



Analysis of the Educational Inclusion Capacity of Social Networks: An Approach to University Classrooms

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Abstract: Social media plays a leading role in social life, and education is no exception. Therefore, this research focuses on analyzing the perceptions of first-, fourth-, and sixth-year students of the Basic Education program at the National University of Education of Ecuador (UNAE) regarding the capacity for educational inclusion offered by social media in academic processes. A quantitative approach was used, based on a 17-item survey aimed at 330 students, to investigate the inclusion capacity of social media. The results show that the social media platforms TikTok, Instagram, Facebook, WhatsApp, YouTube, and Messenger have higher correlation values when they share the variables of inclusion and appreciation of diversity. For its part, TikTok is presented as the social media platform that correlates most strongly with the variable of acceptance of diversity. These findings demand that social media not be limited solely to communication and information; they must transcend the classroom to promote inclusion.

Keywords: Diversity, Educational Inclusion, Social Media.

1. Introduction

Currently, social networks have a leading role in social life and in the educational field, they have become fundamental tools to facilitate student learning. Their impact was particularly evident during the pandemic, when they were consolidated as essential means for distance learning. From the perspective of [1], social networks not only serve a relational function, but also serve as effective channels for integrating teaching resources at different levels of the education system. In addition, its scope transcends the classroom, encouraging feedback and interaction, essential aspects in educational processes.

Due to their flexibility, versatility and accessibility, social networks have become allies in the teaching-learning process, especially in the university context. In this sense [2], highlight that, although these platforms were not created for educational purposes, today they have a great impact on education. However, their effective integration re-

quires that teachers receive continuous and critical training, which allows them to promote analysis, reflection and respect in digital environments. In this context, it is essential to raise awareness about the responsible use of these tools and establish clear rules for digital life.

On the other hand, research by [3] underlines that social networks can motivate students to use them for academic purposes. University students use them to exchange information, solve doubts and perform tasks, which makes them a powerful tool in higher education. However, their didactic effectiveness depends on their being integrated into structured, flexible and contextualized curricular planning.

1.1 Theoretical Foundations

Educational inclusion and its relationship with social networks: Educational inclusion is a fundamental pillar for the construction of fairer and more equitable societies. It is crucial to foster a culture of respect and appreciation of diversity in the classroom. In this line of thought, [4] point out that universities face the challenge of implementing inclusive educational processes that guarantee the participation of all actors, eliminating stereotypes and prejudices that have perpetuated exclusion in the academic field. Likewise, [5] emphasizes that teacher training is key to addressing student diversity in different socio-educational contexts. This training should focus on methodologies, strategies and resources aligned with the demands of the 21st century. However, to achieve true inclusion in the classroom, the commitment of the entire educational community is essential. For this reason, inclusion should be considered a transversal axis in the curriculum of all educational levels.

However, studies by [6] show that continuing education programs for teachers are insufficient and poorly adapted to the diversity of educational contexts. This lack limits the development of the skills necessary to face the challenges of inclusion, becoming a didactic barrier to teaching and learning. Along the same lines, [7] argues that universities and other educational institutions must allocate adequate resources and promote a curriculum that addresses student diversity. In addition, it is essential that the graduation profile reflects the competencies necessary to educate in the post-pandemic era. Education in virtual environments must also incorporate principles of inclusion, both in synchronous and asynchronous spaces.

Social media can play a key role in educational inclusion. According to [8], these platforms facilitate the exchange of ideas and the generation of enriching debates. Students have the possibility of publishing their work and receiving feedback from both teachers and classmates, which promotes a sense of belonging and community spirit, essential elements to face the challenges of today's society. In this context, inclusion must be a cross-cutting axis in all educational environments, face-to-face and virtual. Social networks can be an effective tool to promote it, as long as their use is guided by appropriate educational strategies. In this sense, the present study aims to analyze the perception of students in the first, fourth and sixth cycles of the Basic Education career

of the National University of Education (Ecuador) about the potential of social networks to promote educational inclusion in academic processes.

Social media in the context of higher education: Social networks are an essential tool for higher education since most university students have them installed on their cell phones, laptops, tablets and use them for communication, information and support their academic training and the teacher is not excluded from it, since WhatsApp groups are generated as complementary spaces in which the teacher participates with reminders, communications, sending reading and analysis resources. From this perspective, [9] report that learning with the arrival of social networks is not only focused on four walls, but that students can access a variety of resources in different formats such as videos, images, documents, animated elements that stimulate the different learning styles of each student; all this can be complemented with digital books, conferences, audios, interviews; however, this requires that the teacher be prepared and plan appropriate spaces in the classroom for the pedagogical use of social networks.

For [10] estimates that social networks are key for teachers since they allow interaction with other education professionals, in turn they can send academic work, encourage feedback and in the case of students they use them daily, which contribute to the generation of learning, the development of critical thinking, digital, socio-emotional, communicative and civic skills. In this sense, social networks motivate the participation of various educational actors such as students and teachers. For their part, from the perspective of [11] they conceive that educational institutions should provide spaces to integrate social networks in classes, as didactic strategies that promote learning and the participation of educational actors; in the case of TikTok, it promotes motivation for learning in the different areas of the university curriculum; however, It is relevant to develop critical competencies that allow identifying elements in this network that are not linked to the educational field.

Challenges of social networks in inclusive education: Although social networks are present in university classrooms and their good use favors the achievement of learning outcomes; however, their inappropriate use hinders academic training in young university students. Along these lines, [12] states that social networks can help improve stress levels and their excessive use ends up creating dependence in students, thus postponing academic tasks. That is why it is important to sensitize students to its critical, disciplined, pedagogical use, in which a range of learning opportunities for all is evident.

In the studies by [13] consider that social networks are ideal spaces for the construction of learning with their peers, in which narratives of their personality are spun and other innovative forms of access to knowledge are discovered; however, social networks can also lend themselves to aggressions, verbal offenses and this weakens school coexistence; It is therefore relevant to design training, preventive and effective actions in the use of social networks by the educational community.

On the other hand, artificial intelligence is already present in social networks and requires that it be used together to benefit inclusive processes in students; from the

studies of [14] consider that *TikTok* integrates artificial intelligence to analyze user preferences through the interactions generated in the videos with reactions and gives a personalized report to the user. Therefore, it is important to take advantage of this social network to build videos with educational content and in which several participants are invited, that is, both students and students for discussion.

2. Materials and methods

2.1 Participants

The National University of Education of Ecuador (UNAE) is a public institution dedicated to the training of teachers to transform the educational system. It currently has around 6000 students, has seven face-to-face undergraduate careers: Basic Education, Early Education, Special Education, Bilingual Intercultural Education, Education in Experimental Sciences, Pedagogy of Arts and Humanities, Pedagogy of National and Foreign Languages; it also has online careers: Basic Education, Early Education, Inclusive Education, Youth and Adult Education; and two distance careers: Basic Education and Intercultural Bilingual Education. Therefore, 330 students from the first semester of 2024 (IS 2024), in the first, fourth and sixth cycle of the Basic Education career, participated in this research, which constitute the sample and are organized according to the following characteristics:

Table 1. Sample characterization (N = 330)

Variables	Categories	N°	Percentage
Age	18< age <20 years	89	27%
	19 < age < 21 years	104	32%
	21 < age < 22 years	47	14%
	21< age < 23 years	33	10%
	age > 22 years	57	17%
Gender	Male	105	31,8%
	Female	224	67,9%
	Other	1	0,3%
Ethnicity or nationality	Kichwa	3	0,9%
	Shuar	3	0,9%
	Mestizo	319	96,7%
	Other	5	1,5%
Disability	Yes	9	3%
	No	321	97%
Use of social networks on a regular basis	Yes	315	95%
	No	15	5%
Use of social networks in academic training	Yes	298	90%
	No	32	10%

The Table 1 shows the diversity of the sample represented in age, gender, ethnicity, disability, daily use of social networks and academic training. For this reason, it can be noted that the age of greatest predominance in the participants is 20 years (32%); in the

same way, more female students participated (67.9%); In terms of ethnicity, mestizo women stand out (96.7%) and 97% of those surveyed do not have disabilities. In relation to the use of social networks on a daily basis, most of the researchers (95%) use them and in the same way there is a high percentage of social networks (90%) in the academic training of students.

2.2 Instruments

In the collection of information, the questionnaire on students' perception of the capacity for educational inclusion offered by social networks was applied, based on previous studies by [15] and [16]. The questionnaire was structured in 17 items that inquired about the inclusion capacity of social networks: *TikTok*, *Instagram*, *Facebook*, *WhatsApp*, *YouTube*, *Messenger*, other; through a *Likert-type* scale with five response options where 1 = Never / Strongly disagree, 2 = Rarely / Disagree, 3 = Occasionally / Undecided, 4 = Frequently / Agree, 5 = Very frequently / Strongly agree. Other questions were open-ended. It is relevant to note that the questionnaire was validated by two experts: a professor from the University of the Basque Country and a professor from the National University of Education of Ecuador.

The validation focused on the relevance, clarity and coherence of each item with respect to the objectives of the research, using an assessment scale from 1 to 5, where 1 = Unacceptable, 2 = Acceptable, 3 = Fair, 4 = Good, 5 = Very good. When entering the ratings of the experts in the SPSS program, the result obtained in the measure according to the Kappa coefficient was -0.089, which indicates a discordance in the ratings. Although most of the items received a rating of "Very Good", some comments from the evaluators were taken into account and incorporated before the application of the instrument. In addition, the questionnaire was previously tested on a small group of students before its application to the total sample.

2.3 Procedure

The focus given to this research was quantitative, with an exploratory scope, based on the application of the survey of students' perception of the capacity for educational inclusion offered by social networks. This survey was answered digitally by the students, in a Form of *Forms* of the Institutional Mail of the University of Oviedo with open access to students. Prior to its application, students were sensitized about sincerity when answering each item. It is important to emphasize that for its application it had the approval of the Research Coordination and the Directorate of the Basic Education Career of the UNAE, in which the importance of guaranteeing the voluntary participation, confidentiality, anonymity, and non-traceability of students in research was recalled. Therefore, the questionnaire did not have data such as names, emails, that would allow the participants to be recognized. The survey took about 5 minutes to answer and all students showed their interest in participating.

2.4 Research design

Given that the objective of this research was to analyze students' perception of the capacity for educational inclusion offered by social networks in academic processes, that is, to identify the relationship between both variables, it is a correlational study, as pointed out by [17]. This approach focuses on the analysis of the behavior of one variable in relation to the other, thus allowing understanding the interaction and connection between the variables under study.

2.5 Data analysis

The data was collected, sorted and analyzed digitally. First, a descriptive analysis was carried out, the correlation matrix and the distribution of the variables were analyzed. Subsequently, to determine the students' perception of the capacity for educational inclusion offered by social networks, an exploratory factor analysis is carried out and several factors are identified that determine the capacity for educational inclusion offered by these platforms. The data obtained were analyzed with the SPSS v.27 program, having as a reference for significance a p-value < .05 and with a confidence level of 95%.

3. Results

According to the results, it is identified that the social network: *WhatsApp* (3.88) stands out from the others in relation to the average, which is positioned as a propitious space for the promotion of educational inclusion, since it allows the exchange of resources, synchronous and asynchronous communication; it is followed by *YouTube* (3.69) for its particularities in terms of educational content and the video tutorials it presents; on the other hand, *Messenger* (2.51) is low in terms of the average in relation to the other networks for the promotion of inclusion, since its function is more focused on messaging. On the other hand, the standard deviation indicates that "Other social network" (1,366), *Messenger* (1,160) and *TikTok* (1,119) represent scattered opinions on the role of these social networks in educational inclusion, while *WhatsApp* (1,047) and *YouTube* (1,061) reflect less dispersion, that is, there is greater consensus in their assessments, as evidenced in table 2.

Table 2. Descriptive data on social networks and educational inclusion

Statistical							Another social network: educational inclusion
TikTok educational inclusion	Instagram educational inclusion	Facebook educational inclusion	WhatsApp educational inclusion	YouTube educational inclusion	Messenger educational inclusion		
Media	3,06	2,80	3,12	3,88	3,69	2,51	2,65
Desv. Deviation	1,119	1,093	1,078	1,047	1,061	1,160	1,366

When the participants were asked about those social networks that promote educational inclusion, the results reveal that the social network *WhatsApp* is positioned as a medium that promotes educational inclusion from the perspective of the students, since its evaluations reflect the highest percentages in "Very Frequently" (34.5) and "Frequently" (31.5) and it is an indication that most of the participants agree and value this social network as the best for generate scenarios for attention to educational diversity.

Table 3. Percentage distribution of social networks analyzed to promote educational inclusion

	Never	Rarely	Occasio- nally	Often	Very of- ten
WhatsApp	2,4	7,6	23,9	31,5	34,5
Youtube	2,4	10,9	28,8	30,6	27,3
TikTok	9,1	21,8	33,0	25,8	10,3
Facebook	6,1	22,7	36,4	23,0	11,8
Instagram	10,9	30,9	33,9	16,1	8,2
Another so- cial network	29,1	16,7	27,9	13,3	13,0
Messenger	22,7	29,4	28,8	12,7	6,4

Compared to *WhatsApp*, *YouTube* is the second social network to promote educational inclusion from the perspective of the researched since the highest level is concentrated in "Frequently" (30.6), these percentages that differ between the two networks can occur due to the particularities they have, for example, *WhatsApp* allows immediate interaction, while *YouTube* stands out for presenting audiovisual content that does not allow immediate participation, unless it is live. The third social network that lends itself to promoting educational inclusion according to the results obtained is *TikTok*, its highest level is focused on "Occasionally" (33.0), however, "Frequently" has a high component, these results can be associated with the use of this social network for other purposes and a lack of knowledge of students and teachers in the potentialities that this network can provide for educational inclusion.

As for the social network Facebook, from the students' point of view, it concentrates a higher percentage in the "Occasionally" (36.4) to promote educational inclusion and it may be that these percentages reflect that this social network is currently being used for other purposes that are different from social learning and therefore from promoting educational inclusion. *Instagram* is perceived by students as a network that does not greatly favor educational inclusion, presents a high level in "Occasionally" (33.9) and it is considered that all these results are due to the fact that this social network is more oriented to the dissemination of show business, visual and entertainment content that causes interest and motivation in young people. For those investigated, they consider that another social network can be lent to promote educational inclusion and this can be: *Twitter*, *Discord*, *Telegram*, *LinkedIn*, which for some time may be used for other purposes and are not directly linked to educational processes due to ignorance of their potential; this calls for reflection to use them supported by other social networks.

As for Messenger, its highest percentage is concentrated in "Never" (29.1), which means that it presents a low percentage to promote educational inclusion, this is because it is not so linked to academics since its purpose is more focused on personal messaging and any user can decide to use another social network such as WhatsApp itself, which shares some functions, and the Messenger social network kits use can be complemented with *Facebook*. Regarding the results obtained in the Correlation Matrix, they show moderate relationships between several social networks, as is the case of the correlation between TikTok and Instagram, with a value of $r=0.545$, while other correlations are lower. However, it is observed that social networks such as TikTok, Instagram, Facebook, WhatsApp, YouTube and Messenger present higher correlation values when the variables of inclusion and valuation of diversity are analyzed, which suggests a logical relationship between these variables. It is important to note that the variables were grouped into categories such as inclusion, discrimination and valuation of diversity, which allows a more precise analysis of the different topics addressed.

On the other hand, very low correlations are also highlighted, such as the one between "Social networks discrimination ethnicity" and "Facebook diversity assessment" ($r=-0.034$). This low correlation suggests that not all variables have significant relationships with each other. These weak correlations can generate statistical noises, reflecting conceptual differences that should be discussed. In this case, it is observed that discrimination by ethnicity in social networks is conceptually far from what is implied by the valuation of diversity on Facebook. In some cases, it is relevant to note that high levels of correlation between variables do not always reflect direct practical relationships. For example, variables related to educational inclusion and the valuation of diversity show high correlations, which could be related to conceptual overlaps between the two topics. In this sense, correlations vary significantly depending on the topic, as evidenced in the case of TikTok, whose correlation is higher with the "valuation of diversity" than with "discrimination".

Regarding the factor analysis, the Kaiser-Meyer-Olkin Measure (KMO) as evidenced in table 4, a value of 0.824 which is interpreted as very good, that is, they indicate that the values entered are highly relevant to carry out the factor analysis, in turn the results obtained show that the variables have a high correlation for the identification of significant underlying factors. On the other hand, with regard to the Bartlett Sphericity Test, a significance of 0.000 is presented, this shows that the correlations of the matrix are not random and the data favor to perform the factor analysis:

Table 4. Kaiser-Meyer Olkin (KMO) Adequacy Test and Bartlett Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,824
Bartlett's sphericity test	Approx. Chi-square	2753,669
	gl	153
	Sig.	,000

On the other hand, Table 5 identifies that the total explained variance reflected in the first component has an eigenvalue of 6.003, this is equivalent to 33.348% of the total

variance and explains that this component represents a considerable proportion of the variability in the data. Regarding the following components, it is evident that they have less variance and progressively decrease, as is the case of the second (12.841%) and the third (8.778%) respectively. Following this line, Kaiser's rule implies that components with eigenvalues greater than one are retained, while the first five components of this study comply with this rule and together account for 68.249% of the accumulated variance. What is interpreted as these five components are sufficient to support most of the information contained in the original data. On the other hand, the variance represented by the first five components (68.249%) is adequate. However, it leaves 31.751% unexplained and it is evident that the components from six to eighteen have very low eigenvalues (< 1), which indicates that they represent little variance individually.

Table 5. Total variance explained and goodness-of-fit test

Component	Initial eigenvalues			Sums of charges squared from extraction			Sums of Charges Squared of Rotation ^a
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total
1	6,003	33,348	33,348	6,003	33,348	33,348	4,682
2	2,311	12,841	46,190	2,311	12,841	46,190	2,225
3	1,580	8,778	54,968	1,580	8,778	54,968	2,866
4	1,353	7,519	62,487	1,353	7,519	62,487	3,116
5	1,037	5,761	68,249	1,037	5,761	68,249	3,104
6	,807	4,482	72,731				
7	,705	3,914	76,645				
8	,644	3,579	80,223				
9	,598	3,320	83,543				
10	,501	2,783	86,326				
11	,452	2,509	88,836				
12	,387	2,153	90,988				
13	,374	2,077	93,065				
14	,318	1,767	94,832				
15	,294	1,632	96,464				
16	,232	1,290	97,754				
17	,220	1,224	98,977				
18	,184	1,023	100,000				

Extraction method: principal component analysis.

The pattern matrix in this study reflected in table 6 presents interesting results, such as component one that groups the variables in relation to the assessment of diversity in social networks such as *Facebook* (0.862), *TikTok* (0.818), *Instagram* (0.725), *WhatsApp* (0.623), *YouTube* (0.620) and *Messenger* (0.605), which are not very distant from each other. In component two, which has to do with discrimination on social networks, high values are evidenced in relation to discrimination on social networks for belonging to an ethnic group (0.891), discrimination for thinking differently (0.826), discrimination for disability (0.821). In component three, which refers to educational

inclusion in social networks, negative charges are identified that possibly reflect an inverse relationship, for example, this is the case of *TikTok* (-0.766) and *Instagram* (-0.710) and *Facebook* (-0.656). For its part, in component four, there is evidence of a positive equality between the social networks of *YouTube* and *WhatsApp* (0.777) to promote educational inclusion. On the other hand, in component five there is less clarity in its grouping, but it stands out: another social network to promote educational inclusion (0.854).

Table 6. Pattern Matrix

	Component				
	1	2	3	4	5
Facebook for diversity assessment	,862				
TikTok for diversity assessment	,818				
Instagram for diversity assessment	,725				
WhatsApp for diversity assessment	,623			,357	
YouTube for diversity assessment	,620			,357	
Messenger for diversity assessment	,605				,447
Social media for ethnicity discrimination		,891			
Social networks for discrimination for thinking		,826			
Social Media for Disability Discrimination		,821			
TikTok for educational inclusion			-,766		
Instagram for educational inclusion			-,710		
Facebook for educational inclusion			-,656		
YouTube for educational inclusion				,777	
WhatsApp for educational inclusion				,777	
Social networks for educational inclusion				,542	
Another social network for educational inclusion					,854
Another social network for valuing diversity	,326				,709
Messenger for educational inclusion			-,389		,570

Extraction method: principal component analysis.

Rotation method: Oblimin with Kaiser normalization.

The Table 7 explains the matrix of component correlations, which identifies that the highest correlation is present between components 1 and 4 ($r=0.394$) and between 1 and 5 ($r=0.326$), which implies that these components share some variance. On the other hand, the lowest correlations are found in component 3 with the others, highlighting the negative relationship with component 5 ($r=-0.256$). This implies that the third component could represent a different construct or even contrary to the one represented by the other components; All this is evidenced in more detail in the following table:

Table 7. Component Correlation Matrix

Component	1	2	3	4	5
1	1,000	-,030	-,212	,394	,326
2	-,030	1,000	-,083	-,016	,051
3	-,212	-,083	1,000	-,200	-,256
4	,394	-,016	-,200	1,000	,183

5	,326	,051	-,256	,183	1,000
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4. Discussion and conclusions

This research focused on analyzing the perception of students in the first, fourth and sixth cycle of the Basic Education career of the National University of Education about the capacity for educational inclusion offered by social networks in academic processes, through the application of a survey. The results obtained reveal relevant information about social networks and their prominent role in the creation of inclusive environments, especially in the university context, aimed at addressing student diversity. With respect to the most popular social networks, such as: WhatsApp, YouTube, TikTok, Facebook, Instagram, and Messenger, a greater affinity is observed with the variables of inclusion and valuation of diversity. This suggests that these platforms are positioned as key spaces to promote inclusion in virtual environments. In this sense, [18] argue that young people see social networks as a means of communicating, leaving aside physical limits, and turning them into an opportunity for linguistic and cultural rapprochement.

On the other hand, in the case of Facebook, a weaker relationship is found with the variable of discrimination by ethnicity. This implies that, for the most part, participants have not experienced discrimination in these settings due to their ethnicity, although they may face other forms of discrimination. [19] points out that, through its groups, Facebook is configured as a platform that facilitates conversations on various topics, allowing the participation of users from all over the world. As for TikTok, there is evidence of a closer relationship with the variable of valuing diversity than with discrimination, which may suggest based on students' perceptions that this social network promotes an environment of respect and acceptance towards diversity. [20] highlight that TikTok allows the expression of diverse identities, representing a society made up of individuals with diverse thoughts, characteristics, and questions, who demand acceptance and respect from all perspectives. Perhaps, in this social network you can contribute to the construction of more inclusive societies, as long as the values of respect and tolerance are promoted.

The pattern matrix confirms that the most relevant social networks in the study, such as Facebook (0.862), TikTok (0.818), Instagram (0.725), WhatsApp (0.623), YouTube (0.620) y Messenger (0.605) offer ideal scenarios for the assessment of diversity, as they share common characteristics that promote respect and tolerance. In this sense, [21] argues that, although social networks represent valuable opportunities, they can also become channels for the dissemination of prejudices. Therefore, it is crucial that their use is oriented to the benefit of society, promoting inclusion and equity.

In short, it is relevant to mention that from the perspective of students, social networks are related to educational inclusion and can be the best allies to embrace the

diversity present in the different university contexts; however, each social network has its particularities that make some (WhatsApp) stand out more than others (Messenger) in the promotion of educational inclusion within academic processes. In addition, it is important to consider that the impact of social networks on educational inclusion is not automatic, but depends on other factors such as the role of the teacher, the intentional approach to inclusive activities, digital competencies in the negotiation of identities, the promotion of support, and the various manifestations of the participants [22].

Faced with these latent demands in the university context, future research should focus on the use of social networks with reflective and critical approaches, accompanied by planned actions that involve both students and teachers. It is essential to consider the characteristics, needs, and identities of students, given that most of them use social networks on a daily basis, even for their academic training. Therefore, its use should not be limited to communication or obtaining information, but should transcend the classroom, promoting inclusion in various socio-educational contexts and contributing to the construction of fairer and more equitable societies.

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