

## Epistemological foundations of the Santa Catarina Movement for Education: unveiling the assumptions of formation for the 21st century

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### Abstract

The study, of a documentary and bibliographic nature, it is linked to the discussion between Educational Policies and Teacher Training. Seeks to know the epistemological foundations of the Santa Catarina Movement for Education, which brings together a set of actions under the leadership of the main business associations in Santa Catarina. It addresses the philosophical-scientific foundation that sustains the movement. To capture its epistemological basis, it uses as a methodology the selection and analysis (anchored in the dialectical method) of the main materials available on the movement's website until the year 2021. The categories that emerge from the research are: Information and Knowledge Society, Theory of Human Capital, Competence and Neuroscience. It is concluded that Education within the movement is emblematic to adapt society to the new civilization parameters. In this context, training submitted to the market acquires centrality with regard to 21st century schooling, especially for the adaptation of individuals adjusted to the world of flexible work.

### Keywords

Santa Catarina for Education; marketplace; competence; neuroscience.

### Fundamentos epistemolgicos do Movimento Santa Catarina pela Educao: desvelando os pressupostos da formao para o sculo XXI

### Resumo

O estudo, de natureza documental e bibliogrfica, vincula-se  discusso entre Polticas Educacionais e Formao Docente. Busca conhecer os fundamentos epistemolgicos do Movimento Santa Catarina pela Educao, que congrega um conjunto de aoes sob a liderana das principais associaoes empresariais catarinenses. Aborda o alicerce filosfico-cientfico que d sustentao ao movimento. Para captar sua base epistemolgica, utiliza como metodologia a seleo e anlise (ancorada no mtodo dialtico) dos principais materiais disponibilizados no *site* do movimento at o ano de 2021. As categorias que emergem da pesquisa so: Sociedade da Informao e do Conhecimento, Teoria do Capital Humano, Competncia e Neurocincia. Conclui-se que a formao educativa no mbito do movimento  emblemtica para adequar a sociedade aos novos parmetros civilizatrios. Nesse contexto, a educao submetida ao mercado adquire centralidade no que se refere  escolarizao no sculo XXI, especialmente para a adaptao de indivduos ajustados ao mundo do trabalho flexvel.

### Palavras-chave

Santa Catarina pela Educao; mercado; competncia; neurocincia.

## Epistemological Foundations of the Santa Catarina Movement for Education: unveiling the presuppositions of training for the 21st century

### Resumen

El estudio, de carácter documental y bibliográfico, se vincula a la discusión entre Políticas Educativas y Formación Docente. Busca conocer los fundamentos epistemológicos del Movimiento Catarinense por la Educación, que reúne un conjunto de acciones bajo el liderazgo de las principales asociaciones empresariales catarinenses. Aborda el fundamento científico-filosófico que sustenta el movimiento. Para plasmar su base epistemológica, utiliza como metodología la selección y análisis (anclado en el método dialéctico) de los principales materiales disponibles en el sitio web del movimiento hasta el año 2021. Las categorías que emergen de la investigación son: Sociedad de la Información y el Conocimiento, Teoría del Capital Humano, Competencia y Neurociencia. Se concluye que la formación educacional dentro del movimiento es emblemática para adaptar la sociedad a los nuevos parámetros civilizatorios. En este contexto, la Educación sometida al mercado adquiere centralidad con respecto a la escolarización en el siglo XXI, especialmente para la adaptación de los individuos ajustados al mundo del trabajo flexible.

### Palabras clave

Santa Catarina por la Educación; mercado; competencia; neurociencia.

## 1 Introduction

This study is linked to the discussion between Educational Policies and Teacher Training and results from research carried out within the scope of the doctorate in Education. The analytical research clipping seeks to know the epistemological foundations of the Santa Catarina Movement for Education (MSCE), led by the Federation of Industries of the State of Santa Catarina (Fiesc). In this sense, the article addresses the philosophical-scientific foundation (the theoretical dimension of knowledge) that underpins the MSCE. The goal is to identify the main epistemological roots that anchor it.

Created in 2012, MSCE acts as an articulated strategy to defend the interests of the Santa Catarina business segment. Through it, partnerships are established with the state to disseminate values and reinforce ways of thinking/acting about educational formation aligned with economic expansion. This process links its fundamentals to the restructuring requirements of the productive sector and the increasing availability of flexible workers to the marketplace.

In order to capture its epistemological basis, as a methodological procedure, we selected and analyzed the main materials produced within the scope of the MSCE present

on the movement's *website* until 2021, involving digital books, event presentations, booklets, interviews granted to the main media, reports and news published in the Santa Catarina press. It should be noted that the research is characterized as being of the documentary and bibliographic type, with a qualitative approach. The reading and analysis of the selected materials, anchored in the historical-dialectical method, is guided by the identification of the empirical categories present within them, by what they proclaim, as well as by the understanding of the underlying world, its contradictions and disputed projects.

The NVivo software was used to help organize and classify the selected sources during the empirical data collection phase. As we proceeded with the careful reading of the materials, at the same time it was possible to select excerpts from the documents and classify them – according to their most representative category – for further analysis. From the methodological approach of the study, the categories that emerged were grouped as follows: Information and Knowledge Society; Human Capital Theory; Competence; and Neuroscience. The particularities and discussions of each will be developed in the next sections. It is expected that other productions and research will be carried out in the dialogue proposed in this work.

## 2 The Information and Knowledge Society

The actions and proposals defended in the context of the MSCE propagate the idea that “[...] knowledge is the basis of productivity and competitiveness in the marketplace” (FIESC, 2013, p. 5). Fiesc (2018), throughout its public insertions, reinforces the motto that the economy of the third millennium is anchored in knowledge. Increasingly recurrent, these appeals gain strength and become naturalized, suggesting the culmination of a new civilizational milestone, now marked by the *slogan* “knowledge society”.

According to Côrte (2018), in the knowledge age, it would no longer be useful to talk about labor, since workers would be gaining more and more importance. Given the scenario of fierce competition, the entrepreneur argues that the most determining factor in the level of competitiveness of the industry would no longer be the machinery, but the employees. In our view, such rhetoric seems contradictory, because while it attributes less value to the “labor” of the worker, it also records that this class would be acquiring greater

importance in the productive world. When addressing the context of technological transformations, via industry 4.0, Fiesc repeatedly points to the dangers in terms of productivity and competitiveness if companies do not adapt their industrial park (machinery) to the new digital order. How, in this context, will the large mass of employees gain more importance in the face of a probable decrease in jobs in the advanced manufacturing environment?

We believe that one of the explanatory theses developed to pulverize the problems arising from the previous question is in the so-called “Information and Knowledge Society”. This is because the idea embedded in the expression can naturalize and justify unemployment. In this perspective, individuals who adjust, adapt or invest in their “greater power”, information and knowledge, will be able to “do well”. The category called “Information Society and/or Knowledge Society” may contain this trap.

Such theoretical construction is used as one of the foundations of MSCE. In this regard, Fiesc (2018) notes that it cannot be disregarded that the economy of the 21st century is based on knowledge. Education, in this perspective, would be the origin and solution of the country's social and economic problems. Thus, overcoming the problems experienced in the “era of knowledge” would be in the increase in schooling, as well as in the change in performance indices and educational formation (FIESC, 2018).

On the subject, we consider important the considerations of Gonçalves Souza (2011) when declaring that the theoretical construction linked to the “Information Society” and “Knowledge Society” holds thematic propositions inherent to employment, productivity and competition. For the author, this approach “[...] empties the debate around the democratization of access to information and the production of knowledge, reducing the issue to strictly private economic logic and guided by the emphasis on skills and ‘skills’ for employability” (GONÇALVES SOUZA, 2011, p. 220).

The thesis disseminated by the “Information/Knowledge Society” has historicity. It develops, therefore, in the midst of movements, sometimes conflicting, which can be understood from the social configurations that created them. Currently, movements that are guided by the predominant use of information dissemination networks on digital platforms can give birth to an environment of both libertarian desires and imprisonment (MARTINI, 2017).

Lemos (2016) explains that, since the mid-twentieth century, the nuances of the “Knowledge Society” have been worked out. With the end of World War II, the configuration of the Cold War and the apparent end of the industrial era, space was opened for the emergence of the era of knowledge and the supposed defeat of the social model based on exploited labor. Under this bias, knowledge would replace work as the founding category of the social being. As a consequence of this illusory effect, education is understood as the laboratory capable of manufacturing the main remedies to solve society's problems, such as unemployment, poverty and hunger. With this dynamic, a series of theories and models appears in the educational area that seek to adapt to these expectations, quickly incorporated and disseminated by international organizations, gaining seal of innovative pedagogical conceptions as opposed to the so-called traditional education.

Gonçalves Souza (2011) argues that the Information and Knowledge Society, under neoliberal protection, is not experienced in the same way by everyone. For individuals who have consistent access to information and knowledge, there is a greater possibility of learning and development. For those who are close to this universe in a fragile way, exclusion seems to be the indelible mark. For the researcher, it is possible to affirm that technological reductionism and evolutionary determinism (where the Information Society assumes its capitalist bias) make it difficult to analyze all the nuances and processes of social change that comprise the theme. In neoliberalism, knowledge and information are seen as elements of productive restructuring, having implication in social and professional relations.

However, the spread of access to information through the use of new technologies is not translating into significant changes in the material conditions of the working class. The amount of information increased, but its quality did not, which “[...] has generated knowledge emptied of its theoretical bases, reduced to its utilitarian dimension, which has caused an alienation of a new type: informational alienation, which generates disinformation” (GONÇALVES SOUZA, 2011, p. 224).

In this crisis scenario, knowledge assumes characteristics of a pragmatic, fragmented and instrumental commodity that can be bought and sold, acting in a biased manner for the accountability of individuals in relation to their respective social positions

enjoyed (FRERES, 2013). Thus, information and knowledge are treated as a product with potential value in the market.

As Mattosinho (2017) reiterates, the thesis of the “Information and/or Knowledge Society” tries to explain the great changes that occurred in the world from the argument that we would be at a new corporate level, no longer guided by work. Information and knowledge would be the new foundations of material and symbolic life. This thesis proposes non-structural (palliative) responses to social ills. In addition, it gains academic support and from supranational entities such as the United Nations Educational, Scientific and Cultural Organization (Unesco). His rhetoric is very seductive, since hardly anyone would not accept living in a society where information and knowledge are fully socialized. In reality, however, this idea, although it seems to be the greatest of the progressive world, does not reveal its hidden thesis: “[...] if the foundation of this new sociability is information or knowledge”, the lack of them would be the cause of social and economic inequality; not its effect (MATTOSINHO, 2017, p. 52).

It should be noted that the “new” Knowledge Society carries with it the promise of overcoming humanity's greatest problems. In this way, the “[...] knowledge economy” is seen as a new civilizational stage. In it, the class struggle would no longer exist. Such explanatory devices function as “[...] ideological mechanisms that blind our eyes to objective reality” (FRERES, 2013, p. 190).

### 3 The formation of “human capital” through education

Under the MSCE, companies consider investment in “human capital” as the driving force for raising “skills” at work and the consequent competitive participation of organizations in the market. This achievement would come through raising the qualification and education of workers (EDUCAÇÃO..., 2015). The objective of the actions of the business people of Santa Catarina in education is in the belief that it acquires more and more weight in the sector: to invest resources in the formation of “human capital” would guarantee results in efficiency and productivity, improving the commitment of workers and their satisfaction with companies, especially to reduce turnover, absences and accidents at work (FIESC, 2018).

The MSCE exists to enhance a process of change and direct a common agenda for Santa Catarina education appropriate to the desires of companies (FIESC, 2018). From the perspective of the movement, the problem of Brazilian development would be due to the absence of “human capital” adapted to the demands of productivity and competitiveness of companies.

In this context, the mobilizations and actions taken by the entities participating in the MSCE raise the banner that the preparation of teachers should accompany the changes in the market and other professions, and there is a need to give new shape to teacher training programs (FIESC, 2018). Based on this reasoning, it is argued that “[...] teachers need to be committed to the preparation of our future citizen-workers. They must have a passion for what they do and awaken in students the curiosity of knowledge” (CÔRTE, 2018, p. 86).

According to Oliveira (2001), the theory of human capital dates back to a discourse of the 1960s, a period in which the belief that the path to the enrichment of a country would be in the professionalization and schooling of individuals stands out. However, time has shown its fragility when it is found that Brazil's social inequality does not originate only from the unequal distribution of knowledge, but arises from the characteristics inherent to the capitalist mode of production.

The theory of human capital, as explained, does not take into account the contradictory relations (marked by inequality and concentration of wealth) on which social life is based. In this context,

[...] the fragility of the Theory of Human Capital [...] must be challenged epistemologically, since its construction develops within an analytical framework that does not apprehend the human being and his history in the complexity of plots and the relationships in which he is inserted. (OLIVEIRA, 2001, p. 27).

From the 1990s, according to Aguiar (2012), the theory of human capital appears resignified in educational reforms. The double between employability and education stands out, emphasizing that schooling would considerably increase the chances of obtaining a job. With this bias, the changes proposed for education proclaim that, nowadays, individuals must be trained to be multipurpose in the profession and have flexibility in order to become subjects “[...] dynamic and adaptable to the demands and changes in the world of work” (AGUIAR, 2012, p. 127). Education, in this redemptorist

perspective, would be the best way for poor countries to achieve development, since the human capital generated by education would be responsible for balancing the distribution of income and making society equal.

The thesis of human capital also insinuates that the poorest people are in this condition due to lack of knowledge and qualification, because if they had higher education, they would be more productive and skilled and would have better wages. Education, in this context, would be responsible for taking people out of their initial stage of low qualification and poverty, determining the equal distribution of income. This belief proclaims that “[...] those who improved in level would be better paid and those who remained in the first condition would also have their wages increased due to the decrease in the supply of cheap labor” (AGUIAR, 2012, p. 128).

Finally, it should be noted that the idea of human capital, as warned by Frigotto (2015), reduces the human being to a commodity and confuses labor (founding and central activity of the social being) with employment (sale of labor power). In addition, it ignores the unequal and contradictory basis of social classes in the formation of society, in addition to reducing education (as social and subjective direct) to a notion of mercantile formation.

#### 4 Competence as a guiding basis

For Fiesc (2013), education at the service of the development of “skills” brings good results to the business world, adding value both for business and for individuals who have differentiated educational *status*. Under this analytical bias, “[...] without adequate investment in skills, people languish on the margins of society” (RAMOS, 2015, p. 71). In this regard, for Côrte (2018), the question that arises today would be to understand what skills are necessary for the future of business in order to overcome outdated practices. For him, it would be necessary to build a viable project for the survival of the market. In this regard, the author notes:

Today, structural changes in society and advances in technology require new curricula and new methodologies. Such changes and resources, before distancing, must bring teachers, students, families and society together. Therefore, investing in continuing education of teachers, in terms of skills and abilities, is an urgent priority.



As can be seen, the trend presented for teacher education within the MSCE is focused on the development of skills and abilities in the face of current and future changes and uncertainties required by the external environment, going back to a conception of environmental development of adaptation to the stimuli offered by external reality.

In this regard, Kyllönen (2017), during the International Education Seminar held within the MSCE, notes that it is important to create new learning environments to develop 21st century skills. Therefore, it would be necessary to think about the future of school learning in its relationship with dimensions of evidence-based learning (phenomena). In this sense, a new narrative for the school of the future is envisioned, now focusing on the learning of general skills anchored in scientific evidence. In the same vein, Ryymin (2015), a researcher at the Finnish University HAMK (focused on applied sciences), defends the competency-based approach in education. Such rhetoric is also one of MSCE's anchor points.

Maria Helena Guimarães de Castro, executive secretary of the Ministry of Education in the Michel Temer government (2016-2018) and one of the main mentors of the Reform of Secondary Education and the National Common Curricular Base (BNCC), states, during a lecture for the MSCE, that the teacher is one of the main variables that must be contained by the educational policy, since his/her performance has a high impact on the performance and learning of students. According to the author, in 2017, Brazil had about 1.5 million students studying undergraduate degrees, almost 20% of undergraduate enrollments (GUIMARÃES DE CASTRO, 2017).

Under the neoliberal analytical bias advocated by Guimarães de Castro (2017), the creation of a new national teacher training policy would need to be subordinated to the domain of knowledge provided for in the BNCC and also make use of the collaboration regime between federative entities and training institutions for its operationalization.

In the context of teacher training, in line with the idea worked by Guimarães de Castro (2017) and the MSCE, the National Council of Education/Full Council (CNE/CP) publishes Resolution No. 2/2019 (replacing Resolution CNE/CP No. 2/2015), which deals with the new National Curriculum Guidelines (DCN) and the Common National Base for Initial Training (BNC-Initial Training) of Basic Education teachers. The new rule brings in its core the model of general and specific competencies to be fulfilled by the teacher, in close alignment with the BNCC of Basic Education.

In a note, the National Association of Graduate Studies and Research in Education (ANPEd) demonstrated its concern with the content of the new resolution, especially due to the inclination of the CNE and the Ministry of Education (MEC) to format the curriculum and the national policy of teacher training in the opposite direction to that desired by the movement of education workers and the scientific communities in the area. From this perspective:

[...] when the document adopts as a structuring axis of teacher training the learning of the skills provided for in the BNCC as a guarantee of its implementation in the basic school, subject to large-scale evaluations to verify its effectiveness, it becomes certain that the profile of teacher that is expected is closer to the one that performs than the one that makes decisions as an education professional about the curriculum of the school in which he teaches. (ANPED, 2019, p. 13).

As noted, the recurrence of the skills approach in the official curriculum proposals most of nations, in the undergraduate curriculum and in the continuing education of educators is present in recent years, as well as in discussions about the contents and the form/strategy of teaching to be adopted by schools (ZABALA; ARNAU, 2020).

According to Zabala and Arnau (2020, p. 5), the competence thesis “[...] arises in the 1970s to define what increased income at work and begins to be used in the area of education at the end of the 20th century”. In this perspective, the development of competences for life would portray an assertive transformation in the formative path of students, as it would provide them with the theoretical-practical framework demanded by 21st century society.

The approach to competences is contrary to the notion of school as a transmitter of knowledge, being widely linked to the educational purposes advocated by many international organizations such as the United Nations (UN) and Unesco. These institutions proclaim the four pillars of education (knowing, knowing how to do, knowing how to be and knowing how to live together) explained in the Delors Report of 1996. The competencies model recovers guidelines postulated in the nineteenth and twentieth centuries in educational proposals of different origins, such as, for example, the pragmatism of John Dewey. It is clear the attempt to curb the supremacy of theory over practice, seen as an obstacle to student development in the personal, professional, interpersonal and social dimensions (ZABALA; ARNAU, 2020).

However, Chauí (2008) considers the epistemology of competence a persuasive ideology that works to hide the social division of classes, distinguishing the competent from the incompetent. According to the author, the ideology of competence performs domination also making use of the prestige and power conferred on scientific and technological knowledge. According to Chauí (2008), it is easy to identify the idea embedded in the skills thesis when we join the discourses defended by the business organization and by specialists, revealing two basic points of the capitalist mode of production: that there is only reason in the laws of the market and that happiness and success are destined for those who win this competition.

In this perspective, one of the consequences of the ideology of competence is present in the unbridled search for the “diploma”. It is studied because the diploma would be demanded by the company and also used as a tool for professional selection. Young people also believe that the function of an educational institution is to fit the demands posed by business organizations, popularly called “the market”. In this logic, for those seeking employment, the diploma would end up conferring the position of “fit” and “competent”, in addition to a higher *status* in the scale of functions and positions. In this way, the school and the university, by feeding the ideology of competence, end up failing to do their main activities of critical training and research (CHAUÍ, 2008).

Sacristán et al. (2011) explain that, in the theory of competencies, formulations are contained that present themselves as salvationist narratives that would rescue schools from their “inadequacy” and “insufficiency” in the face of market demands, curbing the supposed inefficiency of education systems from their historical failure. According to the authors, this approach:

[...] intends that competencies act as guides for the elaboration and development of curricula and educational policies; that they serve as an instrument for the comparison of educational systems, constituting an overview of education. (SACRISTÁN *et al.*, 2011, p.15).

It is possible to observe, in this sense, that the meaning on which the competency model is nurtured “[...] represents a way of understanding the world of education, knowledge and the role of both in society” (Sacristán *et al.*, 2011, p. 15). The rhetoric of competences, according to Pérez Gómez (2011), resembles the image of a winding serpent that accompanies him throughout his academic career. As a seductive

crawler, the notion of competence emerged at the beginning of Didactics classes with its scientific clothing anchored in Skinner, Bloom, among others. With ever-present effects, such epistemology gains emphasis in the current proposals for education under leadership of the Organization for Economic Cooperation and Development (OECD). Therefore, the term is not used innocently. It brings with it an extensive tradition of behaviorist interpretations that have reduced the complexity of educational processes to a technicist bias.

Perrenoud (2013), an enthusiast of skills, records that they entered the school universe in almost all countries (as a form of contagion), with the immense help of international organizations, especially the OECD, which made them a kind of battle horse. However, according to Morato (2005), with the skills approach, individuals are held hostage to the new attributes required for the competitive formation of the market. Thus, a cooperative and adaptive profile is demanded in the face of the new predilections of financial capitalism. The clear preference directed to the behavioral dimension of individuals paves the way for the market to make the most of human capacities with the potential to generate capital gain. "By expropriating all its potentialities, now understood in knowing how to do, know how to be and know how to learn, capital obtains an even greater and more sophisticated control over this worker" (MORATO, 2005, p. 64).

With a contribution in Morato (2005), we emphasize that the competency model has the potential to limit the power of collective association, as it directs its forces to subjective behaviors shaped by business convenience. In this way, it disperses and weakens workers in their resistance, individualizing trading practices with the market.

## 5 The Neuroscience Paradigm

Within the pillars of the MSCE, we find in the empirical data of the study an epistemological emphasis linked to the approach of cognitive neuroscience. In this regard, Lim (2016, p. 10), during the International Education Forum held by Fiesc, records that "[...] neuroscientists are discovering the brain mechanisms underlying learning [...]. Learning algorithms are being developed in machines to allow robots and computers to learn." In addition, it presents details of neurosciences that, according to

him, would contribute to the construction of what he calls a global and interdisciplinary science of learning. The author correlates education and neuroscience. According to him, neuroscience seeks to understand the mental processes involved in learning, which would be a common ground so that in the future the educational process can be changed, transforming it based on scientific criteria based on evidence. He uses as an example to justify his observation the changes that science has made in medical practice in the past.

At the same event, Lent (2016), a biomedical researcher, states that science needs to be the main foundation for education decisions, so that we have new windows of economic opportunity for Brazil. It is important to note that the author is the coordinator of the National Science for Education Network (CpE), a partner entity of the Ayrton Senna Institute. It is worth noting that scientific knowledge is not neutral, but provisional, the result of a social and historical process. When appropriate, positivist science itself can be used to perpetuate a certain conception of the world, especially if its theoretical framework has the potential to justify socioeconomic decisions with great impact on people's lives. In this wake, when strong corporate interests enter the scene, there is a risk of "falling apart" the supposed scientific neutrality.

In an interview also granted in 2016, Eduardo Deschamps, former Secretary of Education of Santa Catarina, comments that "[...] the results of neuroscience [...] can still contribute a lot to the development of education, the improvement of quality indicators" (MOVIMENTO..., 2016). It is possible to observe, in this sense, that neuroscience also stands out in the political agenda for education, possibly because it could give answers to the question formulated by Louzada (2016): "What happens in the brain when we learn?".

According to Lent (2016), neuroscience has found that sleep is an intrinsic mechanism of the human being to consolidate memory. Managing the sleep cycle would be important for learning itself. Under this approach, Consenza and Guerra (2011, p. 74) explain that "[...] the consolidation of learning is done during sleep [...]. It builds connections between different areas of the brain that store information."

On the subject, Maria Odete Olsen, host of Record News' Education and Citizenship program, notes that in 2016 specialists from Brazil, the United States, Chile and Colombia met in Florianópolis to discuss neurosciences and educational movements. The initiative was from MSCE. At the meeting, topics related to neurosciences and their

experiences in Latin America were addressed. The objective of the event would be the qualification of the Santa Catarina educational system (MOVIMENTO..., 2016).

According to Bartoszeck (2018), neuroscience is a relatively new area of knowledge that intersects neurology, biology and psychology. Cognitive neuroscience studies have uncovered important questions about the functioning of the human brain and nervous system and its relationship to emotions, perception, memory, and learning. For the author, education and learning should constitute a new field of natural sciences, which would require neuroscientific literacy to go beyond the stage of speculation and beliefs and achieve scientific advancement over the brain.

Under this bias, teacher training courses in Brazil would have an impoverished curriculum, with a deficient supply of knowledge about educational biology and/or learning neuroscience. With this lack in the training path, education professionals would be subject to pedagogies not based on evidence and experiments (BARTOSZECK, 2018). With a similar understanding, the OECD (2002) states that the theories of learning studied in undergraduate courses would still be “in their infancy” in a pre-scientific phase, as they would lack predictive or explanatory foundations. Depending on the entity, teachers do not sufficiently understand how children, young people and adults learn, which would be an obstacle to truly effective educational and “training” offers.

In this way, pedagogy would be in a rudimentary and superficial phase, still waiting for its “Charles Darwin” to explain the learning process in order to meet the criteria of scientificity. Thus, the organization declares that “[...] education today is a pre-scientific discipline, which depends on psychology (philosophy, sociology, etc.) for its theoretical foundations” (OECD, 2002, p. 3). Cognitive neuroscience, in this perspective, would offer “[...] a stronger basis for the knowledge of learning and the practice of teaching” (OECD, 2002, p. 3).

In this regard, Bear (2017) states that, in a short time, the biological bases of learning and memory will be understood. According to the author, there are indications that both learning and memory can happen at the synapses (where the contact between neurons occurs). There would be evidence that calcium's function would be more than the constitution of strong teeth and bones. Such a component would be involved in almost all forms of plasticity of brain synapses. This way “Can basic neuroscience research take us

from ions to intelligence? From calcium to cognition? [...] If synaptic plasticity, in fact, is the basis for declarative memory, the answer is probably yes” (BEAR, 2017, p. 898).

Regarding the process of brain plasticity, Consenza and Guerra (2011) exemplify the case of a pianist who would become, day by day, more skilled due to the frequency of his “training”, which would lead to changes in his cognitive and motor circuits, providing him with better accuracy and performance in musical performances. “On the other hand, disuse, or a disease, can cause connections to be broken, impoverishing communication in the affected circuits” (CONSENZA; GUERRA, 2011, p. 36).

In this context, learning would not only lead to increased neuronal interconnections, but would also provide the joining of hitherto loose neural circuits. For example, it would be what happens when you learn something new based on what you already know. On the other hand, a disease or the inertia of the individual could cause damage to the connections between such circuits. Thus, “[...] the great plasticity in making and undoing the existing associations between nerve cells is the basis of learning and remains [...] throughout life” (CONSENZA; GUERRA, 2011, p. 36), but decreasing over the years, which would require more time and effort for learning to consolidate at older ages.

The attention process, in this scenario, would be a kind of “[...] open window to the world, in which we have a flashlight that we use to illuminate the aspects that interest us most” (CONSENZA; GUERRA, 2011, p. 42). Thus, the human brain, even open to learning, would only be willing to internalize what it identifies as functional. Therefore, the fundamental strategy to get attention in classes should involve explaining the importance of content for the lives of students. Educators would then always need to ask themselves, “Why is it necessary to learn certain content?”; and “What is the best way to present it to students so that they recognize its importance?”.

With input from Ferreres and Abusamra (2014), we understand that the search for connections between education and neuroscience is not risk-free. The nature of the areas differs. While research in education (human sciences) is directed to the improvement and reflection of the teaching-learning process, the interest of neuroscience is focused, first and foremost, on the understanding of brain functioning and the nervous system. It is important to mention the undeniable importance of knowledge related to the human brain, but its transposition into the educational universe should not be automatic

and operate as a fad. This process must be accompanied by a systematic reflection anchored in the knowledge historically produced by the area of education.

Along these lines, with high expectations regarding discoveries about the brain and its uncritical transposition into pedagogical daily life, there is a great risk of myths being created with incorrect information about brain performance. In general, this practice has been rapidly perpetuated and begins with a misinterpretation of scientific knowledge. Therefore, it is important that the medical-biologist emphasis is not the only instrument for the solution of pedagogical issues.

## 6 Final considerations

We problematized in the present study, with regard to the epistemological basis of the MSCE, the following categories: “Knowledge Society”, neuroscience, “human capital” and theory of “skills”. Regarding the “Knowledge Society”, we warn that the *slogan* can act in a biased way to reinforce individualism in relation to success and failure throughout life. On the ideology of “competencies”, we problematize its trappings to hide the antagonistic division of classes, distinguishing competent and incompetent through meritocracy. In this process, we need to be aware of the challenges and current issues that affect teacher education, being crucial to reflect on the profession, in view of the various factors that influence it, especially in a scenario full of paradoxes, as is the case in Brazil (SILVA; SOUZA, 2002).

On neuroscience, we emphasize that positivist science itself can be used to reinforce the hegemonic worldview, especially if its conceptual basis serves as a pretext for decisions that benefit the business market. In this sense, the sophistry of scientific neutrality “falls apart.” On the theme of “human capital”, we affirm that such rhetoric reduces the social being to a commodity, in addition to reducing education to a notion of mercantile formation.

In this sense, Education 4.0 (in analogy to the fourth technological revolution) appears as an emblematic expression to adapt education to the new civilizing parameters. With this bias, it is understood that the participation of young people is strategically designed to disseminate the educational changes intended by the business organizations of Santa Catarina, especially from the parameters of technological



innovation demanded by the economic sectors. The inspiration for the changes, in this case, comes from countries such as Singapore, for example, due to the good performance in the OECD evaluations.

From the evidence raised, we understand that the proposals praised in the MSCE are structured from some points in common, sewing a kind of “new school” for the 21st century, mixing elements of an active/collaborative pedagogy, presenting a redemptive vision of education with anchorage contemporary on the idea of “competence”.

In this context, education for the market acquires centrality with regard to schooling in the 21st century, especially for the training of individuals fit for the flexible labor market. In the wake of this discussion, it seems fundamental that the initial and continuing education of teachers and educational managers, at all levels and modalities of education, approach the reflections presented here, in view of their interfaces in the definition of educational policies, in force or to be built.

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