelligence, Teachers.*

I.   Introduction

Artificial Intelligence (AI) is one of the most innovative technologies, with profound implications in many areas, including education, where it offers numerous possibilities using intelligent teaching systems tailored to the needs of each student[8]. In addition, it offers solutions for the inclusion of all students[14] and helps improve learning outcomes, using data to enhance educational equity and quality, particularly in developing countries[27,30].

AI systems use data from different sources to create learning profiles, enabling the development of personalized learning paths. This approach is particularly important in multicultural environments, where students from different linguistic, cultural and social backgrounds may require differentiated teaching strategies[11,2]. In addition, AI algorithms are adapted to students' linguistic and cultural preferences, promoting collaboration and understanding in culturally diverse environments [4]. Personalizing AI learning helps students overcome challenges such as feeling excluded or discouraged[12] and promotes creativity by providing access to personalized resources linked to each student's interests and skills[34].

In addition, in multicultural educational environments, students face challenges due to cultural differences and language barriers[18, 20]. AI can help bridge these gaps through tools such as multilingual teaching systems and translation technologies. Indicatively, conversational AI systems provide linguistic support to students with different native languages, enhancing interaction and collaboration between them[16] and facilitate collaboration by encouraging students to exchange ideas and solve problems together. AI-enabled adaptive learning systems allow to promote intercultural collaboration by enhancing students' social skills[25, 28]. Applications, such as virtual reality (VR) and simulations, create learning environments that allow students to experience different cultures and situations in a safe and controlled environment. These technologies enhance cultural understanding and facilitate the development of intercultural communication skills[22].

However, AI systems, when based on data that reflects biases, can perpetuate or even exacerbate existing inequalities in intercultural environments. Education systems that leverage it are often influenced by biases embedded in algorithms' training data. For example, if algorithms are trained on data that reflects unequal educational practices, the result will be a system that reproduces discrimination based on ethnicity, language, or gender[7]. Also, the lack of access to AI technologies for students coming from disadvantaged areas or social groups can exacerbate existing educational inequalities, creating a gap that threatens the fundamental principle of equality in education and limit the possibility of developing skills and knowledge, especially in modern educational requirements[32].

Important questions also arise with the ability of AI to collect and analyze large amounts of information about its functioning, especially in intercultural environments where cultural sensitivities must be respected. Ethical challenges include protecting privacy, preventing discrimination, and preserving students' cultural identity[13]. Maintaining cultural sensitivity when using data is critical, as its systems must support multiculturalism and not promote homogeneity[22].

The successful integration of AI in education requires training teachers not only in technological issues but also in understanding learning and cultural specificities. Teachers need to know how to use its tools to effectively support students, ensuring that these tools are truly inclusive[6], following rigorous standards and frameworks that include guidelines for using data and ensuring transparency of algorithms[3].

Based on this theoretical framework, a key question examined in this research study concerns teachers' perceptions of the influence of Artificial Intelligence on the implementation of the differentiated approach and inclusion of all students in the educational process without social or cultural exclusions (Module B, field 4, 7, 12, Section C1, field 7, 8, 18) as well as the challenges emerging with the use of AI in differentiated approach and inclusion for learners (Module D, field 4, 7, Module E, area 8). Specifically, this study will describe the findings of the research: a) on module B (area 4): "AI can support the teacher in differentiating teaching", (area 7): "Artificial Intelligence can adapt a teaching method to the needs of the learner", (area 12): "AI can increase the inclusion of students with special or special needs in the learning process", (b) Module C1 (area 7): "AI applications can be positive for promoting student didactic inclusion", (area 8): "AI applications can be positive for creating a facilitative learning environment for each learner", (area 18): "AI applications can be positive for adapting the learning process to the specific needs of each learner", c) Section D (field 4): "There is an ethical issue of discrimination of students on an ethnic basis or social origin", (area 7): "There is a moral issue of circumvention of equality between students", d) Section E (field 8): "There is a fear of social and educational inequalities being created by the use of Artificial Intelligence in Education".

Thus, the research objectives are formulated as follows:
- What are teachers' perceptions about the applications of artificial intelligence that can affect the differentiated approach and equal inclusion of all students without social, learning or intercultural discrimination in the learning process?
- What are the challenges posed to the implementation of differentiated and inclusive practices for students in education through Artificial Intelligence?
- Is there a correlation between the parameters related to the differentiation and inclusion of students with the use of AI?
- Is there a correlation between the parameters related to the challenges that exist in implementing differentiated and inclusive practices for students using AI?
- Are inclusion and inclusion practices related to the challenges of implementing them through AI?
- Do demographic characteristics influence teachers' perceptions of the influence of AI on differentiated and inclusive practices for students in education?
- Are there predictors of teachers' perceptions and attitudes about the impact and importance of AI in implementing differentiated and inclusive practices in education?

II. Material And Methods

This study is an exploratory survey and aimed to capture the current situation regarding Artificial Intelligence (AI) among primary and secondary school teachers. It was conducted using data collection through an anonymous self-report questionnaire. The questionnaire was distributed via email to all schools in the country through the Directorates of Primary and Secondary Education in Greece, in December 2023. The data collection was done with the Google Forms platform and the statistical analysis and processing was carried out with the IBM SPSS v29 statistical software package.

Sample: The research sample of the study included a total of 1736 teachers of Primary and Secondary Education from all over Greece, who participated voluntarily. A notable aspect of the methodology was the instruction given to participants, which asked them to refrain from completing the questionnaire if they answered "Not at all" to question A1, which concerned their level of knowledge about Artificial Intelligence (AI). This process revealed that 51% of teachers had no knowledge of AI, while 49% said they had little to very good understanding of the subject. After excluding questionnaires where participants had no knowledge of AI, the final sample was limited to 862 participants, which formed the basis for further processing and analysis of the data.

The questionnaire: The questions included in the survey questionnaire are part of a larger study [21, 38, 39, 40]. They consist of three (3) closed-ended questions from Unit B (area 4, 7 and 12) and three (3) closed-ended questions from Unit C1 (area 7, 8 and 18), which concern teachers' perceptions of the impact of AI on the implementation of differentiated and inclusive educational teaching practices. It also includes two (2) closed-ended questions from Module D (area 4 and 7) and one (1) closed-ended question from Module E (area 8) and relate to the challenges emerging from the influence of AI on differentiated and inclusive teaching methods. The total number of closed-ended questions is nine (9).

Statistical analysis

The data was processed using descriptive and inferential statistics, utilizing IBM SPSS v29 software. Frequencies and percentages were calculated, with the findings presented in the form of tables and graphs. The regularity check of the variables was carried out through the Kolmogorov-Smirnov test, proving that the variables follow a normal distribution ($p>0.05$). Parametric methods (Pearson, t-Test, One-Way ANOVA and Multiple Linear Regression) were applied to analyze the correlations.

III. Result

Table 1 *Percentage Distribution of Diversity and Inclusion with AI.* The responses show generally positive acceptance of AI in educational practice, especially in areas related to teaching differentiation and enhancing inclusion. However, there is moderate uncertainty regarding adaptation to the student's needs, indicating a need for further information or practical application for greater confidence. It is also considered a positive factor in education, especially for the creation of facilitative learning environments and didactic inclusion. Of course, there remains room for improving understanding and confidence in applying it to individual needs. When it comes to differentiating teaching, 74% of respondents believe that AI can significantly support teaching differentiation ("Very-Very much"), while 26% perceive little or no contribution. The result suggests a positive attitude towards its potential for adapted teaching. Regarding adaptation to the needs of the student, 55.7% believe that they can adapt the teaching method to the needs of the student, while

44.3% are to a small extent for this possibility. The marginal difference suggests that there are reservations, perhaps due to limitations or lack of knowledge of its capabilities. Regarding the inclusion of students with special needs, 64% believe that it contributes significantly to the inclusion of students with special needs, compared to 36% who remain more hesitant. This finding demonstrates optimism about the role of AI in improving accessibility and equity. Regarding the promotion of teaching inclusion, 62.2% believe that AI can contribute positively ("Very-Very much"), while 37.8% believe the opposite ("Not at all-Little"). It appears that the majority recognise it as a tool to support inclusion, possibly because of its potential to address different educational needs. When it comes to creating an environment that facilitates learning, 69.1% believe that AI can create it and be appropriate for every student, while only 30.9% are opposed. This underlines the widespread acceptance of AI as a tool that facilitates the learning process, possibly through the use of interactive and adaptive technologies. Regarding the ability to adapt to students' needs, 61.3% believe that they can adapt the learning process to the specific needs of each student, while 38.7% show hesitation. This positive assessment shows confidence in the potential of AI to personalize learning, although a significant part of the population remains skeptical, perhaps due to insufficient knowledge or experience with its applications.

Table 1: Percentage distribution of Diversity and Inclusion with AI

Questions	Not at all-little	Very-Very much
B4. Can AI support teachers in differentiating teaching?	26.0	74.0
B7. Can AI adapt a teaching method to the needs of the student?	44.3	55.7
B12. Can AI increase the inclusion of students with special or special needs in the learning process?	36.0	64.0
Question C1: In which of the following areas can the applications of Artificial Intelligence in your opinion be positive for Education?		
Statements	Not at all-little	Very-Very much
C1_7. Promoting Student Inclusion	37.8	62.2
C1_8. Creating a facilitative learning environment for each student	30.9	69.1
C1_18. Adaptation of the learning process to the specific needs of each student	38.7	61.3

Table 2: *Percentage Distribution of Diversity and Inclusion Challenges with AI.* The results capture respondents' perceptions of the ethical issues that arise and their fear of consequences for diversity and inclusion of students with the introduction and use of AI. 63.1% of respondents consider that there is no relative ("Not at all-Little") concern about ethical issues of discrimination on an ethnic basis, while 36.9% consider that there is ("Very-Very much"). The majority appear relatively optimistic or believe that the use of AI can avoid discrimination. But a significant proportion remain concerned, indicating that potential discrimination is a concern for certain groups of students. 61.5% express limited concern about whether AI will circumvent equality among students ("Not at all-Little"), while 38.5% consider this issue to be serious ("Very-Very Much"). The slight difference in views suggests that there is a degree of trust in AI technologies to maintain equity, although some reservations remain. 46.6% of respondents consider that the fear of creating inequalities is relatively limited ("Not at all-Little"), while 53.4% rate it as particularly intense ("Very-Very Much"). The almost equal distribution of responses reveals a multidimensional perception. A significant proportion are confident that AI will not create inequalities, but there is slightly more concern that existing inequalities may worsen or new ones may emerge.

Table 2: Percentage Distribution of Challenges for Diversity and Inclusion with AI

Questions	Not at all-little	Very-Very much
D4.Is there an ethical issue of discrimination against pupils on an ethnic basis or social origin?	63.1	36.9
D7. Is there a moral issue of circumventing equality between students?	61.5	38.5
E8.Is there any fear of social and educational inequalities created by the use of Artificial Intelligence in Education?	46.6	53.4

Diversity and inclusion correlation checks

A correlation test was carried out Pearson between diversity-inclusion with the use of AI (Teacher support in differentiating teaching, Adaptation of teaching method to the needs of the student, Increase of inclusion of students with special or special needs, Promotion of teaching inclusion, Creation of a facilitative learning environment, Adaptation of learning processes to the specific needs of each student).

Table 3 *Correlation check.* According to the results, all variables show positive correlations with each other, with statistical significance at the level of 0.01. This shows that the different dimensions of AI use (differentiation, inclusion, personalisation) are interrelated and reinforce each other. Specifically, between differentiation of teaching and adaptation to student needs, the correlation coefficient is 0.473, suggesting a moderate correlation with high statistical significance ($p < 0.001$). This means that participants who recognise the value of AI in differentiating teaching are likely to also consider that AI can tailor methods to learners' needs. Between differentiation of teaching and inclusion of students with special needs, the correlation is moderate (0.515) and statistically significant, showing that differentiation of teaching using AI is positively correlated with its ability to enhance the inclusion of students with special needs. The correlation between inclusion of students and facilitative learning environments is high (0.557), indicating that applications aimed at inclusion can contribute significantly to creating environments suitable for each student. Among applications for didactic inclusion and adaptation of the learning process, the coefficient of 0.647 demonstrates a strong correlation, arguing that applications that promote inclusion can facilitate personalized learning.

Table 3: Correlation check

		B4	B7	B12	C1_7	C1_8	C1_18
B4.Artificial Intelligence can support the teacher in differentiating teaching.	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	862					
B7. Artificial Intelligence can adapt a teaching method to the needs of the student.	Pearson Correlation	.473**	1				
	Sig. (2-tailed)	<.001					
	N	862	862				
B12. AI can increase the inclusion of students with special or special needs in the learning process.	Pearson Correlation	.515**	.480**	1			
	Sig. (2-tailed)	<.001	<.001				
	N	862	862	862			
C1_7. Apps to promote student inclusion.	Pearson Correlation	.465**	.450**	.612**	1		
	Sig. (2-tailed)	<.001	<.001	<.001			
	N	862	862	862	862		
C1_8. Applications to create a facilitative learning environment for each student.	Pearson Correlation	.417**	.446**	.557**	.598**	1	
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		
	N	862	862	862	862	862	
C1_18. Applications for adapting the learning process to the specific needs of each student.	Pearson Correlation	.506**	.527**	.615**	.647**	.582**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	862	862	862	862	862	862
**. Correlation is significant at the 0.01 level (2-tailed).							

The correlation between Pearson challenges for diversity and inclusion was tested with the use of AI (Ethnic or social discrimination of students, Circumvention of student equality, Creation of social and educational inequalities).

Table 4 *Correlation check.* All variables show positive correlations with each other, with statistical significance at the level of 0.01. The correlation between ethnic or social discrimination and circumvention of equality has a coefficient of 0.591, meaning that there is a moderate to strong relationship. This shows that those who are concerned about pupil discrimination based on ethnic or social origin are likely to also express concerns about the possible undermining of equality in education procedure. Correspondingly, the link between ethnic discrimination and fears of creating social and educational inequalities shows a correlation of 0.454, which indicates a modest correlation. Respondents who are concerned about the potential for ethnic or social discrimination seem to relate these concerns to the wider social and educational consequences of AI. The correlation between circumvention of equality and social and educational inequalities is 0.549, suggesting a moderate relationship, with high statistical significance ($p < 0.001$) confirming the link. These findings highlight that fears of inequalities in education and society are closely linked to concerns about ensuring equality in the context of AI use.

Table 4: Correlation check

		D2	D7	Q8
D4.There is an ethical issue of discrimination of pupils on an ethnic basis or social origin.	Pearson Correlation	1		
	Sig. (2-tailed)			

	N	862		
D7. There is a moral issue of circumventing equality between pupils.	Pearson Correlation	.591**	1	
	Sig. (2-tailed)	<.001		
	N	862	862	
E8.There is a fear of creating social and educational inequalities from the use of Artificial Intelligence in Education.	Pearson Correlation	.454**	.549**	1
	Sig. (2-tailed)	<.001	<.001	
	N	862	862	862
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 5 *Correlation check.* The correlation between the challenges and capabilities of Artificial Intelligence (AI) in diversity and inclusion issues presents a negative correlation coefficient (Pearson Correlation: -0.150), which is statistically significant at the level of 0.01 (p<0.001). The negative correlation suggests that as perceptions of challenges related to diversity and inclusion through AI increase (Ethnic or social discrimination of students, Circumvention of student equality, Creation of social and educational inequalities), the perception of the potential of AI in these areas decreases (Supporting a teacher in differentiating teaching, Adapting teaching method to the needs of the student, Increasing the inclusion of students with special or special needs, Promoting didactic inclusion, Creating a facilitative learning environment, Adapting learning processes to the specific needs of each student). This means that participants who identify strong challenges in AI applications are less likely to appreciate its positive potential in creating an environment of diversity and inclusion of students in the educational process.

Table 5: Correlation check

		Diversity and inclusion challenges with AI	Diversity and inclusion opportunities with AI
Diversity and inclusion challenges with AI	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	862	
Diversity and inclusion opportunities with AI	Pearson Correlation	-.150**	1
	Sig. (2-tailed)	<.001	
	N	862	862
**. Correlation is significant at the 0.01 level (2-tailed).			

Correlation with Demographic Characteristics

A correlation analysis was carried out between the factors [a) Diversity and inclusion of students with AI (Teacher support in differentiating teaching, Adaptation of teaching method to the needs of the student, Increase of inclusion of students with special or special needs, Promotion of teaching inclusion, Creation of a facilitative learning environment, Adaptation of learning processes to the specific needs of each student), b) Challenges of AI for Diversity and integration of pupils (Ethnic or social discrimination of pupils, Circumvention of pupil equality, Creation of social and educational inequalities)) and demographic characteristics [Gender, Years of Service, Level of Education, Level of Education of Teacher Work (Primary-Secondary Education), and Job Position (Teachers-Education Executives)]. The results showed that Gender, Job and Level of Education do not have a statistically significant effect on the perceptions of teachers in the sample about Different and Inclusion of students with AI and the Challenges raised. On the contrary, the Level of Education shows a statistically significant correlation with the Challenges presented by AI regarding Diversity and Inclusion of students. Also, a statistically significant correlation is recorded with the Years of Service of the participants with the perceptions of the influence of AI on the Diversity and Inclusion of students in the learning process.

Table 6 *Descriptive Diversity-Inclusion Measures and AI Challenges with Education Level*. Regarding the Level of Education, the t-Test analysis for Diversity and Inclusion Opportunities with AI, the Average value for Primary Education teachers is 1.66 and for Secondary teachers (Mean=1.63). Regarding the Challenges of diversity and inclusion with AI, They are 1.48 and 1.40 respectively.

Table 6: Descriptive Diversity-Inclusion Measures and AI Challenges with the Level of Education

	Level of Education		N	Mean	Std. Deviation	Std. Error Mean
Diversity and inclusion opportunities with AI	Primary		346	1.66	.364	.020
	Secondary		516	1.63	.373	.016
Diversity and inclusion challenges with AI	Primary		346	1.48	.418	.022
	Secondary		516	1.40	.394	.017

Table 7 *Independent Samples Test.* The results of the t-Test on Diversity and Inclusion with AI, based on Levene's Test (p>0.05), show that the first row of table t(860)=1.1708, p=0.242>0.05) does not show a statistically significant difference. Primary and secondary school teachers have no substantial differences in their perceptions of the impact of AI on diversity and inclusion of students in education. The results for the AI Challenges for Diversity and Inclusion of students based on Levene's Test (p<0.05), show that the second row of table t(860)=2.915, p=0.004<0.05) demonstrating a statistically significant difference. Primary school teachers are less cautious (Mean = 1.48) about the challenges (ethical issues, discrimination, inequality) that AI can bring about the diversity and inclusion of students compared to secondary school teachers who are more cautious (Mean=1.40).

Πίνακας 7: Independent Samples Test

		Levene's Test for Equality of Variances				Significance	
		F	Mr.	t	df	One-Sided p	Two-Sided p
Diversity and inclusion opportunities with AI	Equal variances assumed	1.084	.298	1.170	860	.121	.242
	Equal variances not assumed			1.176	752.046	.120	.240
Diversity and inclusion challenges with AI	Equal variances assumed	8.560	.004	2.949	860	.002	.003
	Equal variances not assumed			2.915	709.931	.002	.004

Table 8 *ANOVA.* The ANOVA One-Way Variance Analysis was used to examine the difference in average values in respondents' perceptions of diversity and inclusion and the challenges from AI in education based on their Years of Service. The findings on students' potential for diversity and inclusion in education do not record equality of mean values (F(7)=3.069, p=0.003<0.05). Therefore, there is a statistically significant difference. Years of service differentiate their perceptions of diversity and inclusion. The results on the challenges arising from AI in education for diversity and inclusion of students in education show that there is equality of mean values (F(7)=1.184, p=0.309>0.05). There is no statistically significant difference in their perceptions of challenges based on years of service.

Table 8: ANOVA

		Sum of Squares	df	Mean Square	F	Mr.
Diversity and inclusion opportunities with AI	Between Groups	2,891	7	.413	3.069	.003
	Within Groups	114.938	854	.135		
	Total	117.829	861			
Diversity and inclusion opportunities with AI	Between Groups	1.364	7	.195	1.184	.309
	Within Groups	140.486	854	.165		
	Total	141.850	861			

Table 9 *Multiple Tukey HSD Comparisons.* The results of multiple comparisons between different categories of years of service regarding AI applications in diversity and inclusion of all students in the educational process, indicate a statistically significant difference between categories: "31-40" years of service with "1-5" years of service (p=0.006<0.05), with "11-15" years (p=0.029<0.05) and "26-30" years of service (p=0.030<0.05). This indicates that experience significantly influences perception of use of AI in diversity and inclusion opportunities. Other comparisons, such as between "6-10" years and "41-43 and older" years of service, show no statistically significant differences, indicating a potential stability in perceptions beyond a certain level of experience.

Table 9: Multiple Tukey HSD Comparisons

Dependent Variable	(I)) Years of service	(J) Years of service	Mean Difference (I-J)	Std. Error	Mr.	95% Confidence Interval	
						Lower Bound	Upper Bound
Diversity and inclusion opportunities with AI	31-40	1-5	.179	.049	.006	.03	.33
		6-10	.165	.065	.186	-.03	.36
		11-15	.196	.061	.029	.01	.38
		16-20	.076	.049	.788	-.07	.23
		21-25	.142	.049	.070	-.01	.29
		26-30	.169	.053	.030	.01	.33
		41-43 and over	.165	.155	.964	-.31	.64

Predictive factor prediction model for Diversity and Inclusion of students with AI

Table 10 *Entered variables.* To create a predictive model of independent variables related to artificial intelligence and education, which affect perceptions in relation to the dependent variable (Diversity and inclusion of students using AI), Stepwise Multiple Regression identified 20 variables. With the inclusion of these 20 variables, the final model was formed, where R Square=0.835, predicting 83.5% of the total variance in enhancing and developing practices of differentiated teaching and inclusion of all students in the learning process with the applications of artificial intelligence. The contribution of individual independent variables, apart from Remedial Applications and effective addressing of students' special needs, is relatively small. In addition, model validation using ANOVA demonstrates statistical significance (p<0.05) for all 20 variables. The equation of the regression model resulting from the final step of the 20th model is:

$$Y=b_0+b_1x_1+b_2x_2+b_3x_3+...+b_{20}x_{20}$$

Πίνακας 10: Entered Variables[a]

Model	Variables Entered	Method
1	C1_4. Remedial learning applications.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >=.100).
2	C1_9. Applications for more effective teaching treatment of students' special needs.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >=.100).
3	B3. Artificial Intelligence can support the teacher in remedial teaching.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).)
4	C1_6. Automatic evaluation and feedback applications.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	C1_14. Automatic evaluation and feedback applications.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	C1_2. Applications for automatic scheduling of teaching.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	B13. Artificial Intelligence can free the teacher from bureaucratic work (drafting a teaching plan,	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= ,100).
8	B6. Can AI evaluate students' assignments?	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >=.100).
9	F1. Based on your studies, experience and broader attitude to life, you believe that the entry of Artificial Intelligence in Education is positive.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).)
10	B11. Virtual reality with the use of Artificial Intelligence can support the learning process.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >=.100).
11	B8. Artificial Intelligence can predict student performance.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).)
12	F5_5. Curricula with suggestions for specific applications of Artificial Intelligence in each course and teaching unit.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
13	C1_13. Applications for the development of student literacy.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
14	C1_15. Applications to develop skills in students to solve problems.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= .100).)
15	A8. ChatGPT uses standardized answers.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
16	F5_6. Primary solution of logistical and building infrastructure (interactive whiteboards, fiber optic internet, etc.).	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
17	A9. ChatGPT can process our thinking and behavior.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
18	B5. Artificial Intelligence can monitor the student's learning path.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
19	Q1. There is a fear of negative consequences on students' critical thinking.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
20	B10. Can AI support collaborative learning with student-machine communication?	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
	a. Dependent Variable: Diversity and inclusion in education with AI	

Table 11 *Standardized Beta Values of Independent Variables*. Figure 1. *Standardized Beta Values of Independent Variables.* According to the Standardized Beta Values of the independent variables in the model that examines the correlation of different factors with the dependent variable "Diversity and inclusion of students using AI", positive effects are recorded. Factors with the greatest impact are:

- Apps to address students' special needs (Beta=0.265): This variable has the largest positive contribution to the model, suggesting that the use of AI to individually support students with special needs is key to promoting diversity and inclusion. These applications likely include adaptive learning, feedback tools and personalized learning environments that reduce barriers to education.

- Remedial learning applications (Beta=0.202): These applications, which support the teacher in differentiating teaching, play an important role in the inclusion of students. Remedial learning, especially through AI tools, helps adapt educational materials to the needs of students with different levels of ability, contributing to inclusion.
- Artificial Intelligence for Remedial Teaching (Beta=0.174): The contribution of this variable underscores the notion that AI can enhance teaching, freeing teachers from repetitive tasks and allowing for a greater focus on students' learning needs.

Some variables indicate a smaller contribution to diversity and inclusion, such as automatic assessment apps (Beta=0.056) and apps for developing problem-solving skills (Beta=0.066). Although statistically significant, low beta values indicate that participants view these applications as supportive but not primary to achieving inclusion goals. Also, variables that show a negative contribution are recorded, such as the use of ChatGPT with standardized answers (Beta=-0.048) and thought processing through ChatGPT (Beta=-0.047). These findings highlight concern about the high standardization of the learning process and the potential lack of adaptability to individual needs, which can negatively affect the enhancement of diversity and inclusion. The negative contribution highlights the need to improve these applications to align them with educational requirements.

Table 11: Standard beta values of independent variables

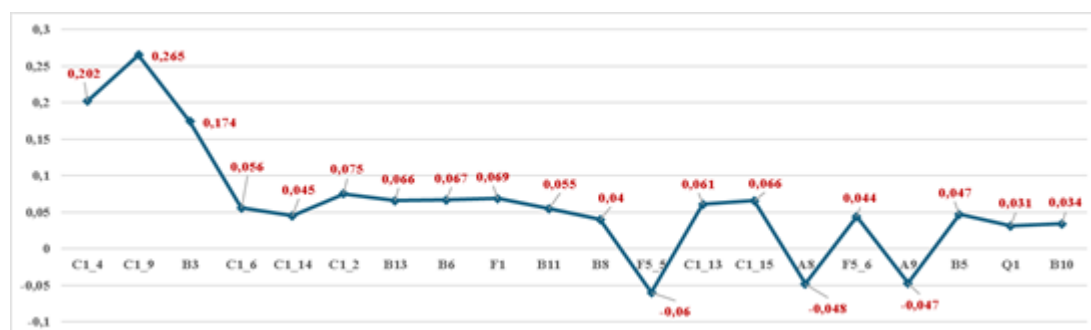| Model	Independent Variable	Beta Value
C1_4	Remedial learning applications.	0.202
C1_9	Applications for more effective teaching treatment of students' special needs.	0.265
B3	Artificial Intelligence can support the teacher in remedial teaching.	0.174
C1_6	Automatic evaluation and feedback applications.	0.056
C1_14	Automatic evaluation and feedback applications.	0.045
C1_2	Applications for automatic scheduling of teaching.	0.075
B13	Artificial Intelligence can free the teacher from bureaucratic work (drafting a teaching plan,	0.066
B6	Can AI evaluate students' assignments?	0.067
F1	Based on your studies, experience and broader attitude to life, you believe that the entry of Artificial Intelligence in Education is positive.	0.069
B11	Virtual reality with the use of Artificial Intelligence can support the learning process.	0.055
B8	Artificial Intelligence can predict student performance.	0.04
F5_5	Curricula with suggestions for specific applications of Artificial Intelligence in each course and teaching unit.	-0,06
C1_13	Applications for the development of student literacy.	0,061
C1_15	Applications to develop skills in students to solve problems.	0.066
A8	ChatGPT uses standardized answers.	-0.048
F5_6	Primary solution of logistical and building infrastructure (interactive whiteboards, fiber optic internet, etc.).	0.044
A9	ChatGPT can process our thinking and behavior.	-0.047
B5	Artificial Intelligence can monitor the student's learning path.	0.047
Q1	There is a fear of negative consequences on students' critical thinking.	0.031
B10	Can AI support collaborative learning with student-machine communication?	0.034
a. Dependent Variable: Diversity and inclusion in education with AI		

Figure 1: Beta values of independent variables

IV. Discussion

Regarding the perceptions and views of the participants on diversity and inclusion of students in the learning process with AI, its use is recognized as a tool that can contribute positively to the differentiation of teaching, the enhancement of inclusion and the creation of learning environments that meet the needs of all students. According to this research, 74% of respondents believe they can support the diversification of teaching, while 26% have reservations about its effectiveness. This finding aligns with the findings of the

systematic review[35], according to which AI can offer personalized learning pathways through adaptive systems and smart educational environments. When adapting teaching to students' needs, 55.7% of respondents agree that AI has the potential to meet different learning requirements, while 44.3% express uncertainty. These findings reflect the need to further develop its tools that are understandable and accessible to teachers and students. Adaptive learning algorithms have proven effective in improving learning performance, but further emphasis is needed on data protection and teacher education[9]. Regarding the inclusion of students with special needs, 64% of respondents acknowledge that AI can enhance equity and accessibility in the learning process, while 36% express reservations. Similar results have been recorded indicating that AI systems enhance inclusion through adaptive educational models that meet the needs of students with different learning profiles, although further ethical and educational frameworks are needed[37]. Creating learning processes that facilitate the educational process is another important advantage of AI, with 69.1% of respondents claiming that this technology can create adaptive and personalized environments, while 30.9% remain more cautious. In the same line, it is argued that personalized learning approaches implemented through AI, such as interactive educational algorithms and augmented reality, have the potential to improve engagement and learning outcomes[4]. In addition, regarding the adaptation of the learning process to the specific needs of students, 61.3% of participants indicate a positive attitude, while 38.7% appear hesitant. This finding is in line with scholars[10], who report that, despite technological possibilities, concerns remain about data impartiality and security, which requires teacher training and strict regulatory frameworks.

Regarding the challenges posed by respondents regarding diversity and inclusion of students in the educational process with AI applications, the findings record perceptions of ethical issues and fears of consequences related to diversity and inclusion of students when applying Artificial Intelligence (AI) in education. 63.1% believe that there are no serious concerns about discrimination on an ethnic or social basis, while 36.9% are concerned that such issues may arise. The majority maintain an optimistic view of the use of AI as a means of avoiding discrimination, although a notable proportion remain sceptical, reflecting concerns about specific groups of learners. Similarly, 61.5% show limited concern about the possible violation of equality, while 38.5% consider that there is a serious risk. This marginal difference indicates confidence in AI technologies, despite reservations. Regarding the fear of creating social and educational inequalities, 46.6% express less fear, while 53.4% are deeply concerned. The almost equal distribution shows a multidimensional attitude, with one side trusting the ability of AI to eliminate inequalities and the other fearing the exacerbation of existing inequalities or the emergence of new ones. The concerns about the ethical issues that accompany the introduction of AI in education are confirmed by the literature. Bias in algorithms and managing large amounts of data can lead to discrimination and inequality, particularly when students from marginalized groups are treated as exceptions to education data[6]. It is important to create ethical and transparent systems that ensure equality, as inequalities can be exacerbated when educational data does not take into account the diverse needs of students[4]. There is a need for continuous monitoring of algorithms (algorithmovigilance) to avoid unintended bias and discrimination that may arise from the use of AI in education[22]. At the same time, it is estimated that fears of inequalities can be addressed by strengthening digital infrastructure and developing algorithms that minimize discrimination. However, transparent policy frameworks are needed to ensure fair access to AI technologies[3].

Regarding the correlations of parameters related to diversity and inclusion of students with the influence of AI, the findings highlight that participants recognize strong connections between these parameters, which underlines the multidimensional value of AI in education. The correlations are all statistically significant ($p<0.001$), with moderate to strong intensity. The link between differentiation of teaching and inclusion of students with special needs demonstrates the perception that AI applications can be adapted to different educational needs. Similarly, applications for creating facilitative learning environments are significantly correlated with personalised learning practices, indicating that AI can promote inclusion and personalisation through adaptive and interactive technologies. The highest statistically significant correlation (0.647) between applications for didactic inclusion and adapting the learning process to students' specific needs underlines that respondents believe that AI technologies can bring about a holistic improvement in the quality of education, reducing barriers for students with different needs. The above findings are consistent with the literature, which refers to the multidimensional dynamics of AI in education. AI technologies can address inequalities in education through personalization and adaptive learning, although ethical and policy frameworks are needed to ensure equity[6]. Adaptive learning environments can promote student engagement and enhance their learning experience, and monitoring algorithms to avoid bias and inequalities is of particular importance[3, 22]. AI can enhance educational access through personalization, but requires investments in digital infrastructure to avoid inequalities[3].

In terms of correlations between diversity and inclusion challenges and AI, the findings show connections between ethical issues and concerns about its use in education. The strong correlation between parameters such as ethnic discrimination, circumvention of equality and educational inequalities suggests that

participants see these concerns as interrelated. This reflects the multifaceted ethical challenges of AI in the educational process. The link between ethnic discrimination and equality is significant (Pearson Correlation: 0.591), indicating that concern about discrimination is closely correlated with degradation of equality. This relationship is also confirmed by research[36], which highlights that social and ethical concerns are key issues in the application of AI in education. Similarly, the correlation between equality and social and educational inequalities (Pearson Correlation: 0.549) demonstrates that respondents recognize the need for transparent practices that will limit the amplification of inequalities through AI. Accordingly, the principles of fairness and inclusion must be a foundation for AI applications in education[13]. Finally, the correlation between ethnic discrimination and social inequalities (Pearson Correlation:0.454) highlights the participants' connection between social impact and educational practices of AI. This finding is consistent with the assessment of scholars who believe that the effects of AI on educational equity require further research and development of ethical frameworks[26].

The correlation between the challenges and capabilities of Artificial Intelligence (AI) in terms of diversity and inclusion highlights a negative correlation coefficient (Pearson Correlation: -0.150), which is statistically significant (p<0.001). The negative correlation means that participants who perceive the intense challenges of AI, such as ethnic or social discrimination and reinforcing inequalities, are less likely to appreciate its positive potential, such as enhancing inclusion, adapting to learning needs and creating facilitative learning environments. This suggests that perceptions of the challenges and potential of AI in education negatively influence each other. The negative correlation between AI challenges and capabilities is consistent with the assessments of other scholars who highlight that cultural and technological challenges influence the use of AI for inclusion, while data limitations and differences in cultural approaches undermine the utilization of technology for disadvantaged groups[32]. Ethical and societal concerns, such as algorithm bias and lack of transparency, prevent AI from being fully integrated into equitable educational environments[36]. The need for ethical and policy frameworks for AI integration is critical to reducing the gap between capabilities and challenges[5]. In addition, they stress that concerns about data integrity and trustworthiness of AI are impacting teachers' and students' perceptions, limiting its acceptance as an inclusion tool[29].

Regarding the impact of demographic characteristics on teachers' perceptions of the possibilities and challenges of Artificial Intelligence (AI) in education, in terms of Gender, Job and Level of Education, no statistically significant differences were recorded. Statistically significant differences were found in relation to Level of Education and Years of Service. Regarding the potential of AI for diversity and inclusion, primary and secondary school teachers do not differ substantially in their perceptions, showing general agreement on the positive impact of technology on the educational sector. On the contrary, regarding challenges, such as issues of ethics, discrimination and inequalities, secondary school teachers appear more cautious (Average=1.40) than those of Primary Education (Average=1.48), possibly reflecting differences in the experiences and challenges they face in their educational environments. Moreover, length of work experience appears to influence perceptions of the potential of AI. Teachers with more years of service value the contribution of AI to creating inclusive learning environments differently, with these differences being felt between groups with different experiences. However, when it comes to AI challenges, perceptions remain constant regardless of experience, showing a general agreement on concerns about ethical issues and potential risks. These findings highlight the impact of experience on perceptions of the potential of AI, but also a shared understanding of the challenges that its application in educational practice brings. Similar findings from studies show that teachers with more experience are more receptive to using AI tools to promote diversity and inclusion, as they are more familiar with technological applications and have a deeper understanding of their educational potential. Teachers who possess more knowledge and experience in the application of AI show increased confidence and readiness to adopt such technologies, which supports the need for continuous training and professional development[37]. They also point out that enhancing teachers' skills and understanding through professional development strategies contributes to improving the quality of teaching and making better use of technological tools, especially in culturally and socially diverse educational environments[23]. Similarly, positive attitudes towards AI are related to understanding the usefulness of these tools in creating personalized learning experiences, while teachers with limited experience often appear hesitant towards technological innovations due to lack of training[33].

In terms of creating a predictive model for diversity and inclusion through Artificial Intelligence (AI) based on the impact of independent AI-related variables in education, the high R Square (0.835) suggests that the model explains 83.5% of the total variance, offering an important basis for understanding the factors influencing inclusive education. The greatest positive contribution comes from applications to address special needs of students, which facilitate individualised support and reduce barriers to education, and remedial learning applications, which help teachers differentiate teaching and adapt to the needs of students of different levels. Similarly, AI for remedial teaching helps free teachers from repetitive tasks, allowing them to focus on learning needs. Some variables, such as automatic assessment and problem-solving skills development applications, make a smaller contribution, indicating their supportive but not primary role in achieving inclusion. In addition,

variables such as the use of ChatGPT with standardized responses and ChatGPT thought processing present a negative contribution, raising concerns about lack of adaptability and the normative learning process, which may limit their positive impact on diversity and inclusion. The statistical significance of all variables confirms that, despite differences in their contribution, each variable plays a role in the overall picture. This robust model provides a basis of trust for educators and policymakers to leverage AI applications to improve inclusive education, enhancing equity and adaptability of educational practices. These findings are in line with the views of other scholars. AI applications can improve students' skills, engagement, and performance while providing the tools to personalize teaching[15], while the perception of utility plays a critical role in the acceptance of these applications by teachers and students, especially in inclusive environments[1]. At the same time, challenges related to data representativeness and bias in algorithms reinforce educational inequalities and present the need for transparent and fair data to avoid discrimination[17]. Improving understanding of functionality can lead to greater acceptance and trust in AI applications[31]. At the same time, continuous teacher training and the integration of pedagogical principles in the development of AI applications are equally important, as they enhance the effectiveness of technology, making pedagogical adaptation vital to achieve better learning outcomes[24].

V.   Conclusion

Artificial Intelligence (AI) has extraordinary potential to diversify teaching, enhance inclusion and create personalized learning experiences, with a multidimensional potential to improve the educational experience and enhance inclusion and interculturality. Despite its potential, its full utilization requires continuous development of technological tools, strengthening of educational infrastructure and creation of ethical frameworks that minimize concerns about inequalities while maximizing trust in its use. The findings show that AI can help improve equity in education by creating synergies between differentiating teaching and adapting to learning needs. However, some applications require further improvement, and reservations about its ethical and social implications demonstrate the need for clear regulatory frameworks. These concerns, together with differing perceptions of the potential reinforcement of inequalities, highlight the need for transparent systems and fair policies and teacher training. Progress in these areas is crucial to make full use of it as a tool to ensure fairness and inclusion in education.

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