

Psychometric Properties Of A Questionnaire To Assess Educational Inclusion From The Perception Of University Students

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Abstract

Latin American higher education institutions have the constitutional and social mandate to generate changes in their organizational, relational and academic configuration. In this context, educational inclusion -understood in its broad sense and not only in diversity- constitutes one of the backbone paths to contribute to these high purposes. Thus, and by virtue of what has been expressed, this methodological study reports the psychometric properties of an instrument (developed by the first four authors of this article) to evaluate educational inclusion from the perception of university students. This instrument underwent content validation processes by a system of expert judges. The statistical validation of the questionnaire (44 items) was carried out on a sample of 175 volunteer students (74.3% women and 25.7% men) from a social management and development program at a state university located in Santa Elena (Ecuador); 38 items were accepted for the final version of the instrument. The analyses showed a high reliability (0.878) for the entire instrument and an adequate relationship and dependence between each of the 6 factors identified through factor analysis. It is concluded that the questionnaire is valid, reliable and relevant to be used for research, diagnosis and evaluation of the impact of institutional policies in the field of educational inclusion.

Keywords: educational inclusion, higher education, questionnaire, psychometric properties, validation.

Introduction

This study is part of a partial product of an international research project called: development of capacities for community, family and gender professional intervention for university educational inclusion. Specifically, five universities in Latin America participate in this project: the Santa Elena Peninsula State University (Ecuador), the Arturo Jauretche University (Argentina), the Autonomous University of Ciudad Juárez (Mexico), the Technical University of Manabí (Ecuador) and the National University of Loja (Ecuador).

In this context, the need for a valid and reliable instrument that makes it possible to have diagnostic information and to help weigh the impacts of this international project was determined. Therefore, it was considered relevant within the Santa Elena Peninsula State University (UPSE) the construction of a preliminary instrument that later, also, can be subject to broader applications, adaptations and improvements in terms of its structure. All this stands as the essential support of this article.

In this way, and as a starting point, a review of the available literature was made with emphasis on the construct of educational inclusion. This allowed us to determine that in most comprehensive frameworks components associated with the participation of students in higher education institutions are absent (most studies appeal to basic education). In other words, the constructed reviewed are not related to the level of

involvement of students in university education based on identified needs, defined objectives and own decisions that contribute to their achievement. Nor are aspects such as the human bond established in the process of enjoyment of the right to education, which, for the authors, denotes the type of social relationship that is established during the educational process at the university. These links can be community, supportive and collaborative; or, on the contrary, individualistic, selfish, sectarian and competitive.

Likewise, the appropriation of inclusive experience is understood by an important group of authors as the ability to apprehend what has been learned. This means incorporating new knowledge, skills and values into everyday life; producing from oneself the corresponding transformations. However, insufficient attention was identified to the consideration of the subjects located (students) within a training process interested in the development of professional skills.

Under this panorama, the achievements of Ocampo (2015) stand out as contributions of great value for this psychometric study, who clarifies with solvency that inclusive education is not reduced to situations of disability and special educational needs. In this sense, and for this same author, inclusive education – as a founding precept – aims to transform and update all fields of pedagogy such as didactics, curriculum and formative assessment (Chávez, 2017). Given this, it is likely that inclusive education needs a theoretical construction capable of laying its conceptual, theoretical and methodological foundations that allow it to be achieved in a sustained manner.

From this point of view la educación incluyente parte del reconocimiento de la heterogeneidad y la diversidad de todas las personas. Esta diversidad es su fundamento antropológico o puede explicarse a todos los ciudadanos somos diferentes y eso es lo normal; y donde lo anormal sería pensar que todos somos iguales. Thus, heterogeneity is the psychological and explanatory basis for all human beings in experimental situations, dimensions and abilities of different people to learn (Ocampo, 2015; Martínez et al., 2022).

There are also substantial approaches to the diversity of alternatives proposed by universities today in the face of the challenges of their development (Acosta, 2016). This, however, depends on the role played by accumulated cultural capitals and how these, together with other structural social inequalities, shape the position, status and possibilities of inclusion of young people in higher education (Chávez, 2017).

Also, the scope of Arnaiz (2019) is shared when he affirms that: the discourse of inclusive education must pass from the field of principles and ideals to the classroom scenario. This is to land these principles in schools previously going through the political and social decisions that are necessary to facilitate it. Here, we cannot deny the progress, but there would be much more to be done about it; Because we must go beyond the mere attention to the most vulnerable students who, while remaining important and beneficial, are in many cases not fully coherent with the inclusive education project. Consequently, another great challenge to address is the creation of a true political conviction that gives economic, social and cultural coverage to inclusive education (Arnaiz, 2019; Palacios et al., 2022).

Advancing in university educational inclusion requires the transformation of the socially established order in the different dimensions and scales of development. This is considered by Plancarte (2017) when pointing out that it is undeniable that inclusion has been conceptualized in different ways and has been linked to ideologies and policies of each country; The same ones that have been used - in many cases - as a political springboard, but without truly taking into account people as individuals capable of learning. By virtue of this, it would promote the insertion of students in regular schools with the sole purpose of reaching the quotas committed in some decree or national or international agreement.

Methodology

A study of cut or instrumental nature was used (Hurtado, 2008; López et al 2019); the same that is methodological since it aims to offer as a product a way or form of obtaining data from reality thanks to the use of theoretical procedures as statistical (Méndez, 1988; Marroquin (n.d.). At the same time, this methodological research is circumscribed where the frameworks of educational studies (Arnal et al., 1992; (Bostwick and Kyte, 2005; Stevens, 1951).

Participants

The study sample consisted of 175 students; of whom 74.3 per cent are women and 25.7 per cent are men aged between 18 and 43. The exhibition has contemplated the volunteer students of the career of social management and development belonging to a state university of Santa Elena (Ecuador).

Instrument

The measuring instrument is a self-perception questionnaire composed of 44 items, according to a Likert-type scale (1 means nothing to agree and 5 strongly agree). The design and elaboration of the Likert scale was developed in three phases and was initially designed and validated with students of all levels of the social management and development career during 2022. It should be noted that this instrument has been prepared by the first four authors listed in this writing.

The validation process of the aforementioned instrument went through three phases. The first consisted of the bibliographic review on educational inclusion at the level. It is important to consider that it highlights the scarcity of measurement instruments that analyze criteria related to our construct; This decrease in student inclusion corresponding to the higher level is also noted. In this first phase, the work of Castillo et al. (2020) on their experience in validating instruments based on the Index for Inclusion for the Chilean educational context was reviewed. Along the same lines, the study by Rodríguez et al. (2020) related to the validation of a questionnaire on teacher attitudes towards inclusive education in Chile that aims to measure teachers' attitude towards educational inclusion was taken into account. It also highlights the report made by Aramendi and Etxeberria (2021) with their proposal for the construction and validation of the questionnaire for the measurement of commitment to attention to diversity in Basic Vocational Training (COMAD); study that aimed to measure the commitment of teachers towards attention to diversity in the educational stage of Basic Vocational Training,

In the same way, the methodological proposal that Carrillo et al. (2018) followed for the study of psychometric properties of the Educational Inclusion Questionnaire (CIE) in Colombian School Contexts whose objective was the adaptation of the instrument initially proposed by Montánchez (2014) was reviewed.

In the second phase, and to determine the validity of the content of the questionnaire, 6 experts with a doctorate degree (PhD) belonging to the Central Marta Abreu University of Cuba, the National Council of Scientific and Technical Research (CONICET) of Argentina, the International University La Rioja of Spain, the Autonomous University of Ciudad de Juárez of Mexico and the Technical University of Manabí in Ecuador were used. All these judges had proven experience in the field of educational inclusion. By virtue of this, they were invited to give their criteria regarding semantics, relevance of content, assessment of structure and understanding. In this process, the experts in their assessment recommended the exclusion of 4 items; finally remaining in 44 reagents.

In the third phase, the instrument was factorial validated, the scale was subjected to reliability and factorial analysis, in this phase 175 students (men and women) participated following what was mentioned by Morales et al. (2003); The same ones that suggest that the minimum amount for this type of statistical processes should not be less than 150.

Procedures

Once the procedures of information, conformity and acceptance of participation of students of the career of social management and development in this study were completed, the questionnaire was passed to be completed voluntarily and anonymously, during regular classes, with the authorization of the teaching staff corresponding to the classes that participated. The students' responses were tabulated and statistical analysis was performed.

Statistical analysis

The statistical analysis of the responses to the questionnaire was analyzed using the statistical program SPSS, V.22. Cronbach's alpha analysis (questionnaire reliability) was calculated. In addition, the Varimax Orthogonal Rotation method is used, which helped us to group the reagents into factors or components that can explain the variance observed in the answers offered by the subjects (Escalante and Caro, 2006).

Next, we analyze the degree of correlation between the variables, which must have high values to make factor analysis feasible, we also analyzed the data through the Kaiser, Meyer and Olkin KMO sample adequacy index (Kaiser, 1970) and Bartlett's sphericity test (1950).

Results

Factorial validity

Once there was an adequate number of individuals to have an ideal sample to perform the study, the data was processed to study the reliability of the scale of the instrument. The questionnaire of 44 items, in our study obtained a Cronbach's Alpha of .860 out of 175 responding subjects.

Anti-image correlation matrix

Before proceeding to obtain the final values of reliability and factor analysis, anti-image correlations analysis was used; This matrix contains the partial correlation coefficients changed sign (the correlation between two variables is partialized taking into account the rest of the variables included in the analysis). On the diagonal of the matrix of anti-image correlations are the sample adequacy measures for each variable. In our case, the factorial model chosen is adequate to explain the data, because the results of the elements of the diagonal of the matrix of anti-image correlations reached a value close to 1. In terms of academic rigor, reference should be made to the fact that the calculation mentioned by Elbel (1965) indicates that those items with a low level of discrimination (correlation $< .200$) in the total scale must be removed from the scale. In our case, we proceeded to suppress the items that were below .600; as shown in Table 1. Finally, there was our questionnaire with 38 items.

Table 1 Summary of deleted items based on Anti-image correlations matrix

Item	Value
11	,555 ^a
14	,557 ^a
15	,450 ^a
17	,462 ^a
19	,528 ^a

Total instrument reliability analysis

With the questionnaire composed of the remaining 38 items, the total reliability of the instrument was determined; finally obtaining a Cronbach's Alpha of .878, over the 175 subjects who initially responded.

Assumptions for factor analysis

Next, the degree of correlation between the variables was studied; and where the values of this analysis must be high in order to perform the factor analysis. In this way, the KMO sample adequacy index reached the value of .841 and Bartlett's sphericity test yielded values of 3566.662 (Approx. Chi Squared), a gl value of 703 and a Sig. .000; with which we have that the answers can be considered to be substantially related. Consequently, it justified continuing with the factor analysis.

Then we proceeded to establish the commonalities or proportion of variance that is explained by the components; the same one that yielded 6 factors. In general, and since there are no values close to zero, it can be said that the 38 items are explained by the components. The analysis of the main components and the Varimax Rotation revealed the convergence in six components that explain 55.791% of the variance. The first component is the one that explains the most variance with 25.514%, the second factor with 9.563%, the third 6.997%, and the fourth with 5.732%, the fifth 4.481% and the sixth 3.503% as read in Table 2.

Table 2 Total variance explained by component

Component	Initial eigenvalues		
	Total	% variance	% Cumulative
1	9,696	25,514	25,514
2	3,634	9,563	35,078
3	2,659	6,997	42,074
4	2,178	5,732	47,807
5	1,703	4,481	52,288
6	1,331	3,503	55,791

Extraction method: principal component analysis.

The correlations obtained show a strong dependency relationship between the factors; This allows to confirm the validity of the questionnaire with a six-factor structure.

Table 3 Component matrix rotated ^{to}

Item	1	2	3	4	5	6
42	,852					
43	,807					
41	,806					
35	,795					

36	,780		
38	,775		
40	,737		
37	,723		
39	,697		
44	,613		
34	,581		
33	,529		
18	,324		
29		,874	
30		,838	
28		,833	
31		,783	
27		,610	
26		,553	
32		,450	
8			,755
6			,722
9			,708
7			-,590
10			,413
23			,764
22			,731
24			,718
21			,691
25			,636
2			,709
5			,671
3			,553
4			,507
12			,595
1			,454
16			,432
13			,360

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

^a Rotation has converged in 6 iterations.

As can be seen in Table 3, we note that the first and second components would group the largest number of criteria from the qualitative section, and from the third to the sixth section a significant number of items are grouped that would describe important qualities of educational inclusion. Given this, the reflective analysis of the dimensions or categories generated allowed them to be named as follows: 1) Institutional mechanisms for university educational inclusion (items 18, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43 and 44); 2) Type of human bond that is established during the inclusive experience (items 26, 27, 28, 29, 30, 31 and 32); 3) Family context and university educational inclusion (items 6, 7, 8, 9 and 10); 4) student

participation for university educational inclusion (items 21, 22, 23, 24 and 25); 5) community context of university educational inclusion (2, 3, 4 and 5) and 6) Rights for university educational inclusion (items 1, 12, 13 and 16). In annex N°1 you can see in a list the 38 items that make up the questionnaire in its final version.

Discussion

The results found have an important degree of agreement with those found in the bibliographic consultations carried out. Likewise, the consistency of the items with the theoretical references of support reveal to us about the importance - and ontological existence - of including the study of educational inclusion at the higher level. This is demonstrated and supported by the fact that it has been possible to validate an instrument to measure or evaluate this construct. In the same way, it is considered relevant to institutionalize this thematic field and deepen on the basis of studies that follow this same quantitative line; and complemented with qualitative approaches that allow us to deepen with solvency (Bartolomé et al. 2021; Ramírez et al., 2018; Simon et al, 2016; Ministry Coordinator of Knowledge and Human Talent, 2012). In addition, it is considered necessary to develop not only educational research on these objects, but also to address inclusion in the experiences themselves within the institutions. The latter is correctly reflected in what Peñaherrera (2014) proposed through his proposal for research-based learning; an initiative aimed at integrating research in the classroom and the development of skills for everyday life.

However, the components found should be studied through qualitative studies to be defined qualitatively in order to have relevant inputs to understand these phenomena of educational research and, at the same time, understand the explanatory scope of this instrument. In this way, from the construction and validation of a questionnaire to listen to the voices of students of the higher level, it rises from the social point of view in a contribution capable of contributing to make these problems visible and committing to the deed of institutional cultures favoring inclusion in its broad sense (Ocampo, 2015).

On the other hand, and from the methodological point of view, the instrument has a high internal consistency since Cronbach's alpha coefficient reached .878. In addition, the saturations of each item with their respective components have high values (Morales et al. 2003; Marroquin n.d.) . This is associated with the fact that we have found a high correlation between factors indicating a good relationship and dependence between them. In summary, and as mentioned above, this instrument that we now present reports high reliability, factor validity and content; This indicates that this questionnaire to measure educational inclusion at the higher level could be used (in its entirety, by dimensions or independent items) for future inquiries and diagnostic processes.

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Annex N° 1

Questionnaire to evaluate educational inclusion from the perception of students (CIPA)

No.	Item	Dimension
1	Health services in my community are accessible when needed.	6
2	In my community there are enough sources of employment to ensure the sustenance of my family.	5

3	In my community there are public institutions that offer social services	5
4	My family and I are satisfied with the education provided by educational institutions.	5
5	In the place where he has gone, citizen security is guaranteed	5
6	In my family, sincere, open, respectful communication prevails We all have the right to express what we feel	3
7	Some member of my family uses violence to exercise authority	3
8	Everyone at home can participate in family decision-making	3
9	The adults in my family are role models	3
10	The women of my family are the protagonists in the education of children, within the home	3
12	Gay, lesbian, trans and queer people should have the same rights as people with other orientations and identities	6
13	Ensuring the economic sustenance of my family is fundamentally a matter of men	6
16	The university access system guarantees my admission on equal terms	6
18	My responsibility to the family does not affect the fulfillment of my student duties	1
21	Perform academic or other assistantship activities at the university	4
22	I am part of research groups or projects at the university	4
23	I participate in the formulation and development of outreach projects at the university	4
24	I have participated as a representative of my classmates in university activities	4
25	My opinions influence college decision-making	4
26	I establish good bonds with people of different ages than I do	2
27	I relate well to people with gender identities and sexual orientations different from my own	2
28	I have good relationships with people with disabilities	2
29	I have good relations with people belonging to different ethnic groups	2
30	I maintain good relations with people belonging to different nationalities	2
31	I establish good links with people who belong to economically disadvantaged groups	2
32	My academic results at university range from very good to excellent	2
33	I incorporate the new knowledge to my experience, these have helped me to improve personal and student life in particular	1
34	My career curriculum meets my expectations as a student	1
35	The work of university professors facilitates my integral development	1
36	The methodologies used in classes contribute to the collective construction of knowledge and learning	1
37	The evaluation modalities are adjusted to my possibilities	1
38	There is flexibility in the teaching-learning process	1
39	There are socio-educational spaces in the university where warm human bonds are promoted	1
40	The university has mechanisms that allow access to scholarships	1
41	Your university's regulations promote the educational inclusion of students	1
42	The university has policies, programs, protocols that favor educational inclusion	1
43	In the university where I study, information is offered that contributes to educational inclusion	1
44	Students have psychological support to respond to our community, family and gender problems	1