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Isabella Henriques and Pedro Hartung

Children's Rights by Design in AI Development for Education

Abstract:

The present article proposes that all AI that directly or indirectly impacts children, also in the educational processes, must always take children's rights and interests always first. It highlights the legal duty to respect, protect and their rights by States and private actors, like tech-companies, in the design, developing and provision of any AI technology, product or service. In this sense, proposes that the Children's Rights by Design (CRbD) standard should be always applied by States and corporations.

Keywords: Accessibility, AI for Children, Children's Rights by Design, Duty, Education, Global South, Legislation

Outline:

Authors:
Isabella Henriques, PhD student, LL.M in Social Law, Executive Director of Alana Institute
- Instituto Alana, Rua Fradique Coutinho, 50, 11 andar, 05416-000, Pinheiros, São Paulo, SP, Brazil
- + 55 - 11 – 9 8128 9384, isabella@alana.org.br, www.alana.org.br

Dr. Pedro Hartung, Ph.D. in Public Law, Coordinator at Alana Institute and Unicef's Data governance working group member
- Instituto Alana, Rua Fradique Coutinho, 50, 11 andar, 05416-000, Pinheiros, São Paulo, SP, Brazil
- + 55 - 11 – 34721600, pedro@alana.org.br, www.alana.org.br - www.criancaeconsumo.org.br/en

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1. Introduction

Artificial Intelligence (AI) systems, although little perceived as part of our daily lives, are becoming ubiquitous for all people, including children. AI is used in cities for public safety and traffic organization purposes; in hospitals, through applications in devices that assist doctors in detecting diseases; in education, with the use of algorithms that create possibilities for customized learning or facial recognition technologies; in entertainment, with algorithms indicating new videos and helping with Internet searches. There are countless examples of already existing AI systems, which are aiming to facilitate and improve the lives of citizens in various and different spheres of their lives, greatly changing the way people live, work and relate to each other. The rise of AI is a globally ubiquitous phenomenon associated with what many have called the 4th Industrial Revolution[1].

Children are inevitably being affected by these changes and are increasingly included among users of AI systems, directly or indirectly. Children are also citizens who enjoy urban centers, medical services, formal education and various forms of entertainment available to them. In addition to being able to interact with household items that use AI technologies, automated decision-making systems are already embedded in products and services directed at children, such as video games, virtual personal assistants and even toys, such as the Hello Barbie doll[2]. Algorithms provide recommendations to children about which movies to watch, which songs to listen to, what news to read, what answers to reach with a search engine, and who their friends may be.

Despite all this technological development and its several potentially positive aspects, such as providing rapid solutions to diverse problems, the automation of various processes and the facilitation of human life as a whole, AI has provoked a series of ethical questions and related discussions around human rights and security. Such concerns do not include the consideration of the more apocalyptic prognostications of a future where machine technologies merge with human biology and physiology[3] through the use of general or super AI[4].

These challenges are even more complex when one considers the demographics of the countries of the Global South which boast large numbers of children per family. AI can contribute to the exponential mitigation of structural inequalities. It can assist in guaranteeing human rights such as the right to adequate food, basic sanitation, quality education, employability and security. However, it can also exasperate preexisting discrimination, including in education, impacting children's accessibility to education and enjoyment of accessible education.

The present article proposes to analyze the relationship of AI as directly or indirectly impacting the educational processes of children, particularly in the Global South. Focusing on Brazil as a case study, the article highlights where the structural challenges of formal education, as impacted by AI, are increasing. It emphasizes the responsibility of participating entities to respect and protect the rights of children, including government and state (in the development of policy), and as well tech-companies (in the design, development and provision of AI technologies, products and services). The article concludes with a defense of the Children's Rights by Design (CRbD), a standard that should be always applied, thus ensuring the best interests of children always prevail, as provisioned by the UN Convention on the Rights of the Child (CRC)[5].

[1] See more at: Schwab, Klaus. The fourth Industrial Revolution. New York: Crown Business, 2017.

[2] The independent, Article 'Ai-Enabled Toys: Hello Barbie Is Now Connected To Wifi - And Can Chat Back', Nov. 2015. Available at: https://www.independent.co.uk/life-style/gadgets-and-tech/ai-enabled-toys-hello-barbie-now-connected-wifi-and-can-chat-back-a6721666.html (checked in 16.10.2020)

[3] The BBC, Article 'Stephen Hawking warns artificial intelligence could end mankind', Rory Cellam-Jones, Dec. 2014. Available at: https://www.bbc.com/news/technology-30290540 (checked in 13.10.2020)

[4] https://codebots.com/artificial-intelligence/the-3-types-of-ai-is-the-third-even-possible (checked in 14.10.2020)

[5] United Nations, Convention on the Rights of the Child – Available at https://www.ohchr.org/en/professionalinterest/pages/crc.aspx (checked in 13.10.2020).

2. Overview of AI for Children

Just as it has been successfully argued through countless studies and letters of principles from around the world that AI must be grounded in human-centric design[6], it must also be made clear that the design, development and provision of AI, that can directly or indirectly, affect children should always put the rights and best interests of children first. Children, as recognized by the CRC and other national legal norms, experience a unique stage of physical, psychological and social development, with evolving capacities and, therefore, must be specially protected, ensuring their rights are guaranteed as priority, no matter the circumstances, whether by family, States and society, or companies.

AI Systems have to promote children's rights and to support their development worldwide. However, given the fact that more and more decisions are being delegated to intelligent systems, it is essential to maintain a critical perspective, that, in addition to the positive aspects provided by AI, the inherent risks involved are properly vetted. As stated by UNICEF in their first draft Policy Guidance on AI:

> *"While AI is a force for innovation and can support the achievement of the Sustainable Development Goals (SDGs), it also poses risks for children, such as to their privacy, safety and security. Since AI systems can work unnoticed and at great scale, the risk of widespread exclusion and discrimination is real."*[7]

2.1. AI for children is any AI that directly or indirectly impacts children

Although the population of children impacted by AI systems is significant - they represent 1/3 of users worldwide on the Internet alone (without accounting for the AI applied massively in schools, cities and other spaces) - the vast majority of AI policy initiatives that exist around the world hardly mention them or when they do, they are limited to broad citations, without details or deeper considerations about their particularities. They do not deal, for example, with the possible uses of predictive analysis or other types of algorithmic modeling that can make determinations about the future of children, causing them unpredictable consequences.

This demonstrates the immense urgency to expand the study of the implications of AI in multiple global childhoods, including among children in the Global South, in which accessibility to the internet is often conditioned to commercial exploitation models, such as the zero rating in Brazil for some applications and services[8], all of which abound in automated decisions.

One of the rare documents on this subject is the first draft of the Policy Guidance on AI for Children, recently launched by UNICEF, which set out nine requirements for a child-centered AI, which should be based on the defense of children's rights, through the lens protection, provision and participation. They are: (1) Support children's development and well-being; (2) Ensure inclusion of and for children; (3) Prioritize fairness and non-discrimination for children; (4) Protect children's data and privacy; (5) Ensure safety for children; (6) Provide transparency, explainability, and accountability for children; (7) Empower governments and businesses with knowledge of AI and children's rights; (8) Prepare children for present and future developments in AI; (9) Create an enabling environment for all to contribute to child-centered AI[9].

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[6] Burle, Caroline e Cortiz, Diogo. Mapping Principles of Artificial Intelligence. São Paulo: Núcleo de Informação e Coordenação do Ponto BR, 2020. [electronic book] Available in https://ceweb.br/publicacoes/mapping-principles-of-artificial-intelligence/ (checked in 13.10.2020).

[7] UNICEF, Policy Guidance on AI for Children – Draft 01, September, 2020. Available in https://www.unicef.org/globalinsight/media/1171/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf (checked in 13.10.2020).

[8] See more in: UN IGF, Net Neutrality Reloaded: Zero Rating, Specialised Service, Ad Blocking and Traffic Management. Annual Report of the UN IGF Dynamic Coalition on Net Neutrality. Available at: https://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/17532/Net%20Neutrality%20Reloaded.pdf (checked in 16.10.2020).

[9] UNICEF, Policy Guidance on AI for Children – Draft 01, September, 2020. Available at: https://www.unicef.org/globalinsight/media/1171/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf (checked in 13.10.2020).

In view of the cross-border multiplication of AI systems, including those that impact children, new global initiatives such as that of UNICEF, guided by ethics and centered on the human will be of paramount importance[10].

Undoubtedly, AI systems that impact children, directly or indirectly, must also be, as any AI systems, first and foremost, human-centered, as mentioned in the European Commission, which seeks to promote a reliable AI:

> "*AI systems need to be human-centric, resting on a commitment to their use in the service of humanity and the common good, with the goal of improving human welfare and freedom*." [11]

Thus, in addition to the challenge of harmonizing innovation, efficiency and freedom of business models with the protection of human rights, accountability, explainability and transparency of AI systems[12], there is one more: finding a balance that guarantees the best interest of children and their specific rights, in all applications that are not prohibited and can be used by them or impact them, even indirectly. And not only in those AI applications specifically aimed at the use and consumption of children[13] - also as a precaution against potential risks to which they may be subjected[14]. And all AI that can directly or indirectly affect children must take their rights and interests first, in addition to ensuring their best interest and being human-centered. This means that the best interest of children and their rights must be pursuit with priority by every AI developer, even though their product or service was meant not to be used by children or affect them indirectly at first sight.

In this sense, efforts must be expanded to democratize the benefits of AI systems for children, as well as to mitigate possible risks, especially in different contexts and for the multiple childhood development around the planet.

3. AI in Education

AI is very welcome as a complement to educational processes, without ever replacing human exchanges with teachers and colleagues. In this sense, children have the right to an education that constitutes knowledge and values in an interactive way (through cognitive and affective exchanges) by (i) ethical values (freedom of

[10] According to Andriei Gutierrez: "(...) It is unanimous among the most developed economies, which participate in the OECD, the need to advance in global policy recommendations for AI". GUTIERREZ, Andriei. É possível confiar em um sistema de Inteligência Artificial? Práticas em torno da melhoria da sua confiança, segurança e evidências de *accountability in* FRAZÃO, Ana e MULHOLLAND, Caitlin (coordenadoras). Inteligência Artificial e Direito – Ética, Regulação e Responsabilidade. São Paulo: Thomson Reuters Brasil, 2019, p. 95.

[11] The European Commission, ´Ethics Guidelines for Trustworthy AI´, Independent High-Level Expert Group on Artificial Intelligence, p. 4. Disponível em https://ec.europa.eu/futurium/en/ai-alliance-consultation/guidelines (checked in 13.10.2020).

[12] Wimmer, Miriam. Inteligência Artificial, Algoritmos e o Direito. Um panorama dos principais desafios. In 2019, LIMA, Ana Paula Canto de; HISSA, Carmina Bezerra; SALDANHA, Paloma Mendes. (Org.). Direito Digital: Debates Contemporâneos. 1ed. São Paulo: Revista dos Tribunais, 2019, v. 1, pp. 15-30. Available in https://www.academia.edu/41546243/Inteligência_Artificial_Algoritmos_e_o_Direito_um_panorama_dos_principais_desafios?email_work_card=abstract-read-more (checked in 13.10.2020).

[13] ICO, UK Age-Appropriate Design Code, 2020: *"This code applies to "information society services likely to be accessed by children" in the UK. This includes many apps, programs, connected toys and devices, search engines, social media platforms, streaming services, online games, news or educational websites and websites offering other goods or services to users over the internet. It is not restricted to services specifically directed at children."* Available in https://ico.org.uk/for-organisations/guide-to-data-protection/key-data-protection-themes/age-appropriate-design-a-code-of-practice-for-online-services/executive-summary/ (checked in 13.10.2020).

[14] *"Simply put: children interact with or are impacted by AI Systems that are not designed for them, and current policies do not address this. Furthermore, whatever is known about how children interact with and are impacted by AI is just the start. The disruptive effects of AI will transform children´s lives in ways we cannot yet understand, for better or for worse. Our collective actions on AI today are critical for shaping afuture that children deserve."* In: UNICEF, ´Policy Guidance on AI for Children´ – Draft 01, September, 2020. Available at: https://www.unicef.org/globalinsight/media/1171/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf (checked in 13.10.2020).

thought and search for autonomy); (ii) political values (rights and duties of citizenship); and (iii) aesthetic values (with beauty, what is beautiful for one is not necessarily for the other – autonomy)[15].

AI can be an important tool to enhance all dimensions of the right of the child to and in education: availability (fiscal allocations, number of vacancies, diversity, teachers' skills etc.); accessibility (elimination of legal, administrative barriers, financial obstacles, discriminatory denials etc.); acceptability (parental choice, minimal standards, language, freedom from censorship etc.); and adaptability (for children with disabilities and minority, indigenous, migrants, children etc.)[16].

For example, AI can promote the adaptation of school and study material to the individual abilities of students and the use by teachers for tasks that do not require human skills. However, there are also many risks involved, depending on the programming of the algorithms: the violation of privacy by the massive use of personal data and the little or almost no control of their respective holders in this regard, such as, for example, the expansion of prejudices and inequalities.

A research report recently published by *Educação Aberta* proved a number of problematic issues in *Terms of Use* of education platforms made available by Google and Microsoft in Brazil, which result in the collection and processing of personal data from children without guaranteeing their best interest just for the purpose of commercial exploitation of children[17]. The main problem is that the consent and age verification standards are often offered as solutions to the pervasive data extraction practices, which they are not. Also, not consenting to tech companies' terms of use and privacy policies, in many cases, is not a real option for most citizens, as, for instance, the use of educational platforms in the remote learning context of Covid-19.

Another negative example is what happened recently in the UK, when the government used an algorithm to classify the grades of students who would take national exams, which were cancelled due to the pandemic. The results showed, for example, that students from private schools were privileged and diverse inequalities were amplified – which generated the first march against an algorithm in the world! [18]

Not to mention the implications arising from missed opportunities, when there is no possibility that children enjoy the benefits of AI systems in education because of the countless inequalities they are subject to.

On this topic, it is worth highlighting that the recent Beijing Consensus on Artificial Intelligence and Education (2020) *"reaffirms a humanistic approach to deploying Artificial Intelligent technologies in education for augmenting human intelligence, protecting human rights and for promoting sustainable development through effective human-machine collaboration in life, learning and work."* And it details recommendations in five areas: (i) AI for education management and delivery; (ii) AI to empower teaching and teachers; (iii) AI for learning and learning assessment; (iv) Development of values and skills for life and work in the AI era; and (v) AI for offering lifelong learning opportunities for all[19].

In summary, AI in education should always promote and protect children's rights and their best interest, potentializing opportunities of availability, accessibility, acceptability, and adaptability and eliminating barriers and not being a tool for violations and commercial exploitation of the collected personal data.

4. Global South – The Brazilian Case

When dealing with AI in the context of educational processes, it is important to note that the Global South has structural inequalities which also impact childhood development. Brazil, for instance, has 13.5 million people in

[15] De Assis, Regina. Papel das escolas na promoção da cidadania digital, Public Talk at the Nic.br symposium, October 2019. Available at: https://www.youtube.com/watch?v=G7BdRW_f7CI&list=PLQq8-9yVHyOYX9BipftGWAaFOMopImqPw&index=3 (checked in 13.10.2020).

[16] Tomaševski, K. Human rights obligations: making education available, accessible, acceptable and adaptable. Right to Education Premiers 3, 2001, p. 14. Available at: https://www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/Tomasevski_Primer%203.pdf (checked in 16.10.2020).

[17] Available at: https://aberta.org.br/educacao-dados-e-plataformas/ (checked in 16.10.2020).

[18] The New York Times, Newspaper article, 'British Grading Debacle Shows Pitfalls of Automating Government', reporter Adam Satariano, Aug. 2020. Available at https://www.nytimes.com/2020/08/20/world/europe/uk-england-grading-algorithm.html (checked in 13.10.2020).

[19] UNESCO, Beijing Consensus on Artificial Intelligence and Education. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000368303 (checked in 14.10.2020).

extreme poverty, 52.5 million people (1/4) below the poverty line, 42.3% of children live below the poverty line and 73% of the poor are black[20]. All these data show the challenges the country has faced in general.

On the one hand, the country needs to be open to innovation, to AI; on the other hand, it needs to deal with basic issues of guaranteeing rights for a population of children that, in absolute numbers, is greater. Consider for example: more than the entire population of Spain – Brazil has 65 million children (0-18 years old), who represent 30.9% of the total of 210 million people and 3.5 million are children with disabilities[21]. In other words, in addition to dealing with all the current challenges that today's society present for children, to accomplish at most their full development, a number of countries and societies, like Brazil, still have to deal with several basic and primary social, economic, political and civil barriers.

Regarding the level of education of the Brazilian population, among adults aged 25 or over, 39% have no education or have incomplete elementary school, 13% have complete elementary school or incomplete high school, 31% complete high school or incomplete higher education and just 17% have completed higher education[22]. Only 14% of Brazilian public schools accessed a virtual learning environment before Covid-19, and one in five students depends exclusively on cell phones to access the internet[23], which limits learning possibilities.

Although Brazil has a huge challenge in providing Internet access for its population (there are more than 4 million children without Internet in their homes), most children and adolescents are Internet users and use several tools that have AI capability to some extent. On a daily basis: 89% of children aged 9-17 years are Internet users (access in the last 3 months) and 95% access the Internet by cell phone; 38% by computer (table, laptop and tablet) and 43% by television[24]. The growth of the Brazilian children's audience has also massively expanded between 2015 and 2016: 975% for unboxing videos, 564% for channels made by kids youtubers and 171% for YouTube channels for kids in general[25]. Those are important data to be observed when thinking about informal education, mainly due to the amount of time children spend on using these new technologies.

Hence, in Brazil and in other countries, the successful use of AI in formal education needs to take place together with reforms in other aspects such as school curriculum, assessment and professional development of teachers. It is important to note that:

- AI in education does not replace educators but helps them to expand their role as mediators of knowledge and curator of content;
- Learning about the operation of machines becomes fundamental so that children are not at the mercy of a technology that they do not master, but can, on the contrary, be easily mastered by it[26]; and
- AI can provide people with disabilities with greater autonomy, quality of life and social inclusion. Indeed, AI systems can be explored by schools and educators, in order to eliminate the barriers that hinder learning[27].

[20] https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/25882-extrema-pobreza-atinge-13-5-milhoes-de-pessoas-e-chega-ao-maior-nivel-em-7-anos (checked in 14.10.2020).

[21] IBGE, Brazilian national Census. Available at: https://educa.ibge.gov.br/criancas/brasil/nosso-povo/20785-as-criancas-no-brasil.html (checked in 14.10.2020).

[22] IBGE, Brazilian national Census, 2018. Available at: https://educa.ibge.gov.br/criancas/brasil/nosso-povo/20785-as-criancas-no-brasil.html (checked in 14.10.2020).

[23] CETIC.BR, ICT in Education 2019. Available at: https://cetic.br/en/pesquisa/educacao/indicadores/ (checked in 14.10.2020).

[24] ICT Kids On Line Brazil 2019 – Available at: https://cetic.br/en/pesquisa/kids-online/ (checked in 13.10.2020).

[25] ESPM Media Lab 2015-2016 – Available at: https://criancaeconsumo.org.br/wp-content/uploads/2018/09/Media-Lab_Luciana_Correa_2016.pdf (checked in 13.10.2020).

[26] BARBOSA, Luciana Santos E SILVA, Júlio César Martins dos Anjos. Computational Language and the Need to Rethink the Curriculum *In* Brazilian Network Information Center (editor). ICT in Education Survey on the Use of Information and Communication Technologies in Brazilian Schools. São Paulo: The Brazilian Internet Steering Committee (CGI.br), 2019, p. 183 (electronic book). Available at: https://cetic.br/media/docs/publicacoes/216410120191105/tic_edu_2018_livro_eletronico.pdf (checked in 13.10.2020).

[27] UN, Convention on the Rights of Persons with Disabilities and Optional Protocol – Available at: https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf (checked in 13.10.2020).

5. Children's Rights by Design for AI

Children are individuals with evolving capacities, they are less able to fully understand the implications of AI and often do not have the opportunities or the means to communicate fully their views, nor have the right advocates to support them[28]. Considering the regulation by law[29] and market regulation, including companies' duties to children's rights, a common effort must be guaranteed in the construction of ethical guidelines and principles, as well as considering that the technology architecture itself can bring innovative solutions to the challenges posed. That is why the idea of *ethics by design*[30][31] has gained strength throughout the development and use of AI systems.

Furthermore, with the Internet of Things, based on machine-machine communication, the use of AI, as it is today and is intended to be in the future, will foster the progressive automation of entire sectors of the economy and social life on the planet[32]. Especially in the face of the proliferation of data that the Internet has enabled and that feed the development of AI based on machine learning algorithms, in this new data economy, which presents relations as asymmetrical as those between children, their families and the companies involved in the collection and treatment of your personal data[33].

Thus, the CRbD standard[34] ensures that data-driven business models from the new data economy do not exploit children in a predatory way. Often, companies' detrimental activities pose threats to children's right to privacy, security and freedoms. Together with this it can promote discriminatory practices and commercial exploitation, including in the course of educational activities, which can seriously compromise the development of children in different forms and levels, and contribute directly to reinforce and deepen children's vulnerabilities in contexts of structural inequalities.

It is essential that the best interest of children and adolescents be preserved in all stages of the development of AI that impacts children, from the design[35] of products and services, to their placement in the hands, minds, and hearts of these people in a peculiar stage of development[36], regardless the colour of their

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[28] https://www.unicef.org/globalinsight/media/1171/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf (checked in 13.10.2020).

[29] RODOTÀ, Stefano. A Vida na sociedade da vigilância – A privacidade hoje. Organização de Maria Celina Bodin de Moraes. Tradução: Danilo Doneda e Luciana Cabral Doneda. Rio de Janeiro: Renovar, 2008, p. 151: "De concreto, a disciplina das matérias abarcadas pelas tecnologias da informação e da comunicação é hoje confiada a uma miríade de fontes, diversas em forma e conteúdo, todas porém relevantes para fins de regulamentação (...)"

[30] "*We believe that, in order to create a Good AI Society, the ethical principles identified in the previous section should be embedded in the default practices of AI. In particular, AI should be designed and developed in ways that decrease inequality and further social empowerment, with respect for human autonomy, and increase benefits that are shared by all, equitably. It is especially important that AI be explicable, as explicability is a critical tool to build public trust in, and understanding of, the technology.*
We also believe that creating a Good AI Society requires a multistakeholder approach, which is the most effective way to ensure that AI will serve the needs of society, by enabling developers, users and rule-makers to be on board and collaborating from the outset." Floridi, Luciano; Cowls, Josh; Beltrametti, Monica; Chatila, Raja; Chazerand, Patrice; Dignum, Virginia; Luetge, Christoph; Madelin,Robert; Pagallo, Ugo; Rossi, Francesca; Shafer, Burkhard; Valcke, Peggy; Vayena, Vayena. AI4People—An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations. Minds and Machines, 2018. Available in https://doi.org/10.1007/s11023-018-9482-5 (checked in 14.10.2020).

[31] https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead1e.pdf?utm_medium=PR&utm_source=Web&utm_campaign=EAD1e&utm_content=geias&utm_term=undefined (checked in 14.10.2020).

[32] Magrani, Eduardo. A internet das coisas. Rio de Janeiro: FGV Editora, 2018.

[33] Bioni, Bruno Ricardo. Proteção de dados pessoais – a função e os limites do consentimento. Rio de Janeiro: Forense, 2019.

[34] Hartung, Pedro. The Children's rights-by-design (CRbD) standard for data use by tech companies. UNICEF Data governance working group, 2020 (in press). Available in https://www.unicef.org/globalinsight/reports/childrens-rights-design-new-standard-data-use-tech-companies (checked in 25.1.2021).

[35] No campo da regulação do desenvolvimento de serviços no ambiente digital vale ser mencionado o *Age appropriate design: a code of practice for online services*, promovido pelo Information Commissioner's Officer do Reino Unido, que tem como regra básica não proteger as crianças do mundo digital, mas protegê-las dentro dele, para que possam usufruir a Internet na sua maior potência. Disponível em: https://ico.org.uk/for-organisations/guide-to-data-protection/key-data-protection-themes/age-appropriate-design-a-code-of-practice-for-online-services/ (checked in 13.10.2020).

[36] UC Berkeley Human Rights Center Research Team. Memorandum on Artificial Intelligence and Child Rights. Disponível em https://www.unicef.org/innovation/sites/unicef.org.innovation/files/2019-05/MEMORANDUM%20AI%20AND%20CHILDREN%2527S%20RIGHTS%20FINAL%20APRIL%2030%202019%20%281%29_0.pdf (checked in 13.10.2020).

skin, the country of their origin, their creed, their financial condition or whether or not they have any type of disability[37]:

> *"Children's varied characteristics, such as their developmental stages and different learning abilities, need to be considered in the design and implementation of AI systems."*[38]

In order to protect all children's right to privacy and to a full development in search for their best interests, a child-oriented design[39] standard arises, supported by the scope of the Convention on the Rights of the Child, because every child must be able to develop in his or her full potential, as they are not the citizens of the future, but from today.

Specifically, the CRdD for AI standard could be translated into the following specific recommendations for actors who govern, develop and provide products and services with AI that impacts direct or indirectly children: 1) Integrate the Convention on the Rights of the Child provisions into all appropriate corporate policies and management processes; 2) Use an interdisciplinary perspective to achieve the best interests of the child; 3) Universal adoption of the best technology and policy available; 4) Due diligence of policies and community standards; 5) Data minimization; 6) Children's full ownership of their data; 7) Commercial-free digital spaces; 8) Promotion of meaningful and non-monetizable experiences; 9) Nudge techniques in the best interest of the child; 10) Safety standards; 11) Default high-privacy settings; 12) Parental controls and mediation (children should have age appropriate and transparent information about how it works and how it affects their privacy); 13) Right use, play and participate without data collection (options free from children's data processing); 14) Promotion of children's right to disconnect; 15) Adoption of Children's Data Protection Impact Assessments; 16) Non-detrimental use of data (processing children's data should be always in their best interests); 17) Transparency, accessibility and legibility of terms of use and privacy policies; and 18) No data sharing[40]. Besides all that, for all automated decisions with AI it's always important to guarantee their explicability and accountability, especially to explain why and how children's rights will be protected and promoted.

And finally, because not only parents are responsible for children's protection and their best interest: the whole society – including private agents, such as, tech business enterprises, digital platforms, apps, connected devices, algorithms – needs to give them priority in policies, decisions and, also, automated decisions as per Article 3 of the CRC:

> *"1. In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration."*[41]

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[37] UN, Convention on the Rights of the Child available in https://www.ohchr.org/en/professionalinterest/pages/crc.aspx (checked in 13.10.202).
"Article 2
1. States Parties shall respect and ensure the rights set forth in the present Convention to each child within their jurisdiction without discrimination of any kind, irrespective of the child's or his or her parent's or legal guardian's race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
2. States Parties shall take all appropriate measures to ensure that the child is protected against all forms of discrimination or punishment on the basis of the status, activities, expressed opinions, or beliefs of the child's parents, legal guardians, or family members."

[38] UNICEF, ´Policy Guidance on AI for Children´ – Draft 01, September, 2020. Available at: https://www.unicef.org/globalinsight/media/1171/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf (checked in 13.10.2020).

[39] The D4CR Association, Designing for Children's Rights Guide, 2020. Available at: https://childrensdesignguide.org/ (checked in 14.10.2020).

[40] Hartung, Pedro. The Children's rights-by-design (CRbD) standard for data use by tech companies. Unicef Data governance working group, 2020 (in press).

[41] Convention on the Rights of the Child available in https://www.ohchr.org/en/professionalinterest/pages/crc.aspx (checked in 13.10.202).

6. Conclusion

In summary, it can be said that ethics, human dignity and the children's rights must be promoted and implemented from the start of the development of any AI system that can impact children, directly or indirectly, to their effective use.

As provisioned by the CRC, the provision of children's best interest shall be interpreted as fundamental concept and always be considered primarily to any other concern, including – and especially – commercial interests.

Because they are global challenges and spread across borders, they deserve to be addressed also globally and through a direction increasingly guided by ethics and in human rights, as well as being attentive to the peculiarities of multiple childhood and the fact children are individuals with evolving capacities.

It is possible to say that today we have four forces that can act together or even separately to create some balance in relation to the regulation of AI[42]. These forces are: the Law; the architecture and design of AI systems; market regulation and ethics and principles. The basis of all regulation for AI in these four forces, including for education issues, must be based on the ethical values of: explainability; accountability and transparency.

Hence, it is essential to guarantee Children's Rights by Design of AI systems which impact children, based in their best interest, so that the promotion of children's rights, as well as their protection, is effective, generating real positive impacts on the lives of children, even if they are in a situation of strong socio-economic vulnerability.

In the case of AI systems that relate to children, including for education, which are used by them or for them, their best interest must always prevail, and, in this sense, all AI must also take their rights and interests always first.

[42] Em uma aplicação da teoria de Lawrence Lessig sobre o cyberspace para o universo da Inteligência Artificial. LESSIG, Lawrence. Code. New York: Basic Books, 2006, p. 123. Available in https://cyber.harvard.edu/ptc2010/sites/ptc2010/images/Lessig_Code_Excerpts.pdf (checked in 14.10.2020).

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