

Critical Review of Education Development and High Education Challenges in Brazil

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Abstract— This article aimed to present a critical review of education development in Brazil and its major challenges for high education. Data are presented that demonstrate the inadequacy of the school model created in the nineteenth century that is obsolete to educate our young people living in a technological age of great technical revolutions. Regarding higher education, data from the 2018 Higher Education Census provided by the Ministry of Education are presented and discussed. Emphasis is given to the brain Executive Functions considered essential for the individual to be able to manage their learning processes through sustained attention and generalization of concepts. Training should be based on a didactic-pedagogical action aimed at the formation of professionals capable of formulating and solving problems, questioning and reconstructing realities at the internal, regional or national levels. It is concluded that it is essential to use active learning methodologies that have the characteristic of providing the best development of knowledge (learning to learn) and skills and attitudes (learning to do and to be).

Keywords— High Education, Executive Functions, Challenges.

I. INTRODUCTION

Education is the area of our collective life that most closely relates to the future. Education works with the children and young people who will occupy the powerful, decisive workplaces that today are occupied by the elders. Therefore, education will shape the people who in turn will shape the world of tomorrow.

Perhaps the most problematic aspect observed in education today is the inadequacy of the nineteenth-century school model that is outdated to educate young people raised in digital technology environments that imply a whole concept of knowledge, work, and full attention, distinct from the previous one. It is not possible to ignore the importance of this debate and the urgent need to adapt the proposal of a new school adapted to this reality.

The evolution of societies has shown us that the future is rupture, it is crisis, it is revolution, it is the unexpected and not only mild alterations of the present. Who could, 30 years ago, predict the impact our Internet, social networks and smartphones would have on our lives?

Another interesting point is that we are all so much more than what we learn in school. Fortunately, we have outgrown and changed what we live and learn in school. How many people remember that the school they attended was a school that promoted social inequalities and

injustices, and that didn't stop them from being militants of the values of educational equity? Thus, the values that the school conveys are not automatically assumed by those who were raised in them. Fortunately, people's evolution does not crystallize after they finish their school attendance.

II. HIGHER EDUCATION IN BRAZIL

Concerning Higher Education, the Anísio Teixeira National Institute for Educational Studies and Research (INEP), a federal agency linked to the Ministry of Education (MEC), recently released the Higher Education Census for 2018. In this document, national data are presented with comparisons with other countries that allow us to reflect on the present and the future of our education.

An important finding revealed by this Census is that only 19.6% of people aged 25 and over have completed college. In South Korea this percentage is 69.6%. Therefore, we still have much to do to reach the percentages comparable with countries that have developed on the basis of education.

The challenges are great to accelerate the pace and direction of the expansion of higher education in Brazil and its actions should be in line with the goals specified in the National Education Plan (PNE) for the period 2014-

2024. The GOAL 12 of this plan envisages raising the gross enrollment rate in higher education to 50% and the net rate to 33% of the population aged 18-24.

General statistics for this Census show an average annual growth rate of 3.8% over the last ten years. In this period, enrollment in higher education grew 56.4%. These undergraduate enrollments are distributed as follows: 2.1 million in Public Higher Education Institutions (HEIs), and 6.3 million in Private HEIs. That is, the private network has 3 out of 4 undergraduate students (75%). In São Paulo, there are almost 5 students in private schools for each student in public schools.

Among the Federative Units, 7 of them have a higher relation than the Brazilian average. Paraíba and Rio Grande do Norte have the same enrollment ratio between private and public and only in Roraima, there is a higher number of enrollments in public institutions than in private institutions. In Brazil, there are 299 public HEIs and 2,238 private HEIs.

This expansion of private higher education in Brazil is characterized by a greater number of courses that do not require laboratories or teachers with higher remuneration, as in Social Sciences, Administration and Law. However, it is important to mention that in recent years there has been a growth in the offer of courses in the health area that require high investments, such as Dentistry and Medicine. The fees charged in these courses are around R\$ 10,000 / month (about 2,5 thousand US dollars/month) and there are institutions that specialize in this niche market.

The number of places in undergraduate education by type of education is distributed as follows: 722 thousand in-person courses in public and 5.6 million in private ones. In terms of distance education (ODL) courses, we have 108 thousand in public institutions and 7 million in private institutions.

The evolution of these modalities was as follows: in 2014, we had 5 million in-person and 3 million distance learning courses; In 2018 we have 6.3 million in face-to-face mode and 7.1 million in distance learning. Interestingly, only between 2017 and 2018 did the number in distance learning grow by 51%.

These data indicate that the number of tickets in distance learning undergraduate courses has grown substantially in recent years, doubling their share of total entrants from 20% in 2008 to 40% in 2018. In contrast, in the last 5 years, admissions in on-campus undergraduate courses decreased by 13%.

Another interesting aspect is the number of enrollments in face-to-face undergraduate courses per shift. In private institutions, 68% are in the night and 32% in the day. In public, we have the opposite: 69% day and 31% night.

Regarding the technological courses, higher education specialized courses, characterized by technological axes, and short courses (2 years) that offer the higher degree technologist, in 2008 we had 539 thousand students, in 2018, this number almost doubled, reaching 1.098 million.

Among the students of technological courses, 85% attend the private network and 60% of this network is offered through distance learning (EAD). With over 160,000 students in public schools, the State category corresponds to more than half of these enrollments. Unlike the private network, in the public network most students in technological courses study in classroom courses.

When considering postgraduate programs, the situation is reversed because of the costs involved with laboratories, libraries, and teacher salaries. At this level, the participation of the private sector corresponds to 43 thousand enrollments while in public this number is 245 thousand.

In public schools, the full-time teacher prevails (86%). In the private network, there is a tendency to reduce the number of "hourly" teachers and to increase the number of full-time and part-time teachers, with the figure of the part-time teacher prevailing (42%).

An alarming fact taken from this Census concerns the dropout rate of students, that is, those who fail to take the course to its final stage to obtain the title. In 2016, 47.6% of students from the federal public school did not complete their course; in the private network this percentage is 59.9%. Apart from financial issues, it is necessary to rethink pedagogical models that cannot motivate students and seek to investigate other factors that lead them to drop out of their courses.

III. NEW TECHNOLOGIES AND SKILLS

A key aspect of education today is the importance of new technologies. We imagine totally different forms of teaching, which make traditional schools unnecessary and that promote the individualization of teaching. Education can happen anywhere and anytime, with real or virtual teachers as a reference. Several authors point to technology as the key to future education: "Schools as we know them will cease to exist. In its place, there will be learning centers that will operate seven days a week, 24 hours a day. Students will have access to their teachers, but at a distance. The classrooms will be inside your computers." Phrases of this kind are heard every day. It is a future in which enormous advances in the production of interactive learning "tools" make it increasingly possible. For the most part, the school continues to operate in a class regime and on the basis of a curricular structure organized by disciplines, that is, of a fragmented

knowledge, surrounded by little porous boundaries that do not favor interdisciplinary dialogue and have not allowed any hiccups by the teachers. In fact, not even making curricular articulation a major aspect in the external evaluation of schools has made the disciplinary boundaries more permeable.

The second aspect, which follows from the previous one, concerns the fact that we continue to insist on a school of contents, of disciplinary preferences, when we live in a society that demands skills to face the different challenges that are imposed today. What we really need is a school whose main purpose is not simply the transmission of knowledge, but the development of questioning and investigative attitudes towards scientific, humanistic and, above all, ethical knowledge.

At bottom, a curriculum that, in addition to the knowledge essential for each young person's education, encompasses other skills, competencies and sensitivities that students need to develop and that Suárez-Orozco (Harvard Educational Review: July 2009, Vol. 79, No 2, pp. 327-340) groups into five categories:

- Critical thinking: necessary to structure the mind of the future; It allows each individual to make autonomous judgments, which are essential for a competent understanding of the observations he makes and the realities he encounters on a daily basis;
- Communication techniques: essential for students to communicate effectively and interact correctly with individuals of different nationalities and ethnic backgrounds;
- Language skills: enabling them to communicate in more languages, not merely by choice, but because of an increasingly pressing need in the global society;
- Collaborative skills: to help students in and out of class, as many organizations today are looking for people with good social and relational skills;
- Technological skills: if possible in all areas and dimensions of the curriculum, considering the correct mastery of technologies as an evaluation criterion.

Thus, we need instruments of political and pedagogical action that guarantee the global and critical formation for those involved in the process, as a way to enable them to exercise citizenship and professional training of excellence and full personal development. Training that includes contents and activities that articulate skills (knowledge, skills and attitudes) necessary for the full professional exercise.

Executive Functions

Among these competencies, those related to executive functions (EF) deserve attention.

Executive Functions are considered essential for the child to be progressively able to manage the different aspects of his life with autonomy and thus be able to make decisions independently, take responsibility and insert themselves in society (Scientific Committee Nucleus, Science for Childhood, 2016). These functions are composed of a variety of organizing and self-regulating behaviors, often associated with maturation of the prefrontal cortex (SHAHEEN, 2014). Executive functioning regulates goal-oriented dynamic behaviors that require memory-based action planning, past experience and learning, and require individual self-control, action flexibility, and self-monitoring of strategies and actions as a means of assessing achievement of previously established goals (MIYAKE et al., 2000; TAVARES and FREIRE, 2019).

Taken together, executive functions enable thinking before acting, reasoning, problem solving, flexibly adjusting to the demands and priorities of the environment, and viewing the world from a different perspective, critical skills for the socio-emotional development of child and required throughout life (DIAMOND and LING, 2016). From this perspective, executive functioning is represented by a set of cognitive skills that are fundamental to conscious and deliberate control over actions, thoughts and emotions. These functions are significantly related to many aspects of child development, but their effects extend far beyond childhood. A robust body of evidence indicates that good executive functioning extends beyond childhood; it is critical for success in acquiring and maintaining a job and achieving career achievement (BAYLEY, 2007), as well as for establishing and maintaining work. social bonds (HUGHES & DUNN, 1998), marital harmony (EAKIN et al., 2004), decreased risk behaviors in adolescence (such as avoiding drug use and staying out of jail) (MOFFIT et al., 2011; MILLER et al., 2011) and is also associated with better performance in academic life, greater acquisition of human capital, personal satisfaction and quality of life (MOFFIT, 2012).

In the same vein, studies point out that executive functions are critical to success in various aspects of life as they are predictive of academic success throughout school years (from preschool to university) (DUCKWORTH and SELIGMAN, 2005; ALLOWAY & ALLOWAY, 2010; LOOSLI et al., 2012), of achievement, health and quality of life throughout life, in greater proportion than variables intrinsically associated with these aspects such as intelligence coefficient or socioeconomic level (DIAMOND and LING, 2016).

Strengthening these skills helps to promote socio-emotional and school competence in children at high risk of school failure, developing readiness for early school work (BLAIR, 2013), helping students achieve academic and social success (DIAMOND and LING, 2016), support the overall development of the individual and are in line with what is achieved in terms of future education.

Given the relevance of executive functions to the multiple dimensions of healthy development in childhood, there has been a strong interest in ways to promote executive functions, accelerate their development, halt or delay their decline in aging and/or remedy their deficits (DIAMOND and LING, 2017). In addition, studies highlight the constant need to identify specific aspects of experience and specific pedagogical approaches aimed at the exercise of executive functions as a potential target of pedagogical efforts (BLAIR, 2013).

IV. FINAL CONSIDERATIONS

It is essential to use active learning methodologies that have the characteristic of providing the best development of knowledge (learning to learn) and skills and attitudes (learning to do and to be). Vocational training should be based on a didactic-pedagogical action aimed at the formation of professionals capable of formulating and solving problems, questioning and reconstructing realities at the internal, regional or national levels, especially through the critical formation that must be outlined in the pedagogical proposals of the students. courses.

It is interesting to note that the National Curriculum Parameters elaborated by the Secretariat of Fundamental Education of the Brazilian Ministry of Education (MEC), emphasizes that are objectives of the elementary school that the students are able to:

- understand citizenship as social and political participation, as well as the exercise of political, civil and social rights and duties, adopting, in everyday life, attitudes of solidarity, cooperation and repudiation of injustices, respecting each other and demanding for themselves same respect;
- To take a critical, responsible and constructive position in different social situations, using dialogue as a way of mediating conflicts and making collective decisions;
- Know the fundamental characteristics of Brazil in the social, material and cultural dimensions as a means to progressively construct the notion of national and personal identity and the sense of belonging to the country;
- Know and value the plurality of the Brazilian socio-cultural heritage, as well as the socio-cultural aspects of other peoples and nations, against any discrimination

based on cultural differences, social class, beliefs, gender, ethnicity or other individual and social characteristics;

- perceive themselves as integral, dependent and transformative agent of the environment, identifying their elements and the interactions between them, actively contributing to the improvement of the environment;
- develop adjusted self-knowledge and a sense of confidence in one's affective, physical, cognitive, ethical, aesthetic, personal interrelationship and social insertion capacities to act perseveringly in the pursuit of knowledge and the exercise of citizenship;
- Know your own body and take care of it, value and adopt healthy habits as one of the basic aspects of quality of life and act responsibly in relation to your health and collective health;
- use different languages - verbal, musical, mathematical, graphic, plastic and body - as a means to produce, express and communicate their ideas, interpret and enjoy cultural productions in public and private contexts, meeting different intentions and communication situations;
- know how to use different sources of information and technological resources to acquire and build knowledge;
- question reality by formulating problems and finding solutions using logical thinking, creativity, intuition, critical analysis capacity, selection of procedures and verification of their adequacy.

It is, therefore, a broad view that places Education as a form of development of people and of the country (s). It is in this direction that the future of education seems to us to be in the responsible construction of our tomorrow.

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