



The Enforceability of Economic, Social and Cultural Rights as a Neutrosophic Variable: The Right to Education in Ecuador

Alejandro Montecé 1,*

1 Pontificia Universidad Católica del Ecuador, Sede Esmeraldas, Esmeraldas, Ecuador. E-mail: samontece@puce.edu.ec

* Correspondence: samontece@puce.edu.ec

Abstract: In 1948 the United Nations General Assembly adopted the Universal Declaration of Human Rights, and in 1966 it divided fundamental rights into two covenants: one for civil and political rights and another for economic, social and cultural rights (ESC rights). This study analyses the level of enforceability of the second group, taking the right to education in Ecuador as its case, and argues that enforceability is not a binary property but a neutrosophic variable: for each dimension of the right there coexist degrees of realization (T), degrees of documented non-realization (F), and a component of indeterminacy (I) that the analysis types, following neutrosophic paraconsistent logic, into constitutive indeterminacy — deliberately built into the Covenant through progressive-realization clauses — and removable indeterminacy — produced by information gaps that better data could resolve. Using a documentary review of the founding instruments, the doctrinal debate, and the Ecuadorian evidence, the study classifies the evidence into a neutrosophic matrix across four dimensions: normative recognition, justiciability, material realization as access, and material realization as quality. The results show high truth values in recognition and access, concentrated falsity in quality, and an indeterminacy profile whose type differs by dimension: constitutive in justiciability, removable in access and quality data. The typing matters because each kind of indeterminacy demands a different remedy: treaty and legislative reform for the former, statistical capacity and transparency for the latter.

Keywords: Economic, social and cultural rights; right to education; enforceability; justiciability; Ecuador; neutrosophy; typed indeterminacy; neutrosophic paraconsistent logic.

1. Introduction

When the United Nations divided the fundamental rights proclaimed in the 1948 Universal Declaration [1] into two great groups and prepared two covenants — one on economic, social and cultural rights and one on civil and political rights — it left the first group without the clause on judicial remedies and without the affirmation of direct and automatic application found in the second [2]. This implied an inferior protection status, adopted at the request of the Western bloc, and it opened what doctrine has called a standing debt regarding the effective realization of economic, social and cultural rights [2]. The debt is politically convenient: honouring it would require large public expenditures, and rights that remain unpositivized can continue to circulate as electoral promises rather than as obligations.

ESC rights are defined as the human rights related to the workplace, social security, family life, participation in cultural life, and access to housing, food, water, health care and education [3]. Among them, education occupies a special place: in contemporary constitutional states, governments are bound to guarantee a free, quality public education, and Article 13 of the

International Covenant on Economic, Social and Cultural Rights (ICESCR) develops that obligation in detail [4].

The need for this study lies in the singularity of the positivization of these rights, which has produced a weaker development of protective legislation and instruments: only occasionally are ESC rights directly applicable, and sometimes enforceable, while in welfare-state nations their enjoyment reaches high levels. The question, then, is not whether ESC rights are enforceable, but to what degree, under which conditions, and with which zones of genuine uncertainty.

That formulation is inherently neutrosophic. Neutrosophy studies the coexistence of an idea with its opposite and with the spectrum of neutrality between them, assigning independent degrees of truth (T), indeterminacy (I) and falsity (F) [5, 6]. Recent work in neutrosophic paraconsistent logic further distinguishes the origin of indeterminacy: epistemic indeterminacy, which new evidence can resolve, and ontological indeterminacy, which is constitutive of the object itself [7]. This article transfers that distinction to legal analysis: part of the indeterminacy of ESC-rights enforceability is deliberately written into the Covenant (progressive realization, maximum available resources), and part is contingent on missing information that better statistics could remove. The objective is to analyse the enforceability of ESC rights, and of the right to education in Ecuador in particular, as a neutrosophic variable with typed indeterminacy.

2. The Two Covenants and the Differentiated Status of ESC Rights

2.1. *Origin and obligations*

The ICESCR was opened for signature in December 1966 and entered into force on 3 January 1976. Article 2.1 commits States Parties to take steps, individually and through international assistance and co-operation, to the maximum of their available resources, with a view to achieving progressively the full realization of the rights recognized, including in particular the adoption of legislative measures [4]. States assume three obligations with respect to these rights: to respect them, abstaining from interference; to protect them, actively opposing violations by third parties; and to fulfil them, adopting legislative, administrative, budgetary, judicial and other measures [8, 9].

Much of the debate on State obligations derives from the assumption that ESC rights necessarily and gravely compromise public resources. Doctrine has shown this premise to be misleading: the essential obligation of the State is not to hand out health, food, housing or education directly, but to institute a regime in which persons can establish a dignified relation with those goods; and the relevant resources are not restricted to the treasury, since they comprise those of the country considered as a whole, so that the less unequal the distribution of national wealth, the less it costs the State to cover those needs [8].

2.2. *The decision that split the rights*

The differentiated status has a precise origin. After long and difficult negotiations, the Commission on Human Rights considered ESC rights too complex to be incorporated into an instrument dealing with the application of civil and political rights, and — on the proposal of the United Kingdom and the United States — the decision was taken to prepare two covenants instead of one [10]. Western States argued that ESC rights were merely programmatic; socialist States demanded precise definitions while resisting control mechanisms. It is reasonable to conclude that, for different motives, most States had serious doubts about the immediate enforceability of ESC rights, and possibly most still do [10]. A comparable difference of status can be observed at the European level, where the European Convention on Human Rights is far more binding in practice than the European Social Charter, and in the Americas, where the Declaration and the American Convention carry more force in civil and political matters than in ESC matters despite the Protocol of San Salvador [11].

2.3. *Justiciability through other instruments*

The International Labour Organization, created alongside the League of Nations, always ignored the theoretical division of rights into two categories: its conventions contain both types without distinction, and Articles 6 to 10 of the ICESCR are based on ILO conventions adopted before the Covenant was drafted; the ILO's regular reports to the Committee on Economic, Social and Cultural Rights reference more than 110 conventions that develop provisions of the Covenant in greater detail [12]. The specificity of ILO standards makes their translation into domestic law simple: most contain explicit instructions on how they are to be applied through legislation, administrative regulation or collective bargaining — three types of norms justiciable at the national level [12].

Within the Covenant system itself, the Committee's General Comment No. 9 establishes the obligation to incorporate the Covenant into domestic law by all appropriate means, a broad and flexible approach that accommodates the particularities of each legal system [13]. Two principles bound that flexibility: Article 27 of the Vienna Convention on the Law of Treaties, under which a party may not invoke its internal law to justify failure to perform a treaty [14], and the Universal Declaration's guarantee of an effective remedy before competent national tribunals [1]. The Covenant, however, contains no direct equivalent of Article 2.3(b) of the International Covenant on Civil and Political Rights, which obliges States to develop the possibilities of judicial remedy [10, 13]. Enforceability does not necessarily require a judicial remedy: accessible, inexpensive, rapid and effective administrative remedies are valid, though for obligations such as non-discrimination some form of judicial recourse appears indispensable [13, 15].

3. Enforceability as a Neutrosophic Annotated Variable

3.1. The triplet and the typed decomposition of indeterminacy

The doctrinal landscape of Section 2 resists binary description: the same right is simultaneously recognized (T), under-protected (F), and suspended in zones where the law itself postpones definition (I). Neutrosophy provides the formal frame for such coexistence: an evaluation is a triplet in which truth, indeterminacy and falsity vary independently [5, 6]. Following the evidence-synthesis approach of neutrosophic paraconsistent logic [7], each dimension d of a right is treated as a proposition annotated with the triplet of Equation (1), and its indeterminacy is decomposed by origin: a constitutive component, deliberately built into the norm (progressive realization, maximum available resources, flexibility of incorporation), which no additional information can remove because it is part of the object; and a removable component, produced by missing or unreliable information, which better data would resolve:

$$A_d = \langle T_d, I_d, F_d \rangle, \quad I_d = I_d^c + I_d^r \quad (1)$$

3.2. The annotated-logic formulation

The representation of Equation (1) belongs to the tradition of paraconsistent annotated logics, in which atomic propositions carry annotations of evidential degree drawn from a X . In the neutrosophic annotated reading, the annotation is the independent triplet itself, and Equation (2) states each dimension of the right as an annotated proposition [7]:

$$d : \mu_d, \quad \mu_d = \langle T_d, I_d, F_d \rangle \in [0, 1]^3 \quad (2)$$

Two classical annotated measures transfer directly to legal analysis, stated in Equation (3): the degree of certainty, which orders dimensions by the net balance of evidence, and the degree of contradiction, which is positive exactly where evidence for and against the realization of the right accumulate simultaneously — the paraconsistent zone that binary legal analysis cannot represent without collapse [16, 17]. The distinction between contradictions that further evidence can dissolve and those that the normative design itself sustains follows the weak/strong paraconsistency analysis developed for neutrosophic systems [18]; Figure 1 summarizes the complete framework.

$$G_c(d) = T_d - F_d, \quad G_{ct}(d) = T_d + F_d - 1 \quad (3)$$

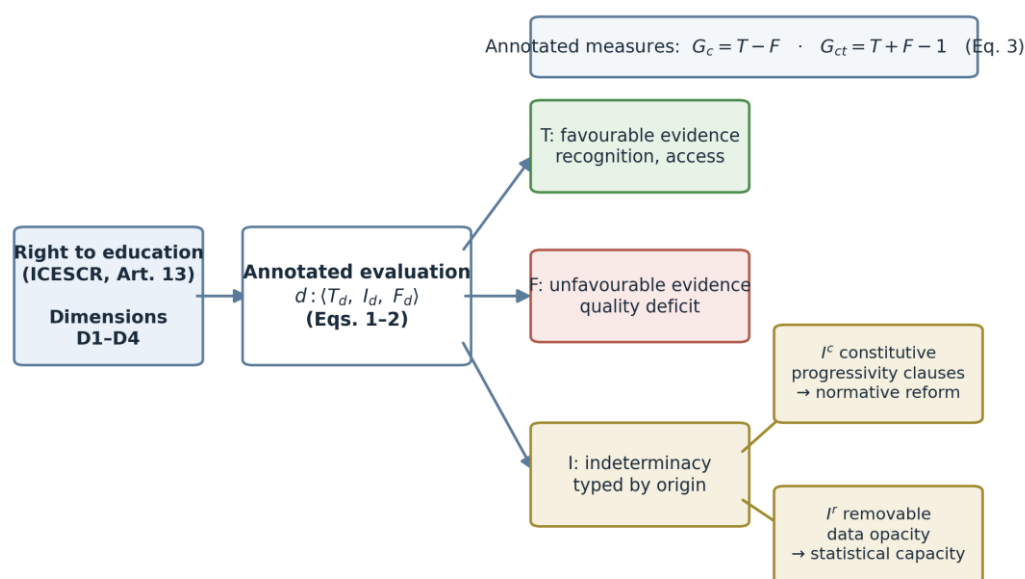


Figure 1: The enforceability of a right as a neutrosophic annotated variable: dimensions are annotated with $\langle T, I, F \rangle$ (Equations 1-2), indeterminacy is typed by origin, each type points to a different remedy, and the annotated measures of Equation (3) read the balance and the contradiction of the evidence. Source: author's elaboration.

The typing is not a formal ornament. It dictates the remedy: constitutive indeterminacy can only be reduced by changing the norm (an optional protocol, a legislative reform, a justiciability clause), while removable indeterminacy is reduced by statistical capacity, registries and transparency. Collapsing both into a single uncertainty — as binary legal analysis implicitly does — systematically misdirects reform effort [7].

4. Materials and Methods

The study adopts a documentary, bibliographic method, with Ecuador as its case: the country approved both covenants in 1969 and ratified the Optional Protocol to the ICESCR in 2010 [19, 20]. The corpus comprises the founding instruments (the Universal Declaration, the two Covenants, the Optional Protocol to the ICESCR, and General Comment No. 9), the doctrinal debate on justiciability, and the empirical literature on the Ecuadorian educational system [1, 4, 10-13, 21-26].

The analysis proceeds in three steps. First, the historical and doctrinal milestones of ESC-rights positivization are consigned (Section 2). Second, four analytical dimensions of the right to education are defined: normative recognition (D1), justiciability and remedies (D2), material realization as access (D3), and material realization as quality (D4). Third, the evidence for each dimension is classified into the components of Equation (1) — favourable evidence (T), unfavourable evidence (F), and indeterminacy (I), with each indeterminacy typed as constitutive or removable — producing the neutrosophic matrix of Table 1. The classification was performed by the author on the documentary corpus; the grounding of every cell is given by the references cited in it.

5. Results and Discussion

5.1. The neutrosophic matrix of the right to education in Ecuador

Table 1: Neutrosophic matrix of the enforceability of the right to education in Ecuador; each indeterminacy is typed as constitutive (I-c) or removable (I-r).

Dimension	Favourable evidence (T)	Unfavourable evidence (F)	Indeterminacy (I) and type
-----------	-------------------------	---------------------------	----------------------------

D1. Normative recognition	Both covenants approved in 1969; Optional Protocol ratified in 2010; Art. 13 develops the right in detail [4, 19, 20].	None identified at the level of recognition itself; the deficits emerge downstream, in justiciability (D2) and quality (D4).	Incorporation “by all appropriate means” leaves the mode open — I-c [13].
D2. Justiciability and remedies	Administrative remedies are valid; ILO standards render related rights justiciable [12, 13].	Inferior protection status relative to civil and political rights; no equivalent of ICCPR Art. 2.3(b) [2, 10, 11].	Progressive realization “to the maximum of available resources” — I-c [4, 8].
D3. Material realization: access	Near-universal, gender-parity attendance in basic education; century-long expansion [21, 24].	Rural residence subtracts ~30 percentage points of access [24].	Inconsistent records and inflated enrolment figures in higher education — I-r [22, 23].
D4. Material realization: quality	Standardized national evaluation exists (INEVAL) [25].	Average of 7.41 points, rated elemental; functional illiteracy across levels [25].	Long-term effect of successive reform cycles unevaluated — I-r [21, 26].

Source: author's classification of the documentary corpus; bracketed numbers indicate the references supporting each cell.

Three structural results emerge from Table 1. First, truth concentrates in recognition and access: Ecuador incorporated both covenants in 1969, ratified the Optional Protocol in 2010 [19, 20], and Article 13 of the Covenant gives the right to education its most detailed normative development, from free compulsory primary education to progressively free higher education [4]. Second, falsity concentrates in quality: the 2017 evaluation by the National Institute for Educational Evaluation (INEVAL) in public institutions produced an average of 7.41 points, described as elemental — students leave school without the knowledge required by the national baccalaureate examination [25] — and functional illiteracy extends from basic general education to the fourth level. Third, the indeterminacy profile differs in kind across dimensions, which is precisely what the typed decomposition of Equation (1) is designed to register.

5.2. Access: high truth with removable indeterminacy

The historical trajectory of access is the strongest truth component of the Ecuadorian case. At the end of the nineteenth century only a few, mostly missionary, basic schools existed; illiterate persons were 74.14% of the schoolable population around 1900, and four decades later the figure had fallen by less than four percentage points [22]. From the late 1950s to the early 1990s the country undertook a cycle of educational reforms of enormous scope, in which the creation of educational opportunities was a central policy objective across all levels [21]. Recent generations attend early basic general education almost universally and in gender parity, without substantial differences by income or ethnic identification [24].

Yet the same dimension carries the clearest removable indeterminacy. Rural residence still subtracts about thirty percentage points of access relative to urban residence [24]. And the country does not actually know how many students its higher-education system has: records of access have been kept inconsistently by co-ordinating bodies with limited co-operation, and public universities have on occasion inflated enrolment figures to obtain more State funds [22]. Regional assessments

add that only half of Latin American youths enter secondary education and on average a third complete it, with large gaps between and within countries [23]. This is indeterminacy of the removable kind: registries, audits and statistical capacity would resolve it, and its persistence is itself a policy finding — opacity protects the actors who profit from the sector [22].

5.3. *Quality: concentrated falsity*

Access having improved notably over a century, the right to education is formally satisfied; the problem is that students leave educational institutions with few skills, having lost imagination and initiative [25]. The succession of highly publicized educational reforms [21, 26] — each promising, in the words of the politicians of the day, to improve learning outcomes — has not translated into measured quality [25]. In neutrosophic terms, D4 is the dimension where favourable evidence is thinnest and unfavourable evidence strongest; its residual indeterminacy (the unevaluated long-term effect of each reform cycle) is again removable, awaiting longitudinal evaluation.

5.4. *Justiciability: constitutive indeterminacy*

The indeterminacy of D2 is of a different kind. The absence of a judicial-remedy clause in the ICESCR, the progressivity of Article 2.1, and the flexibility of incorporation admitted by General Comment No. 9 are not information gaps: they are the deliberate design of the instrument, adopted when two covenants were preferred to one [10, 13]. No additional data about Ecuador can remove this component; only normative change can — as the Optional Protocol ratified in 2010 partially did, and as the administrative-remedy doctrine mitigates [13, 20]. Registering this component as constitutive prevents a recurrent analytical error: treating the enforceability deficit of ESC rights as if it were an empirical unknown, when it is a legislated choice that each State corrects at its own pace and according to the governing political class [10].

5.5. *The annotated reading of the matrix*

Table 2 condenses the annotated reading. In qualitative terms, the certainty degree of Equation (3) is positive in recognition and access, where favourable evidence dominates; negative in quality, where the evaluated deficit dominates; and ambiguous in justiciability, where recognition coexists with an inferior protection status — the one dimension where the contradiction degree is structurally sustained rather than empirically contingent. No numerical elicitation is performed at this stage: the signs summarize the balance of the evidence cited in Table 1, and their quantification through panels of jurists is left as future work.

Table 2: Annotated reading of the matrix: qualitative sign of the certainty degree, presence of contradiction, dominant type of indeterminacy, and indicated remedy per dimension (Equation 3).

Dimension	Gc (sign)	Gct (contradiction)	Dominant I type	Indicated remedy
D1. Normative recognition	Positive	Low	I-c (mode of incorporation)	Normative: define the mode of incorporation
D2. Justiciability	Ambiguous	Present (recognition vs. inferior status)	I-c (progressivity)	Normative: protocol and justiciability clauses
D3. Access	Positive	Present (expansion vs. rural gap)	I-r (registries)	Statistical capacity and audited registries
D4. Quality	Negative	Low (evidence converges on the	I-r (unevaluated reforms)	Longitudinal evaluation of reform

		deficit)		cycles
--	--	----------	--	--------

Source: qualitative reading of Table 1; the signs follow from the balance of the evidence cited there, not from numerical elicitation.

5.6. Limitations of the study

This study has limitations that bound its conclusions. The classification of the evidence into the components of Table 1, and the typing of each indeterminacy as constitutive or removable, were performed by a single author on a documentary corpus; no panel of judges or inter-coder validation was employed, and the signs of Table 2 are qualitative summaries rather than elicited values. The corpus itself combines primary instruments with doctrinal and secondary literature, and the Ecuadorian figures cited are reported as given by their sources, whose primary records — notably the INEVAL series — should be consulted directly before drawing policy conclusions. The quantification of the matrix through single-valued neutrosophic assessments elicited from panels of jurists, announced as future work, is also the natural remedy for these limitations.

6. Conclusions

ESC rights correspond to the division of the fundamental rights of the Universal Declaration into two clearly differentiated groups, made by the United Nations to bind States to work for them in an obligatory and systematic manner. The ICESCR, unlike its civil-political twin, has neither immediate application nor a clause making its rights enforceable before the courts, which does not prevent global and regional human-rights bodies from working for them. Each country has undertaken the legal reforms that make these rights enforceable according to the reach of its rule of law and its governing political class.

Read neutrosophically, that conclusion gains precision. The enforceability of the right to education in Ecuador is a triplet, not a verdict: high truth in normative recognition and in a century of access expansion that ceased to discriminate by gender, ethnicity or purchasing power; concentrated falsity in quality, where evaluated performance is elemental despite repeated reforms; and an indeterminacy whose type varies by dimension. The justiciability deficit is constitutive — written into the Covenant by design and reducible only by normative change — while the uncertainty about access and quality is removable, sustained by inconsistent registries and unevaluated reforms. The practical consequence of the typing is a division of labour: treaty and legislative reform for the former; statistical capacity, transparency and longitudinal evaluation for the latter. Future work should extend the matrix to the remaining ESC rights and elicit numerical SVN assessments from panels of jurists, turning the qualitative matrix presented here into an instrument for comparative monitoring.

Author contributions: the author is responsible for the conceptualization, investigation, analysis, and writing of the manuscript.

Conflicts of interest: The author declares no conflict of interest.

References

1. UN General Assembly. Universal Declaration of Human Rights. Resolution 217 A (III), 10 December 1948.
2. A. M. Bonet de Viola. Consecuencias de la clasificación de los derechos humanos en generaciones en relación a la justiciabilidad de los derechos sociales. *Revista de la Facultad de Derecho y Ciencias Políticas*, 46(124) (2016), 17-32.
3. Office of the United Nations High Commissioner for Human Rights. Frequently asked questions on economic, social and cultural rights. Fact Sheet No. 33. OHCHR, Geneva, 2008. https://www.ohchr.org/Documents/Publications/FS33_sp.pdf
4. UN General Assembly. International Covenant on Economic, Social and Cultural Rights. Resolution 2200 A (XXI), 16 December 1966.

5. 5. F. Smarandache. Neutrosophy: Neutrosophic Probability, Set, and Logic. American Research Press, Rehoboth, 1998.
6. 6. M. Leyva-Vázquez and F. Smarandache. Neutrosofía: nuevos avances en el tratamiento de la incertidumbre. Pons Publishing House, Brussels, 2018.
7. 7. M. Leyva-Vázquez and F. Smarandache. Neutrosophic paraconsistent logic: evidence degrees, ontological indeterminacy, and scientific evidence synthesis. *Neutrosophic Computing and Machine Learning*, 43 (2026), 211-221.
8. 8. R. Gialdino. Obligaciones del Estado ante el Pacto Internacional de Derechos Económicos, Sociales y Culturales. *Revista IIDH*, 37 (2002), 87-133.
9. 9. S. Valencia Quiceno. Obligaciones de los Estados frente a los derechos económicos, sociales y culturales desde las normas internacionales de derechos humanos. In: *Derechos económicos, sociales y culturales*. Universidad Libre, Bogotá, 2009, 399-412.
10. 10. P. Texier. Exigibilidad de los derechos económicos, sociales y culturales en el sistema universal. In: *Construyendo una agenda para la justiciabilidad de los derechos sociales*. Secretaría de Gobernación / Instituto de Investigaciones Jurídicas, México, 2016, 13-24.
11. 11. International Commission of Jurists. *Courts and the Legal Enforcement of Economic, Social and Cultural Rights: Comparative Experiences of Justiciability*. ICJ, Geneva, 2008.
12. 12. L. Swepston. Justiciabilidad de los derechos económicos, sociales y culturales: la experiencia de la Organización Internacional del Trabajo (OIT). In: *Construyendo una agenda para la justiciabilidad de los derechos sociales*. Secretaría de Gobernación / Instituto de Investigaciones Jurídicas, México, 2016, 25-48.
13. 13. Committee on Economic, Social and Cultural Rights. General Comment No. 9: The domestic application of the Covenant. E/C.12/1998/24, 1998. <https://www.escr-net.org/es/recursos/observacion-general-no-9-aplicacion-interna-del-pacto>
14. 14. United Nations. Vienna Convention on the Law of Treaties. Treaty Series, vol. 1155, 23 May 1969.
15. 15. Comisión Nacional de los Derechos Humanos. Pacto Internacional de Derechos Económicos, Sociales y Culturales, y su Protocolo Facultativo. CNDH, México, 2012.
16. 16. N. C. A. da Costa, V. S. Subrahmanian, and C. Vago. The paraconsistent logics PT. *Zeitschrift für Mathematische Logik und Grundlagen der Mathematik*, 37 (1991), 139-148.
17. 17. J. M. Abe, S. Akama, and K. Nakamatsu. *Introduction to Annotated Logics: Foundations for Paracomplete and Paraconsistent Reasoning*. Springer, Cham, 2015.
18. 18. F. Smarandache and M. Leyva-Vázquez. (T, I, N, F) neutrosophic weak and strong paraconsistency and the epistemics of AI. *Neutrosophic Sets and Systems*, 100 (2026).
19. 19. Ecuador, Congreso Nacional. Pacto de Derechos Económicos, Sociales, Culturales, Civiles y Políticos. Registro Oficial 101, 24 January 1969.
20. 20. Ecuador, Asamblea Nacional. Protocolo del Pacto Internacional de Derechos Económicos, Sociales y Culturales. Registro Oficial 222, 25 June 2010.
21. 21. C. Arcos Cabrera. Política pública y reforma educativa en el Ecuador. In: *Desafíos para la educación en el Ecuador: calidad y equidad*. FLACSO Ecuador, Quito, 2008, 29-66.
22. 22. D. Post. Las reformas constitucionales en el Ecuador y las oportunidades para el acceso a la educación superior desde 1950. *Archivos Analíticos de Políticas Educativas*, 19(20) (2011), 1-26.
23. 23. D. Jaspers-Fajier. Los derechos económicos, sociales y culturales: instrumentos y obligaciones de los Estados en relación a las personas de edad. CEPAL, 2009. https://www.cepal.org/sites/default/files/events/files/djaspers_0.pdf
24. 24. T. Madrid Tamayo. El sistema educativo de Ecuador: un sistema, dos mundos. *Revista Andina de Educación*, 2(1) (2019), 8-17.
25. 25. H. Barrera Erreyes, T. Barragán García, and G. Ortega Zurita. La realidad educativa ecuatoriana desde una perspectiva docente. *Revista Iberoamericana de Educación*, 75(2) (2017), 9-20.
26. 26. A. Esteves. Introducción. In: *Desafíos para la educación en el Ecuador: calidad y equidad*. FLACSO Ecuador, Quito, 2008, 9-25.