

The Wizard of Oz, the Allegory of the Cave and the Mathematics curriculum: the ideal and the possible

O Mágico de Oz, o Mito da Caverna e os currículos de Matemática: o ideal e o possível

Paola Amaris-Ruidiaz¹ Elenilton Vieira Godoy² Marcio Antonio da Silva³

ZĚLĚLIKĚ

Abstract

Based in the presentation of two fictitious scenarios — The Wizard of Oz and the Allegory of the Cave —, the aim is to argue that Mathematics curriculum, curriculum, Mathematics Education, Education, Pedagogy, among other fields of research are strongly inspired by the metaphor of the desire for lack, in the case of the "Wizard of Oz", and the ideals of the "Allegory of the Cave", holding us to what is desirable, always pointing to a future that never comes. With this in mind, maybe we could think about the possibility of acting molecularly, in our classrooms, in our research, in our speeches and in our texts so that we cannot seek the desirable ideal of student, teacher, math class, school, curriculum; but that we do what is possible to do, from a political position that gives us clarity that it is possible to build another ethics of existence.

Keywords: Mathematical Education; Mathematics Curriculum; Power; Politics; Desire.

Resumo

A partir da apresentação de dois cenários fictícios — O Mágico de Oz e o Mito da Caverna —, o objetivo é argumentar que os currículos de Matemática, os currículos, a Educação Matemática, a Educação, a Pedagogia, entre outros campos de pesquisa, são fortemente inspirados na metáfora do desejo pela falta. No caso do "Mágico de Oz" e das idealidades do "Mito da Caverna", nos prendendo ao que é desejável, sempre apontando para um futuro que nunca chega. Com isso, talvez pudéssemos pensar na possibilidade de agir molecularmente, nas nossas salas de aula, nas nossas pesquisas, nas nossas falas e nos nossos textos para que possamos não buscar o desejável ideal de estudante, de professor, de aula de matemática, de escola, de currículo; mas que façamos o que é possível fazer, a partir de um posicionamento político que nos dê clareza de que é possível construir uma outra ética da existência.

Submetido em: 30/03/2020 - Aceito em: 02/09/2020 - Publicado em: 18/12/2020

Zetetiké, Campinas, SP, v.28, 2020, p.1-16 – e020028

¹ Post-doctorate student at the Federal University of Mato Grosso do Sul at PPGEDUMAT/UFMS. PhD in Mathematics Education at Universidade Estadual Paulista (UNESP), Rio Claro campus, São Paulo. Brazil. E-mail: paolaamaris@gmail.com. ORCID: <u>https://orcid.org/0000-0001-6683-5359</u>

² Post-doctorate by the Faculty of Education of the University of São Paulo - FEUSP. Professor at the Department of Mathematics, at the Graduate Program in Science and Mathematics Education (PPGECM) and at the Graduate Program in Education (PPGE) of the Federal University of Paraná - UFPR. e-mail: elenilton@ufpr.br. ORCID: <u>https://orcid.org/0000-0001-8081-5813</u>

³ Post-doctorate by the Department of Science and Mathematics Teaching of the University of Stockholm (Sweden) - Professor at the Institute of Mathematics of the Federal University of Mato Grosso do Sul (UFMS) and the Graduate Program in Mathematics Education of UFMS. E-mail: marcio.ufms@gmail.com. ORCID: https://orcid.org/0000-0002-5061-8453

ZEIEIKE

Palavras-chave: Educação Matemática; Currículos de Matemática; Poder; Política; Desejo.

Scenario 1 - The Wizard of Oz

2

The 1939 film "The Wizard of Oz" tells the story of Dorothy and her dog Toto who, traveling to the Emerald City to meet the Wizard Oz, find on the way a Scarecrow who wants a brain, a Tin Man who wants a heart and a Cowardly Lion who wants courage. They go after Wizard Oz in search of the realization of their dreams, in exchange for this realization they need to take the broom of the Wicked Witch of the West. "The Wizard of Oz" is unmasked by Dorothy, who discovers that everything is a farce surrounded by gimmicks and special effects and that he had no special power. In the end, Dorothy finds out who the Wizard of Oz really is: a cruel, rude and insecure man who created devices to scare people and make them worship him. Therefore, Oz is unable to help the protagonists in their mission. After all this journey, the brain, heart and courage that Dorothy and her friends were looking for, were found in each of the protagonists, teaching that one must trust oneself to obtain one's desires.

This film illustrates very well how the desire as lack affects us as a real plague. Authors like Deleuze and Guattari (2004) even argue that this desire is what drives Capitalism, characterized by an unprecedented relationship with social production understood, in a way, as an unfolding of desiring production. In other terms: Capitalism establishes a relationship with desire that is completely different from the social relations that preceded it. It operates a logic for the lack that produces neuroticism.

We always desire more; we always think that we are at fault or that something is missing. We seek completeness, as if we were incomplete by nature. In general, we seek this completeness in the outside, including the others. Deleuze (1996) opposes desire as lack, desire as production. Without a doubt, this composes a new way of seeing the world. After all, one does not desire an object or a person, because historically we have been established: "we can only desire what we do not have!", if that were the case, the desire would be lack. There is a feeling of nostalgia in the air, something has been lost. We have to look for it! That asks to be filled. Desire while missing is constitutive of our subjective formation and finances the powers-knowledge that act in our bodies.

Deleuze (1996, p. 30) explains:

For me, desire does not entail any fault. It is not a natural fact. It is constantly linked to an agency that works. Instead of being structure or genesis, it is, on the contrary, process. Instead of being feeling, it is, on the contrary, affection. Instead of being subjectivity, it is, contrarily, "haecceity" (individuality of a journey, of a season, of a life). Instead of being a thing or a person, he is, contrarily, an event.

Desire while missing constitutes other realities, creates signifiers, paradises that we long for, dreams that we never achieve; reality is a desiring production and desire is the driving force that drives this machine. But it is a subjective machine that Capitalism itself can take advantage of; that is where it operates, imposing certain ways of being in the verbs of life. Thus, "to produce its immanent dynamics of decoding, deterritorialization and

reterritorialization of flows takes place according to the rules of its own functioning, and in doing so, it ends up referring the process to a transcendent, capital itself" (Orlandi, Rago, Veiga-Neto, 2002, p. 3).

Scenario 2 - Allegory of the Cave

According to the story formulated by Plato, there was a group of people who lived in a big cave, with their arms, legs and necks bound by chains, forcing them to fix themselves only to the wall at the bottom of the cave. Behind these people there was a bonfire and other individuals who carried around the light of the fire images of objects and beings, who had their shadows projected on the wall of the cave, where the prisoners were watching. Since they were prisoners, they could see only the shadows of the images, judging those projections to be reality. Once, one of the people trapped in this cave managed to free himself from the chains and went out to the outside world. At first, the sunlight and the diversity of colors and shapes frightened the former prisoner, making him want to return to the cave. However, in time, he ended up admiring the countless novelties and discoveries he made. Thus, he wanted to go back to the cave and share with the other prisoners all the information and experiences that existed in the outside world. The people who were in the cave, however, did not believe what the former prisoner told and called him crazy. To prevent his ideas from attracting other people to the "dangers of insanity," the prisoners killed the fugitive (Moura, 2020).

The "Allegory of the Cave", a metaphor created by Plato, is a great allegory for modern thought that influences us even today. By opposing sensitive world \times intelligible world, body \times soul (denial of the body, affirmation of the soul), among other dichotomies, this image served and serves as inspiration for thought systems around the world, such as the Jewish-Christian. For Plato, we are ignorant, because we only have access to a projection (shadow) of reality. We are stuck to our limited senses, which deceive us and make us see only a distortion of what reality is.

Brushstrokes

This article walks in the direction of thinking that the Mathematics curricula, the Math Education, the Education, the Pedagogy, among other fields of research⁴, are strongly inspired by the metaphor of the desire for the lack, in the case of the Wizard of Oz, and the ideals of the "Allegory of the Cave". By attaching ourselves to what is desirable — what neoliberalism desires of the school, the curriculum ..., through the political practices that can produce a subjective machine for these to become efficient tactics of governments.

While we understand that dichotomies end up expressing inadequate binarisms, we choose a dichotomy as a didactic choice to argue in favor of possible math curricula as

Zetetiké, Campinas, SP, v.28, 2020, p.1-16 – e020028

ZETETKÉ

3

⁴ Mathematic Education will be discussed as an area and as movement (mathematics education) so, for example, it will be understood as an area using [M]athetics, and, as a political field to be discussed: [m]athematic, contributing to the discussion of the demarcation of an area to the multiplicity of research in the field of mathematics education no longer allows the establishment of fixed boundaries (Silva, Miarka, 2017).

ZEIEIKE

opposed to ideal math curricula. In addition, we will try to visualize: What desires are Capitalism producing to make an education desirable? A desirable curriculum? If the lack is its maximum power, "What are we helping to make of ourselves?

48. Se perguntarem pelo método, responda: todo⁵
59. Se perguntarem pelo objetivo, diga: tivo.⁶
111. Se perguntarem pela teoria, ria.⁷
201. Se perguntarem pela norma, informe: não vi.
44. Se perguntarem pela coerência, gagueje.
102. Pra quê régua? Enfie os dedos.
38. Pra quê compasso? Meta os pés.
(Tadeu, 2007, p. 309)

201. If they ask about the norm, say: I didn't see it.
44. If asked about coherence, stutter.
102. For what ruler? Stick your fingers in.
38. For what compass? Set foot.
(Tadeu, 2007, p. 309)

Politcipic 1

The world is crossed by speeches that constitute our way of being, regulating behaviors, through sophisticated and subtle techniques, the realization that these values, this moral, this specific way of behaving and living in our world is aligned with a moral, political and economic logic. Moral, politics and economy are imbricated, directing desirable behaviors and attitudes, aligned with neoliberal logic (Valero, Knijnik, 2015, 2016).

Neoliberalism is an economic policy that is based, like every economic principle, not only on political decisions about how the market should work, but also on characteristics that regulate behaviors and establish goals for society, according to certain moral values. Thus, living in a neoliberal logic can translate into following certain rules that value the entrepreneurial spirit, stimulate competitiveness, hierarchization, flexibility, innovation, accountability and, consequently, blame individuals (Dardot, Laval, 2016).

Neoliberalism constitutes each one (people or groups) as entrepreneurs of themselves: Você S.A.; Universidade S.A.; Programa de Pós-Graduação S.A.; Grupo de Pesquisa S.A. The emphasis is on products, impact, results. In general, quantitative evaluation techniques are valued, as they are more objective and easier to hierarchize and compare results, working as a technique to stimulate competition.

⁵ This phrase has not been translated because the author makes a game of words that in English lose their meaning.

⁶ This phrase has not been translated because the author makes a game of words that in English lose their meaning.

⁷ This phrase has not been translated because the author makes a game of words that in English lose their meaning.

ZEIEIKE

This is what Stephen Ball calls performativity:

5

Performativity is a technology, a culture and a method of regulation that employs judgments, comparisons and demonstrations as means of control, friction and change [...] Performativity is achieved through the construction and publication of information and indicators, in addition to other achievements and institutional promotional materials, as a mechanism to stimulate, judge and compare professionals in terms of results: the tendency to name, differentiate and classify (Ball, 2010, p. 543-544).

We base ourselves on peer evaluation, we write the account performances, we assign degrees to other departments, we reprimand our colleagues for their poor productivity, we plan, put in place and feed the departmental and institutional procedures to monitor and improve results (Ball, 2005, p. 41).

Foucault uses the term "governance" to describe the "institutions, procedures, analyses and reflections, calculations and tactics" (Foucault, 2008, p. 143) that are used as power mechanisms for the State to exercise "government over all others" (p. 144). Thus, the neoliberal logic can be understood within the power relations and knowledge mobilized by states as efficient government tactics.

Unlike the disciplinary technologies of 17th- and 18th-century work — which focused directly on individual bodies, giving the sovereign the power to make his subjects die and let them live —, power over life or bio politics emerges in the second half of the 18th century, mixing with disciplinary power. Since then, forms of government have also addressed the multiplicity of human species, using statistical measurements as a powerful tool for control and decision-making. Although these phases are not watertight, it is possible to affirm that the logic of "making people die and let them live" has changed to that of "making people live and let them die" (Foucault, 1999).

Now, as relationships of knowledge and power, as well as discourses taken as unquestionable truths, circulate in society, the school is also crossed by these questions. More than that, the school is a strategic place to learn, not only socially accepted knowledge but also the "best that society has ever produced in the history of humanity". The school operates a pedagogical device that works as a technique or tool to determine what is true and what is false, addressing values, knowledge and behavior (Silva, 2019, p. 384).

School being part of a logic of governments governed by neoliberalism can translate into following certain rules that value the entrepreneurial spirit, stimulate competitiveness, hold individuals accountable. In addition, "the selection of valid and legitimate subjects to be taught also implies the selection of values, behaviors and morals, which come embedded in this knowledge" (Silva, 2019, p. 384). Thus, the neoliberal logic can be understood within the relationships of power and knowledge mobilized by states as efficient tactics of government, and the school is part of this gear, according to its visibilities, by virtue of its own form.

DOI: 10.20396/zet.v28i0.8658657

A historical problem presents itself in the field of curriculum: the gap between curriculum planning, implementation and school. Although it is a recurring problem, we insist on prescribing recipes, taking as reference a desirable teacher, a desirable student, a desirable teaching, a desirable learning, a desirable school. As in the "Allegory of the Cave", we start from the assumption that we need to plan a very arduous and well formulated course for us to get out of the darkness and out of the cave. Students and teachers are like the lion, the scarecrow and the tin man of "The Wizard of Oz": they lack many things, such as specialized knowledge for teaching, learning, skills, contents, methods, etc.

The etymology of the word curriculum already shows how strong this desire to idealize is in our way of thinking the world. Doll Jr. (2002), quoting Pinar and Grumet (1976), makes a reflection about this etymological origin:

Currere means "run". Specifically, it means to run a route, a closed route, like the one used by cars in circus Maximus. Thus, when speaking of curriculum, it is possible to focus on the route (as a noun) as a material object or on the route (a verb) as a personal experience. Since the time of Ramus and Comenius, we have considered curriculum almost exclusively in terms of the path to be taken and not in terms of the personal experience of the runner (Doll Jr, 2002, p. 43).

These considerations bring important implications for the conceptions we have about the curriculum: curriculum can be seen as a noun or as a verb. For example, if we take *currere* as a noun, we tend to overvalue prescriptions, planning, organizations and evaluations, all these dimensions thought of as something that will happen (in the future) or where we want to get (outside the cave).

On the other hand, in a contemporary perspective, considering curriculum as a verb, the protagonist is the action, the present.

It is important to emphasize that the contemporary conception of curriculum does not end with the need to establish objectives, as some radical interpretation could conclude. In order for the corridor to exercise its action (run) it needs a path to do so, even if it is hypothetical. We understand that the central criticism of William Pinar and Madeleine Grumet about the need to understand *currere* as a verb is the inexistence of reflections on the perspective of the corridor, taking into account only the point of view of the constructor of the path.

This leads us to see that, nowadays, the modern perspective of curriculum dominates educational regulations. There is much reflection on the need to institute curricular orientations that, although they are not built with the objective of establishing categorical rules, are interpreted as such. The importance of the different materials that present the curriculum, such as textbooks, manipulable materials, digital resources, among others, is also highly valued. Finally, the evaluation, especially those done on a large scale, "measures" the effectiveness of the project, without taking into account the specificities of the main participants: the students.

In the current perspective, using the etymological metaphor of currere, it is as if we

DOI: 10.20396/zet.v28i0.8658657

put sedentary people and high performance athletes in the same track, to run a hundred meters' shallow race, and transfer our confidence that the good performance of both groups could be justified by the quality of planning and construction of the track in which they will run. For those who failed, it would be enough to repeat the race several times until the objectives were satisfactorily met.

By interpreting the curriculum as a verb, we position ourselves in favor of building curricula that value the experience of the runner, and not just the beauty of the course, because this beauty can only be in the eyes of those who planned the prescriptions, and not in the eyes of the teacher, much less the student.

Politcipic 3

Thomas Popkewitz wrote about the effects produced by the Mathematics curriculum in the manufacturing of children. For him, there is not a didactic transposition of scientific knowledge to school knowledge, but an alchemy:

School subjects are analogous to medieval alchemy. There is a magical change as mathematics, science, and the social sciences move from their disciplinary spaces into the classroom. Educational and social psychologies have little or nothing to do with understanding disciplinary practices. They are intellectual inventions for normalizing and governing a child's conduct, relationships and communications (Popkewitz, 2004, p. 3, our translation).

From this perspective, mathematics curricula create students, teachers, classes and methodologies that are idealizations, like Plato's ideal world. In fact, one of the justifications about the importance of teaching mathematics in basic education is to provide students with a supposedly good reading of the world. What world? Well, that world is also an ideality, an idealization of the world. A world that does not exist and may never exist. A future world. A fictitious world. A world of Dorothy, the tin man, the lion and the scarecrow.

Now, as relationships of knowledge and power, as well as discourses taken as unquestionable truths circulate in society, the school is also crossed by these questions. The school operates a pedagogical device that functions as a technique or tool to determine what is true and what is false, addressing values, knowledge and behavior (Friedrich, 2010).

School mathematics is traditionally considered one of the most important subjects. At the same time, it seems to be politically harmless, since even today its teaching is considered excessively technical, not offering space for social, economic, historical or philosophical discussions.

However, the innocence of mathematics is apparent. This has been made explicit in the field of curricular research since the 1960s, when groups of researchers in various parts of the world began to question educational ideas and the function of the school. The idea that school can serve as a powerful tool for maintaining social differences shows how much the curriculum is devoid of neutrality (Silva, 2005).

In Mathematics Education, this movement toward broadening horizons, no longer

DOI: 10.20396/zet.v28i0.8658657

investigating only aspects related to teaching and learning through the bias of Psychology, took more time. A milestone was the so-called social turning point (Lerman, 2000). In Brazil, for example, the repercussion of Ole Skovsmose's research and critical math education brought a new look to the teaching of Mathematics.

Abroad, in 2013, Rochelle Gutiérrez described what she called the sociopolitical turnaround in mathematics education (Gutiérrez, 2013). In the same year, the third Handbook on Mathematics Education was published (Clements et al., 2013), which had one of the four parts dedicated exclusively to research that contemplated social, political and cultural dimensions of Mathematics Education.

Although many researchers are tempted to stake stakes or markers to demarcate the area, the multiplicity of research in the field of mathematics education no longer allows the establishment of fixed boundaries (Silva, Miarka, 2017), making the area a network of social practices (Valero, 2009).

These new movements have catalyzed the construction of new research that has brought socio-political and cultural issues to the research scenario of mathematics education, providing the possibility of glimpsing the processes of teaching and learning mathematics from other points of view.

In this path, there are within Mathematics Education possible theoreticalmethodological trends inherently bordering on the social-cultural-political dimensions/components such as ethno mathematics, mathematical modeling and critical mathematics education (Godoy, 2015). The combination of these studies-strands can approximate and highlight the social-political-cultural character of school mathematical knowledge, which certainly helps in the possibility of fracturing the stakes and thus articulating other knowledge that allows other investigative scenarios.

> Mathematical Modeling, as a method, is a valuable tool to put into practice what is advocated as the purpose of Mathematics teaching by Ethno mathematics and Critical Mathematics Education. Critical Mathematics Education can be used as a powerful analytical tool to study the relationships involving academic mathematics, school mathematics, culture and the asymmetric power relationships present in contemporary society. Ethno mathematics enables a closer debate on curriculum theories, specifically, when culture becomes a central dimension in discussions in the curriculum field (Godoy & Santos, 2017, p. 281).

The initial premise when articulating mathematical modelling-ethno mathematical education critically would be to assume "pedagogical practices that enable students to critically analyze the problems surrounding them and also help them promote social [and cultural] justice in contemporary society" (Orey & Rosa, 2007, p. 197).

In political terms, Ethno mathematics approaches facts and practices that are marginalized, mainly the oppressed, the defeated, those living in ghettos; in formative and educational terms, Ethno mathematics links itself to sophisticated mathematical thinking in order to develop mathematical skills and competences, as well as to understand mathematical know-how (Orey & Rosa, 2003).

DOI: 10.20396/zet.v28i0.8658657

Mathematical Modeling seeks to understand what Mathematics is and how its ethno mathematical know-how, through the systems of representation, acts on the subjectivity of subjects from different cultures, strengthening their identities and contributing to the development of respect for differences and non-submission to the dominant culture.

The role played by mathematical language, in different strata of society, is the main link between Ethno mathematics, Critical Mathematical Education and Mathematical Modeling. Language is a tool used both for enlarging worldview and for developing empowerment (Godoy & Santos, 2017, p. 181).

We consider that the politicization of the Mathematics curriculum can hardly be built without, minimally, the crossing of the theoretical-methodological- ethno mathematics trends, mathematical modeling, critical mathematics education. And (or) the curriculum studies and (or) the post-critical theorists and (or) other areas that contribute to the broadening of horizons, erasure of piles that perhaps already existed.

Politcipic 4

The different theories of the curriculum seek answers and arguments to discuss and justify the knowledge that must be taught in order for the subjects to be modeled — desirable curricula — (according to the dominant ideological thinking of the time), or to know and govern themselves and the society in which they live (Silva, 2000; 2007).

Still on the discursive meanings produced regarding the theories of the curriculum, the issue involving power relations contributes to the separation of traditional theories — which wish to be neutral, scientific and disinterested —, from the criticism and post-criticism of the curriculum — which deny this disinterested scientific neutrality of traditional theories. Affirming that, inevitably, theories are involved in (by) power relations.

The distinction between the theories is also perceived by the different concepts employed by each of them. Initially, the shift of emphasis from didactic-pedagogical concepts of teaching and learning processes to the concepts of ideology, hegemony, power, caused the rupture between traditional and critical theories. When the concepts of discourse, governance, mistrust, and blurred, mainly, the concepts of ideology-hegemony-resistance to the postcritical theories of the curriculum redefined the way to perceive and conceive the curriculum (Silva, 2000; 2007).

Ripping the expression curriculum theories. In its place, the expression curriculum studies produces other discursive records broadening the understanding of the centrality of this field to think education-curriculum-discipline-knowledge-adjective by the school. It is an interdisciplinary discursive practice of the educational experience (Pinar, 2007).

The interdisciplinary structures of the curriculum field influenced by the humanities and arts provide the theories of curriculum with distinct specialization in the broad educational area.

As a distinct interdisciplinary field (...), Curriculum Studies may be the only academic discipline within the broader field of education. (...) Only the theory of the curriculum

has its origin and owes its loyalty to the discipline and the experience of education (Pinar, 2007, pp. 18-19).

Curricular studies have been adjectivized as critical to the contemporary educational process and its reforms.

In fact, the "educational experience" seems precisely what politicians do not want, when they insist on emphasizing test scores, the "gross income". By relating the curriculum to the behavior of students on standardized tests, politicians have, in fact, come to control what has to be taught: the curriculum. Exam-oriented curricula demotivate teachers from academics and intellectuals to technicians in the service of the state. The culture of self-reflection, interdisciplinary scholarship and intellectuality disappears. Rationalized as "accountability", political socialization replaces education (Pinar, 2007, p. 19).

The phenomenon of external evaluations seems to be universal and its naturalization tends to materialize. More and more these evaluations become elements of the daily life of our classrooms and the impression is that little or no critical reflection on them is carried out inside the schools. Teachers and students become just hostages to them. Thus it seems that the time-present is "a nightmare for public school teachers" (Pinar, 2007, p. 19), because the school: "has become a factory (or company) of competence and knowledge; the teacher is reduced to the status of supervisor. While millions live the nightmare every day in the schools, very few seem to realize that they are asleep" (Pinar, 2007, p. 19).

In this sense, those who conceive of the curriculum as a noun are likely to be interested in determining whether or not content is relevant, how the stages of schooling should be divided, which subjects are most important and which can be suppressed, how teaching should be proposed, and how learning should be measured to verify the efficiency of the process.

In this way, we assume a desire as production, producing meaning from cultural studies, which has the centrality of culture placed to discuss contemporary issues adjectivized by the premise that culture:

(...) it is formed by a set of systems of meanings that give meaning to human actions, be they ours or the others, making possible the understanding that any social action is cultural and that, therefore, the social practices that express, communicate and produce meanings are practices of meaning, discursive. Thus, being politics, economy, education, power (...) social practices, producing discourses and meanings, they also have a cultural dimension (Godoy, 2015, p. 105).

Thinking about the educational dimension, we consider that the school both produces and reproduces the society in which it is inserted (Neto, 2004; Godoy, 2015).

The practices of meaning and symbolic systems, constituent of a system of representation, act in the constitution of the subject, of his subjectivity and of his identity, and in the fabrication of forms of differences between the elements of the same or distinct social group. This subjection is responsible for the production of differences, which are intrinsic to the constitution of identities, regulating subjects and their conduct (Godoy, 2015, p. 105).

ZETETIKÉ

11

ZETETIKÉ

DOI: 10.20396/zet.v28i0.8658657

The curriculum is seen as a school artifact invented through resignifications of the social-cultural, space-time world. The curriculum is adjectivized "as a time-space boundary, permeated by intercultural relations and a [nonlinear] and contingent oblique power" (Macedo, 2006, p. 106).

According to Macedo (2006, p. 106), the notion of frontier, from the post-colonialist point of view, designates "a space-time in which subjects, themselves hybrids in their cultural belongings, interact by producing new hybrids that cannot be understood as a simple sum of cultural belonging" (Godoy, 2015, p. 106).

The socially invented curriculum — therefore, a cultural practice — is bounded by binary (ambivalent) power relations linked to control and resistance, associated with discriminatory practices, the place where differences are manufactured. Therefore, the curriculum is a place where cultures live with difference.

In institutional terms, the curriculum is seen as a cultural artifact because it is "a social invention, a discursive practice connected to the production of cultural and social identities" (Silva, 2000 apud Godoy, 2015, p. 107). And in content terms, the curriculum is a "social construction because knowledge is a product created and interpreted socially, a social epistemology" (Silva, 2000 apud Godoy, 2015, p. 107).

Positioning the school curriculum in the perspective that adopts cultural policy can produce meanings that allow recontextualizing/reconceptualizing the knowledge that must circulate in school education (hybridized knowledge). Furthermore, this perspective of cultural policy within mathematics education will help understand how mathematics and its education in society is part of power effects (Valero, 2014), and how it can be practiced and conceived as a political issue, since there are addresses that go far beyond conceptual content.

Conceiving mathematics education as a matter of policy allows us to focus on the government of populations and individuals to achieve the desirable and expected behavior, that is, the acquisition of mathematical knowledge, competence and expertise, since these are valued as indispensable qualifications of modern, rational and economically productive citizens (Valero & Knijnik, 2016, p. 5)

Contents that can go in search of: what is expected from populations while acquiring mathematical knowledge? This knowledge is directed to achieve what? Conceiving mathematical education as a political "issue focuses on the critical recognition that mathematical ways of knowing enter into a field of educational relations, and these begin to form part of the picture of historical, social, economic, cultural, ethical and political relations, these relationships are part of school and schooling" (Valero, et al., 2015, p. 297).

Being attentive to the policies that permeate education, the teaching of mathematics and its curricula can enable a counter conduct when assuming a political mathematics education, and a curriculum as a cultural policy, as another way for us to do what is possible. From a political position that gives us clarity that it is possible to build another ethic of existence and other polypathic paths to walk.

Composition

Zetetiké, Campinas, SP, v.28, 2020, p.1-16 – e020028

We wish (desire as production!) to produce some affections: how mathematical curricula can be seen by lack and as unattainable idealizations. With this, maybe we could think about the possibility of acting molecularly, in our classrooms, in our researches and in our texts (like this one), so that we cannot seek the desirable ideal of student, teacher, math class, school, curriculum. So, let us do what is possible, by producing other ways of existence (molecularly) that help to create other outlets and other ways of being in the world.

The Mathematics curricula seem to ignore the plurality and multiplicity of "corridors" that we have. The track is meticulously planned thinking of a univocal formation. Little of the participants' previous knowledge and experience is taken into account in the process. The topics covered are undeniable, ignoring the perspectives and motivations brought by the students.

The teacher training courses, as well as the Math classes, also promote the filling of what is missing to be a good teacher and what is missing to be a good student of Math. They promote a FORMATION, i.e., a modeling so that the subjects mold themselves to the desirable form, and adjust to the form.

According to Fernandes, Miarka e Barros (2018), "Mathematics constitutes an ethos of the training of Mathematics teachers: a set of training policies —governmental, subjective, epistemological, social, etc., —that produce a scenario of dispute between subjects and their interests" (p. 110). Not looking at these disputes and the positions taken in them, math teacher training is no longer just a theoretical problem: it constitutes a political problem that is compounded in the game of teacher training.

An important challenge for Mathematics Education is to assume the political problem that is constituted in the games of truth of teacher training itself, besides, the games that are created within the very political practices that exercise the imposed curricula, that is, ideals.

What we must face in the coming years is "to bring our research closer to mathematics teachers and to academics in degree courses in mathematics" (Silva, 2018, p. 203), so that these feelings of strangeness that we often experience when people come across our research are experienced more and more. Nuisances need to be questioned and not transformed (made) into irrefutable truths.

Forms of life can be established in our ways of existence through effective strategies of governments operating by desire. We understand that mastering these burdens of desire can contribute to the maintenance of Capitalism. And the sooner this desire is directed, the better the subject can be integrated into the social role expected of him.

Desires directed through educational policies can produce the best schools in the world, with practices that generate homogeneous effects to achieve their purposes. Moreover, always compared to other countries that invest in their education, as stated in the document of

ZETETIKÉ

ZĚLĚLIKĚ

the Cesgranrio Foundation Evaluation Center⁸:

Our "Pisa for Schools" showed that even schools with a lower socioeconomic level can perform well. Some schools that participated in the test performed above France and England. That means we have schools of excellence. We are not as bad as the Pisa sample reveals.

What desirable curricula establish the Brazilian Education Guidelines and Basis Law through the Common National Curriculum Base? What curricula do teachers activate in their classroom? So, **what are we helping to make of ourselves?** So that the Capitalist modes of production in their current strategy of production do not diminish our modes of action, but can produce "movements of resistance or counter-conduct towards new possibilities of mathematical education in relation to politics" (Valero & Knijnik, 2016, p. 6, our translation).

What are we helping to make of ourselves? It is to understand that we can be subjective and in this direction Capitalism can fulfill our desires, so what is the effect of this conduction? What is missing, like having good results in Pisa? To have a good curricular management, that is, a "good" way of organizing and progressing the curricular contents to reach the established parameters?—I want to satisfy a machine, but why do we want to satisfy it? — In the end, the answer is simple: it is because your desire, that is, your impulses and affections, are not yours, if we can say so, they are part of the Capitalist infrastructure.

To understand this is an urgency, because we can be victims and active participants of these subjections and lifestyles that they want to impose on us.

7. Subverting language and grammar: that's where the power infiltrates of common sense and the common sense of power.
8. Untie the knots that bind the powerful of the moment to the collectives Abstract: homeland, nation, family. Better: to discredit every kind of abstract collective.
9. To make schools, parties and sects delirious, without leaving out the established religions.
10. Never take any assault. If you have to take it, it is because is not worth it. (Tadeu, 2007, p. 313)

References

- Ball, S. J. (2005). Profissionalismo, gerencialismo e performatividade. *Cadernos de Pesquisa*, 35 (126), 539–564. Retirado, em 20 de fevereiro 2020, de https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-15742005000300002>.
- Ball, S. J. (2010). Performatividades e fabricações na economia educacional: rumo a uma sociedade performativa. *Educação & Realidade*, 35 (2), 37–55.

Zetetiké, Campinas, SP, v.28, 2020, p.1-16 - e020028

13

⁸ Pisa for Schools: what it is and how it will work in Brazil. https://novaescola.org.br/conteudo/17850/pisa-para-escolas-o-que-e-como-vai-funcionar-no-brasil

ZETETIKÉ

- Clements, M. A., Ken et al. (2013). Third International Handbook of Mathematics Education (v. 27). New York: *Springer* New York.
- Costa, M. V. (2010). Poder, discurso e política cultural: contribuições dos Estudos Culturais ao campo do currículo. In: A. C. Lopes, E. Macedo, (Eds.). *Currículo: debates contemporâneos* (pp. 133-149). 3. ed. São Paulo: Cortez.
- Dardot, P., & Laval, C. A. (2016). Nova Razão do Mundo: ensaio sobre a sociedade neoliberal. Tradução Mariana Echalar. São Paulo: Boitempo.
- Deleuze, G., & Guattari, F. (2004). *O Anti-Édipo. Capitalismo e esquizofrenia*. Tradução Joana Morales Varela; Manuel Maria. Lisboa: Assirio & Alvim.
- Deleuze, G. (1996). Desejo e Prazer. Tradução Luiz Orlandi. *Cadernos de Subjetividade*, número especial, 13-25.
- Doll Jr, W., & Wendi, B. (2002). Ghosts and the Curriculum. In: W. Doll Jr, B. Wendi, & N. Gough (Eds.). *Curriculum visions* (pp. 23-72). New York: Peter Lang.
- Fernandes, F., Miarka, R., & Barros, M. (2018). Por uma didática na/da formação do professor de Matemática. In: R. Silva (Org.) Processos formativos em educação matemática: perspectivas filosóficas e pragmáticas [recurso eletrônico]. Porto Alegre, RS: Editora Fi.
- Foucault, M. (1999). *Em Defesa da Sociedade: Curso no Collège de France (1975-1976)*. Tradução Maria Ermantina Galvão. São Paulo: Martins Fontes.
- Foucault, M. (2008). Seguranca, Território, População: Curso dado no College de France (1977-1978). Tradução Eduardo Brandão. São Paulo: Martins Fontes.
- Foucault, M. (1994). Hermenéutica del sujeto. Madrid: Ediciones de la piquera.
- Friedrich, D. (2010). Historical consciousness as a pedagogical device in the production of the responsible citizen. *Discourse: Studies in the Cultural Politics of Education*, 31 (5), 649–663. Retirado, em 19 de fevereiro 2020, de http://www.tandfonline.com/doi/abs/10.1080/01596306.2010.516947>.
- Godoy, E. V. (2015). *Cultura, currículo e educação matemática: uma aproximação possível?* Campinas: Papirus.
- Godoy, E. V., & Santos, V. (2017). O Currículo da Matemática escolar e a centralidade da dimensão cultural. *Educação Matemática Pesquisa*, 19(3), 276-30.
- Gutiérrez, R. (2013). The Sociopolitical Turn in Mathematics Education. *Journal for Research in Mathematics Education*, 44 (1), 37–68. Retirado, em 22 de fev. 2020, de https://www.researchgate.net/publication/259749651_The_Sociopolitical_Turn_in_Mathematics_Education>.
- Lerman, S. (2000). The Social Turn in Mathematics Education Research. In: J. Boaler (Ed.). Multiple Perspectives on Mathematics Teaching and Learning. *International Perspectives on Mathematics Education* (pp. 19–44). Westport, CT: Ablex Publishing.
- Macedo, E. (2006). Currículo: Política, cultura e poder. Currículo sem Fronteiras, 6 (2), 98-113.
- Moura, C. A. (2020). Grande Mentira...: e a Verdade que nos fizeram esquecer!. Bibliomundi.

Zetetiké, Campinas, SP, v.28, 2020, p.1-16 - e020028

ZETETIKÉ

- Orey, D. C., & Rosa, M. (2003). Vinho e queijo: Etnomatemática e modelagem. *Bolema*, 16 (20), 1-16.
- Orey, D. C., & Rosa, M. A. (2007). Dimensão crítica da modelagem matemática.: Ensinando para a eficiência sociocrítica. *Revista Horizontes*, 25 (2), 197-206.
- Orlandi, L. B., Rago, M., & Veiga-Neto A. (2002). Que estamos ajudando a fazer de nós mesmos. *Imagens de Foucault e Deleuze: ressonâncias nietzschianas* (pp. 217-238). Rio de Janeiro: DP&A.
- Pinar, W. F., & Grumet, M. (1976). *Toward a poor curriculum*. Kendall/Hunt Publishing Company.
- Pinar, W. F. (2007). O que é a Teoria do Currículo? Porto: Porto Editora.
- Popkewitz, T. S. (2004). The Alchemy of the Mathematics Curriculum: Inscriptions and the Fabrication of the Child. *American Educational Research Journal*, 41 (1), 3–34. Disponível em: http://aer.sagepub.com/cgi/doi/10.3102/00028312041001003>.
- Silva, T. T. (2005). Documentos de identidade: uma introdução às teorias do currículo. 2ª ed. Belo Horizonte: Autêntica.
- Silva, T. T. (2000). Teorias do currículo: Uma introdução crítica. Porto: Porto Editora.
- Silva, M. A. (2016). Investigações Envolvendo Livros Didáticos de Matemática do Ensino Médio: a trajetória de um grupo de pesquisa. *RIPEM Revista Internacional de Pesquisa em Educação Matemática*, 9 (3), 36–54.
- Silva, M. A. (2018). Currículo e Educação Matemática: a política cultural como potencializadora de pesquisas. *Perspectivas da Educação Matemática*, 11 (26), 202–224.
- Silva, M. A. (2019). A Política Cultural dos Livros Didáticos de Matemática: um guia para transformar estudantes em cidadãos neoliberais. *Linhas Críticas*, 25, 381–398. Disponível em: http://periodicos.unb.br/index.php/linhascriticas/article/view/21853>.
- Silva, M. A., & Miarka, R. (2017). Geni, a Pesquisa em [E]educação [M]matemática e o Zepelim. *Perspectivas da Educação Matemática*, 10 (24), 752–767.
- Tadeu, T. (2007). Políptico. Educação em Revista, Belo Horizonte, 45, 309-322.
- Valero, P. (2010). Mathematics education as a network of social practices. In V. Durand-Guerrier, S. SouryLavergne, & F. Arzarello (Eds.) Proceedings of the Sixth Congress of the European Society for Research in Mathematics Education (pp. LIV–LXXX). Lyon: Institut National de Récherche Pédagogique.
- Valero, P., & Knijnik, G. (2015). Governing the modern, neoliberal child through ICT research in mathematics education. *For the Learning of Mathematics*, 35, (2), 34–39.
- Valero, P., & Knijnik, G. (2016). Mathematics Education as a Matter of Policy. In: M. A. Peters (Ed.). *Encyclopedia of Educational Philosophy and Theory* (pp. 1–6). Singapore: Springer Singapore.
- Valero, P., Andrade-Molina, M., & Montecino, A. (2015). Lo político en la educación matemática: de la educación matemática crítica a la política cultural de la educación matemática. *Revista latinoamericana de investigación en matemática educativa*, 18 (3), 287-300.

ZETETIKÉ

Valero, P. (2014). Political Perspectives in Mathematics Education. In: S. Lerman (Ed.), *Encyclopedia of Mathematics Education* (pp. 484-487). Dordrecht, Netherlands: Springer Netherlands.

ISSN 2176-1744

16