MATHEMATICS AND THE NEOLIBERAL MODEL OF EDUCATION: THE COMPETENCE-BASED PEDAGOGY

A MATEMÁTICA E O MODELO NEOLIBERAL DE EDUCAÇÃO: A PEDAGOGIA BASEADA EM COMPETÊNCIAS

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ABSTRACT

The theoretical essay aims to understand the educational reforms that have taken place in Brazil as part of the successive stages the capitalist system has been experiencing, especially to identify relationships between mathematics and the competence-based pedagogy in shaping the education of the working class. It adopts the methodology of bibliographic review, based on authors who approach such topics in books, articles, dissertations and theses to discuss such concepts in order to understand the essence and proper appropriation of them. It is observed that the educational project, guided by market principles, among them competences, fulfil the role of concealing the impacts generated by the productive restructuring, as well as the resonances of neoliberalism, especially in the working class. Mathematics, configured with the purpose of producing competences through learning situations deemed as significant, corroborates with the structural duality, and only provides access to a partial and neutral view of knowledge.

Keywords: Competence-based pedagogy; Capitalism; Professional education

RESUMO

O ensaio teórico tem como objetivo compreender as reformas educacionais que ocorreram no Brasil no bojo das sucessivas transformações pelas quais passa o sistema capitalista, sobretudo para identificar qual (is) relação (ções) podem se estabelecer entre a matemática e a pedagogia das competências nos tempos atuais e que conformam a educação da classe trabalhadora. Adota-se a metodologia de revisão bibliográfica,

consubstanciada em autores que abordam tais temáticas em livros, artigos, dissertações e teses de forma a discorrer sobre tais conceitos a fim de entender a essência e a devida apropriação deles. Constata-se que o projeto educacional posto, norteado por princípios mercadológicos, entre eles as competências, cumpre o papel de dissimular os impactos gerados pela restruturação produtiva, bem como as ressonâncias do neoliberalismo, sobretudo na classe trabalhadora. A matemática, configurada com a finalidade de produzir competências por meio de situações de aprendizagem propaladas como significativas, corrobora com a dualidade estrutural e apenas proporciona acesso a uma visão parcial e neutra do conhecimento.

Palavras-chave: Pedagogia das Competências; Capitalismo; Educação Profissional.

1. Introduction

Crises, solutions and periods of capital accumulation are inherent in the capitalist system. Especially in the last century, it is possible to observe this succession of events: the crises of the Taylorist-Fordist mode of production; Keynesianism and the golden decades of the 1950s and 1960s; the structural crisis of the 1970s, which resulted in transformations of the scope of political and cultural production.

It is in this context that the Brazilian educational system is constituted. According to Lopes (2008); Ciavatta and Ramos (2012), the proponents of curriculum-focused educational reforms are multilateral organizations, such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (IDB); the Commission for Economic Studies for Latin America (ECLAC), the International Labor Organization (ILO), and the Inter-American Center for the Development of Vocational Training (CINTERFOR). Such reforms consist of an "organic proposal, an ideology, and strategies to improve the quality of the education system, ranging from the macro level to schools and classrooms" (Candau, 2013, p. 35).

For this reason, we believe that classroom research that addresses political, economic and social aspects, in particular in the scope of mathematics, can provide significant contributions. After all, mathematics is not immune to these influences.

In this article we investigate the following question: What is the relationship between mathematics and the competence-based pedagogy in the shaping of working-class education — mainstream secondary education and technical-vocational secondary education — in capitalist societies, in particular in Brazil? Our objective is to understand the educational reforms that have taken place in Brazil as part of the successive transformations the capitalist system has experienced, especially to identify relationships between mathematics and the competence-based pedagogy in shaping the education of the working class. Our specific objectives are: a) to describe the milestones of the transformations of the capitalist system in the last century; b) to contextualise Brazilian educational reforms, in particular those aspects concerning mathematics education, in these transformations; and c) discuss the concept of competence-based pedagogy and to identify when and how it guides educational reforms.

2. The metamorphoses of the capitalist system

Based on the rationalisation of the productive process proposed by Frederick Winslow Taylor in *The Principles of Scientific Management* (1911), Henry Ford originated a new way of production and consumption in 1914, by introducing conveyor belts in the production line. What differentiates Fordism from Taylorism is the view that "mass

production meant mass consumption, a new system of reproduction of the labor force, a new policy of control and management of labor, (…) In short, a new type of democratic society, rationalized, modernist and populist " (Harvey, 2008, p. 121). In addition, Fordism also meant the marketing of culture, as a consequence of product standardiszation and mass consumption (Harvey, 2008).

Although Taylorism-Fordism has enabled the growth of the American economy during World War I (1914-1918), the surplus production generated by the economic recovery of the European nations resulted in the crash of the New York Stock Exchange in 1929 and the formation of a contingent of unemployed people.

In view of this reality, it was necessary that the capitalists created feasible actions with the purpose of containing the labour movement ― which was especially influenced by the Russian Revolution of 1917. According to Harvey (2008), this economic crisis, which also signified the crisis of the liberal state, was confronted by the Franklin Delano Roosevelt government (1933-1945) through the New Deal, a set of economic and social measures, elaborated from the ideas of economist John Maynard Keynes, that redefined the roles of the state.

This redefinition, characterised as a welfare state or Keynesianism, aimed to control economic cycles with an appropriate combination of fiscal and monetary policies. These policies were directed to the areas of public investment in sectors such as transportation, public equipment, etc., which were vital for the growth of production and mass consumption, as well as to the creation of jobs. Governments also sought to provide a strong complement to social wages with social security, health care, education and housing, etc. (Harvey, 2008).

With such actions, the central nations of the capitalist system experienced two decades of capital accumulation in the post-World War II period. On the other hand, the internationalization of Fordism-Keynesianism, through the Breton Woods agreement (1944), did not guarantee the economic recovery of the peripheral countries of the capitalist bloc.

Faced with this reality, where not all nations and economic sectors benefited from the modernisation and development that would be brought about by Fordism-Keynesianism, other contradictions in the capitalist system, such as the destruction of local cultures, became evident: low accessibility to the quality jobs, low standard of living, poor quality of public services offered. This led to a series of social and political-cultural movements (Harvey, 2008).

Subsequently, the central countries of the capitalist bloc began to feel what would be the first signs of the structural crisis of the system generated by the fall of productivity and profitability, due to the economic recovery of Western Europe and Japan; the policy of import substitution in Latin American countries; the devaluation of the dollar; the breakdown of the Bretton Woods agreement, resulting from competition between newly industrialized countries; the oil crisis in 1973, where Middle Eastern producers began to fight the cartel that dominated the exploitation of the product (Harvey, 2008).

In addition, the crisis of Fordism-Keynesianism can be summed up by the rigidity of investments, since large-scale production required large investments that would only be recovered in the long term, which made short-term planning of the labour and consumer market, labour contracts, and commitments assumed by the state virtually unfeasible (Harvey, 2008).

Although Fordism has become internationalised, according to Antunes (2005), other forms of work organisation coexisted, and during the crisis in the 1970s, the Japanese mode of production — Toyotism ― became the most influential in the West. This mode of production, called Flexible Accumulation, was adapted to the capitalist nations of the West during the governments of Margaret Thatcher (1979-1990) in the United Kingdom and Ronald Reagan (1981-1989) in the United States (Harvey, 2008).

For Harvey (2008), Flexible Accumulation has as characteristic the direct confrontation with the rigidity of Fordism. It relies on the flexibility of labour processes, labour markets, products and consumption patterns. It is characterised by the emergence of entirely new production sectors, new ways of providing financial services, new markets and, above all, highly intensified rates of commercial, technological and organisational innovation. Flexible accumulation involves rapid changes in patterns of uneven development, both across sectors and geographies, creating, for example, a sweeping "service sector" movement, as well as completely new industrial assemblies in previously undeveloped regions. It also involves a new movement that I will call "space-time compression" in the capitalist world ― the temporal horizons of private and public decision-making are narrowing, while satellite communication and falling transportation costs have increasingly made it possible to disseminate these decisions in an ever wider and more varied space.

Among the consequences of productive restructuring under the neoliberal aegis in the United Kingdom are: the privatisation of almost all public services that were under state control; the deactivation of the state productive sector; the deregulation of working conditions; and the flexibilisation of social rights, disorganisation of the trade union activity (Antunes, 2005).

Added to this scenario is structural unemployment; the existence of a select group of employees who enjoy stability, rights, and whose training allows them to be adaptable, flexible and even geographically mobile; a peripheral group of employees with skills readily available in the labour market and another peripheral group of employees, who, as a result of numerical flexibility, are hired on a part-time, temporary or subcontracted basis and trained with public subsidies (Harvey, 2008).

According to Jameson (1996), such transformations were accompanied concomitantly by transformations in the cultural sphere, with postmodernity being the cultural logic of Flexible Accumulation. The ideological function of postmodernity is to coordinate new forms of social and mental practice and habits ... and the new forms of organisation and economic production that come with the modification of capitalism ― the new global division of labour ― in the last years (Jameson, 1996).

3. The conformation of Brazilian education

According to Sacristán, the curriculum is defined as a "selective cultural, social, political, and administratively conditioned project that fills school activity and becomes reality within school conditions such as conditions against configured" (Sacristán, 2000, p. 34).

Therefore, the centrality of curricula in educational reforms pointed out by Lopes (2008); Ciavatta and Ramos (2012) must impel us to unveil the consensus established around the organic solutions disseminated by the multilateral organizations to improve the quality of education.

With regard to reforms, Sacristán (1996) adds that these are milestones that make it possible to analyse, at least, the political, economic projects of the reformers and the historical period in which they arise. That is, through curricula, reforms harmonise educational projects and political and economic projects, enabling even reformers to make adjustments to evaluate them.

In addition, Sacristán (1996) and Candau (2013) emphasise that educational reforms do not consider the complexity, dynamics and real problems of the educational system and, therefore, do not innovate and, consequently, do not transform configured reality. In this perspective, it is added that such transformation presupposes, above all, an educational project that, in fact, is prepared by educators and that questions the consensuses and conformations of education.

Firstly, it should be pointed out that with the rise of the bourgeoisie and the fall of absolutist monarchies, there was the constitution of national states, the advent of modern science, as well as the expansion of educational institutions.

> As a revolutionary class the bourgeoisie represents the school, on the ideological discursive level, as a public, free, universal and secular institution which has at the same time the function of developing a new culture, integrating the new generations into modern society and socializing, in a systematic way, the scientific knowledge. It is an institution that has a clear dual function: to oppose dominant metaphysical thinking in feudal society, dominated by the church, hence the defense of secularity, and to reproduce the knowledge, values and attitudes necessary for the construction of the capitalist system. (Frigotto, 2011, pp. 19-20)

Considering the unequal constitution of the capitalist system, composed of different social classes, school institutions are dually shaped by the holders of capital and the working class, whose members possess the intellectual and physical forces to be sold.

In the North American context, beginning of the twentieth century, to make industrialisation feasible and to constitute a national identity, it was necessary to promote mass education (Silva, 2005). Thus, with the advent of Taylorism-Fordism, traditional theorising of the curriculum field corroborated the structural duality, characterised by the separation of intellectual and operational work.

The technician curriculum, for example, which has as an exponent John Franklin Bobbitt, author of *The Curriculum* (1918), considered the milestone in the constitution of this field, defined that the education of the masses would aim to prepare students to efficiently exercise professional occupations of adult life and, consequently, rationalised the educational process and the curriculum, similar to the functioning of a company defining results, methods and ways of evaluating these results (Silva, 2005).

In the meantime, incipient initiatives in Brazil had been developed for the teaching of crafts, characterised by "degradation of manual labour as a result of slave relations; (...) the instruction for the offices was made feasible through coercion and later in institutions of an assistance character, separated from secondary education" (Senna, 2018, p.70). As the country entered marginally in capitalist relations, with the proclamation of independence (1822), the instruction for the trades, from the division of labour, started to combat the degradation of manual labour by promoting the discipline of the working class (Cunha, 2005).

Although the Brazilian reality was distinguished from the North American, in economic, political and social aspects, education was coherently conceived in order to attend to the industrialist project and to constitute a national identity. Thus, in the first half of the

twentieth century, the constitution of the Brazilian educational system, the educational reforms undertaken, as well as the extensive and diversified offer of vocational education, harmonised with the new kind of rationalised production which demanded a new type of man capable of adjusting to the new methods of production, for whose education the mechanisms of social coercion were insufficient; it was a question of articulating new competences to new ways of living, thinking and feeling, appropriate to the new working methods characterised by automation, that is, by the absence of mobilisation of intellectual and creative energies in the performance of work (Kuenzer, 2007).

According to Kuenzer (2007), the discipline of the working class occurred mainly in the middle level, through professional training institutions and academics aimed respectively at the working class and the bourgeoisie. In relation to the professional formation, the Taylorismo-Fordismo conformed it printing the following characteristics: specialised, with focus in partial occupations; offered through short courses; based on the development of simple competences, based on pedagogic processes that favoured memorisation; the primacy of tacit knowledge about scientific knowledge (Kuenzer, 2007).

Middle-level academic institutions offered complementary courses from which secondary education originated. These courses were created in the Francisco Campos Reform (1931), through several decrees, at the beginning of the Vargas Era (1930-1945). There was, in the reformist ideology of the last two decades that preceded this reform, that education would be the key to the solution of social, political and economic problems (Shiroma, Moraes & Evangelista, 2002).

In addition to the elitist character of these complementary courses, which was evidenced by the non-articulation with courses aimed at vocational training, according to Soares, Dassie and Rocha (2004), the Francisco Campos Reform also had authoritarianism as a characteristic, after all, it was imposed on teachers.

Regarding mathematics, it should be pointed out that the reform was based on the innovations that Euclides Roxo had implemented since 1929 in the D. Pedro II College, such as the elaboration of a national curriculum with the fusion of Algebra, Arithmetic and Geometry in a single discipline called Mathematics, as well as the introduction of notions of Differential and Integral Calculus (Soares, Dassie, & Rocha, 2004).

According to Soares; Dassie and Rocha (2004), Euclides Roxo's proposals were influenced by the German mathematician Felix Klein (1849-1925) and aimed at modernising contents and methods, however, this intention did not materialise, especially for the way was implemented.

In view of the objectives, which were still being pursued, in order to constitute a national state, modern and that served the industrialist project, during the dictatorial phase of Getulio Vargas' government (1937-1945), the Capanema Reform (1942) was made possible through Organic Laws and complementary legislation. But the mere fact that there were guidelines for the national educational system did not make it one, because the old dualism translated into different opportunities according to class origin persisted.

In the mid-1940s, with democratisation, the new Constitution ensured education as a right of everyone to be guaranteed, at all levels, by the public authorities, in the form of a law, with private initiative (Shiroma, Moraes & Evangelista, 2002). However, in relation to mathematics, the achievement of this right was accompanied by conflicting developments regarding the definition of a "Minimum Program" for school institutions, which resulted in the withdrawal of various contents.

Regarding this program, Peralta, Silva and Pacheco (2018, pp. 38-39) provide the following excerpt of an interview with a teacher of the public-school system of the state of São Paulo:

> The rationale was simplification with the purpose of meeting the demand presented in the early 1950s: increasing diversity of the school population compared to previous decades. Today I understand how all that was exclusive, prejudiced. As if the schools open the door for a larger number of students, for a diversity of social classes; would have made it impossible to teach more complex content. They simplified the school because now the poor have entered it. Between us we always said that it was a way of blaming the poor, who were having access to the school, because of the poor quality. Now we would have a mass of student with level below. So they would not notice if the content was complex.

This democratic context also encouraged educators in the 1950s to articulate to advocate for an educational project different from what was in place, but it did not materialise in the 1961 Law on the Guidelines and Bases of National Education, Law No. 4.024 / 1961.

At the end of the 1950s the scenario was one of crisis: in the national political field, the bipolarisation of the Cold War favoured the circulation of socialist and communist ideas; in the economic field, attempts to promote late industrialisation at the expense of foreign capital also failed to reduce the quality of public services. The outcome of this conjuncture was the civil-military coup of 1964.

This was aimed at ensuring economic, political adaptation. Consequently, a new educational reform was made possible, based on the prescriptions of international agencies - *Carta de Punta del Este* (1961), Ten Year Education Plan of the Alliance for Progress, and an agreement between the Ministry of Education (MEC) and the Agency for International Development (AID) - and national organizations, composed of Brazilian intellectuals to favourable to the regime. (Shiroma, Moraes & Evangelista, 2002).

This educational reform was grounded in Theodore Schultz's economic theory, which provided an explanation for the inequality between countries, individuals, and social groups. In it,

> (...) human labor, when qualified through education, was one of the most important means for the expansion of economic productivity, and hence of the rates of profit of capital. Applied to the educational field, the idea of human capital generated a whole technicist conception about education and about the organization of education, which ended up mystifying its real objectives [1].

On the theoretical level, education, defined from the skills, knowledge, attitudes and values required by the labour market would guarantee the working class to ascend socially, key to the economic development of Brazil.

However, the linearity established by this thesis between this educational project and the economic development consisted in a reductionist view, since, above all, it disregards: that the holders of capital and the working class do not have equality and freedom of choice; power relations; the unequal constitution of nations and, therefore, its purpose was to mask the contradictions of the capitalist system and to guide antagonistic formative processes (Frigotto, 2011).

In practice, with respect to the economy of the civil-military regime, there was only the promise of a miracle. As for education, the reform legalized structural duality, turned

[1] Available in: < https://goo.gl/Zkjv1S>. Retrieved: Oct. 22, 2018

basic and vocational training precarious, promoted compulsory professionalization, reduced hours of basic training, and reduced investments in infrastructure and personnel (Shiroma, Moraes, & Evangelista, 2002).

If the bipolarization context resulted from the Cold War (1945-1991), the turmoil in the political field and the dissatisfaction in the economic field had as a result the civil-military coup. In turn, the scientific and technological advances led, in the 1960s and 1970, to the internationalization of the movement of modern mathematics, which brought significant changes in the scope of mathematics, unlike the Reforms of Francisco Campos and Gustavo Capanema.

Despite the articulation of mathematics educators in favour of these changes through courses, lectures and research groups, they ended up proving unworkable by teachers and students, in the end, contradicting the denomination of the movement itself — the modern proposal consisted of more of the old.

However, the consolidation of congresses, the creation of research groups, postgraduate programs and the expansion of institutionalized mathematics culminated in the consolidation of the field of research in mathematics education, as well as the creation of the Brazilian Society of Mathematical Education, which began to contribute to the realization of a diverse educational project, especially in relation to mathematics, along with other scientific associations.

Such changes took place in the context of redemocratisation that began in the mid-1980s, when civil society and the educational community once again mobilised to defend a national education project for the working class from the theoretical contributions of Antonio Gramsci (1891-1937), aiming to restructure secondary and vocational education, to cope with the impacts arising from the Flexible Capital Accumulation.

The Marxian program of education and Antonio Gramsci's studies contributed to the diffusion of the conception of technological and polytechnical education, and of the omnilateral formation as the revolutionary educational utopia of the working class, with work as an educational principle (Ciavatta & Ramos, 2012).

> (…) rescuing the principle of human formation in its totality; in epistemological and pedagogical terms, this ideology defended a teaching that integrated science and culture, humanism and technology, aiming at the development of all human potentialities. From this perspective, the vocational objective would have no end in itself nor would it be based on the interests of the market, but would constitute a more possibility for students in the construction of their socially determined projects of life, culminating in a broad and integral (Ramos, 2014, p.38).

However, in the context of the resonance of neoliberalism in the educational field, the educational reform, begun in the 1990s and based on the Law on Guidelines and Bases of Education - Law 9.394 / 1996 - consolidated another educational project.

Considering that this educational reform is part of the resonance of the Washington Consensus (1889), which spread neoliberal prescriptions to Latin American governments, it is necessary to question the current educational project - which includes the recent transformations in secondary and vocational education that took place in Brazil.

According to Frigotto (2011), the education reform is guided by a series of marketing principles - flexibility, employability, knowledge society, flexible training, competence, among others - promoted by multilateral organizations and promoting the rejuvenation of the theory of human capital.

Until then, it was possible to grasp aspects of the constitution of the Brazilian educational system and the reforms made feasible, designed to harmonise with capital. Consequently, educational projects heterogeneous to the system, which questioned this conformation, did not consolidate.

It is also understood that educational reforms contribute with changes in the scope of mathematics, while it was still in the process of configuration, aiming to solve problems related to teaching, but because they were imposed, they distanced themselves from solving the problems they had with that purpose.

In the current context, does Mathematics, aiming at developing competences, bring innovations in relation to its teaching? Can the structural duality, in the educational scope, be overcome with the current educational project that has been consolidated since the 1990s?

It reaffirms the need for the development of research that unveils consensus and questions the ideology that underlies the educational project of capital. The following is a concept of competence in the context of the educational project that gains forms in the context of Flexible Accumulation.

4. Competence-based pedagogy

In order to understand the consensus established around the concept of competency-based pedagogy, we need to examine the context in which it was originated, unveiling its aims and ideology.

It can be seen from the references of this study that in Taylorism-Fordism, in the scope of work, the productive processes were characterised by fragmentation, stability and based on electromechanical basis. Meanwhile, in the educational sphere, professional education was made feasible from specialised, partial courses, defined from the occupations, with a focus on the practical activities and that, nevertheless, it was necessary for the worker to develop a set of tacit theoretical support, since the actual work did not correspond to what was prescribed.

According to Ramos (2001), it is more precisely in the 1970s thatthe concept of competence began to guide technical and vocational education. The concept is used to denote, according to Kuenzer (2002), type of know-how that is derived from experience, as opposed from intellectual knowledge. In this sense, the concept of competence comes close to that of tacit knowledge.

The concept of competency did not guide the elaboration of the 1996 LDB. However, according to Ciavatta and Ramos (2012, p.12), the law inaugurates a new period, the age of the parameters, and within the National Curricular Parameters (NCP) the term competency is used. This posed difficulties for teachers, as Peralta, Silva and Pacecho (2018) show. Teachers interviewed in their study were not sure what competencies were, even after in-service teacher training.

In this scenario of global curriculum design, educational reforms fail to take into account the local reality, as well as neglect the educational project advocated by educators.

For the working class, through basic education, to have a formation for citizenship that can provide them the means to enter the world of work and to progress in studies, especially in the area of mathematics, students should not be offered a teaching that displays the following configuration:

> (...) conditioning to writing and memorising formulas and calculations devoid of meaning. It is necessary to enable him to decide, to think, to think for himself, to analyse critically and autonomously. We must constantly be experimenting and testing new methodologies and equipment that allow the individual to follow all the facets of the evolution of his time.(Fernandes, & Menezes, 2002, p.10)

This situation reveals that a redefined school mathematics was used, just as the reform of the 1990s imposed an educational project to the detriment of the working class, when it was established that mathematics, for example, was aimed at developing skills and abilities without the teachers' understanding of such purposes.,.

However, multilateral organisations argue that the educational project that emerged in the context of Flexible Accumulation, based on market principles, including competence, would guarantee the working class a different formation than the Taylorist-Fordist context.

The discourse is that this project would enable the working class a flexible formation, which would guarantee the workers to follow the changes resulting from scientific and technological advances; promote the development of complex competences - a domain of formal logic; communicative skills - that is, competences of theoretical domain; would overcome structural duality by approaching the trajectory of general and professional training (Kuenzer, 2007).

However, according to Ramos (2001), what this pedagogical project establishes is the correspondence between school and the labour market, through the National Curricular Guidelines and the Brazilian Classification of Occupations, both based on the notion of competences.

> When used in the context of work, this notion becomes plural - 'competencies' - seeking to designate the particular contents of each function in a work organization. The transfer of these contents to the training, guided by the competences that are intended to develop in the learners, gives rise to what we call 'pedagogy of competencies', that is, a pedagogy defined by its objectives and validated by the skills it produces [2].

According to Ramos (2006),

> the pedagogy of skills is (...) the way in which education reconstitutes, in contemporary times, its integrative function of the subjects to the social relations of production reconfigured in the economic plane - by the productive restructuring - in the political plane - by neoliberalism - and in the cultural plane - by postmodernity. (Ramos, 2006, p.273)

According to Kuenzer (2007), productive restructuring and neoliberal socioeconomic measures aimed at ensuring the accumulation of capital and, for this, differentiating the working class - selecting group and peripheral group - as well as training demands.

Still in Kuenzer (2007), while the select group of workers had their labour rights protected and whose flexible training is made possible through a propaedeutic training of quality, complemented by scientific-technological training, historical partner, and the development of complex skills , a contingent of workers, who make up the peripheral

[2] Available in: < https://goo.gl/JHPg9M>. Retrieved in: October 25, 2018

group, have access to a general training of a generic nature, from which professional training is given, consisting of rapid training and the development of simple skills.

Therefore,

> the overcoming of duality is not an issue to be solved through education, through new forms of articulation between the general and the specific, between theory and practice, between disciplinarity and transdisciplinarity; or through a new conception of competence that has an impact on teacher education policies and programs. The duality will only be overcome if it is overcome by the contradiction between the ownership of the means of production and the labor force. (Kuenzer, 2007, p 1162)

It should be emphasized that in the educational project put to the working class there is a consensus around the concept of competence, when, in fact, it is polysemic.

According to Perrenoud (1999, apud Kuenzer, 2002, p.6), competence is conceptualized as "an ability to act effectively in a given type of situation, supported by, but not limited to, knowledge".

However, Kuenzer (2002) distinguishes knowledge and competence, the types of knowledge mobilised by competencies, and points out in which spaces — work or school — competences are developed.

For the author (2002), the seizure or production of knowledge presupposes theoretical activity, which occurs in the plane of thought from other scientific knowledge, in addition, knowledge is praxis, because in the form of practical activity aims to transform the reality. In this perspective, since competence is a human, practical activity that is situated at the level of actions, a theoretical activity is presupposed (Kuenzer, 2002).

However, in the context of Flexible Accumulation, although the development of competences is enabled by the complex cognitive competences that demand scientific knowledge, the peripheral group of the working class continues to be enabled through tacit knowledge, which means a retreat from the theory, in counterpart to coping with adverse situations in the work environment (Kuenzer, 2003). And to face events, capitalism is at the mercy of human thought, which is mobilised only from the worker's adhesion; hence the importance given to the development of attitudes and behaviour in the context of flexible accumulation, incorporated into the concept of competence; it is necessary to develop mechanisms that lead the worker to think, in favour of capital accumulation, and therefore, in contradiction, in favour of the exploitation of his labour power (Kuenzer, 2003).

Thus, according to Kuenzer (2002), the school should be the space in which the working class can learn to interpret the world from scientific knowledge in order to transform it, whereas social and productive practice is the adequate skills development space. When establishing that the school education aims to develop skills, it is based on:

> a subtle but extremely perverse form of exclusion of those who live from work, since the children of the bourgeoisie develop their capacities despite the school, which for many becomes only a certifying institution; for workers, the school is the only space of intentional relationship and systematized with knowledge. (Kuenzer, 2002, pp. 17-18)

Therefore, by unveiling the consensus about the concept of competence, which guides the educational project, one can understand the conformation of education, but also, it is

encouraged by the need to develop actions that can contribute to the achievement of another educational project.

5. Considerations

It can be seen that the educational reforms made possible in the Era Vargas (1930-1945); in the period from 1948 to 1961; in the Civil-Military regime (1964-1985); and the one that has been taking place since the 1990s have been in line with political and economic projects and are related to the modes of production of capitalism, Taylorism-Fordism or Flexible Accumulation, which aim at disciplining the working class through unequal distribution of knowledge.

Therefore, it is noteworthy that educational reforms, specifically Francisco Campos (1931), Gustavo Capanema (1942), and the "Minimum Program" (1951), which are in force, have contemplated changes in relation to the curriculum or the teaching of mathematics. In fact, these changes, made possible by international influences, corroborated the uneven distribution of knowledge by segregating, from a traditional, rigorous and abstract mathematics, those students who had or did not have the aptitude to learn it, or when the working class had access to only a partial mathematics.

If, on the one hand, the consolidation of the field of research in mathematics education refutes the teaching of mathematics conditioned to writing, to memorisation of formulas and calculations devoid of meaning, the current educational reform, especially for high schools and professional technical education at the secondary level, is guided by the purpose of developing skills in the working class.

Competence is just one of many other concepts that underlie the educational project, whose foundations are in postmodernity and neoliberalism, and that came about through productive restructuring — Flexible Accumulation — with the purpose of concealing the impacts felt by the working class, with structural unemployment, deregulation of working conditions; and flexibilization of social rights.

For the working class, this educational project, guided by the concept of competence, produces a flexible subjectivity, instead of providing a flexible formation; the articulation of general and professional formation does not surpass the structural duality, on the contrary, it recomposes it to the generic formation.

When the polysemy of the concept of competence is revealed, it is understood that although competence and knowledge are related, they are not to be confused. However, in the educational project put to the working class, this occurs resulting in a curriculum that provides a result in a generic general formation articulated with the professional formation that does not enable them to transform reality and to face productive process based on the scientific and technological advances.

When institutionalised education, in particular mathematics education, is based on the notion of competences, the curriculum focuses on supposed significant situations of learning for the subject that relativizes certain contents, as well as neglecting "socio-historical, cultural and economic dimensions of learning, of the process of knowledge construction" (Ramos, 2001, p. 64).

Thus, mathematics education, when guided by the notion of competences, corroborates with the unequal distribution of knowledge, through supposedly significant situations, but which only allow partial and neutral understandings of reality.

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