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Memorizing multiplication tables: production of docile subjects

Decorar a tabuada: produção de sujeitos dóceis

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Resumo

Este artigo tem o propósito de problematizar a usual prática escolar do decorar a tabuada como parte das políticas de *re*cognição presentes nos currículos escolares, buscando por modos outros de olhar para o aprender e o ensinar matemáticaS. Nos aproximamos da Filosofia da Diferença para discutirmos o multiplicar como acontecimento que permite práticas e táticas para resistir às políticas curriculares *re*cognitivas, entendidas como possibilidade de luta à produção de corpos dóceis. Para isto, nos aproximamos do conceito da autonomia do sujeito, na perspectiva de Michel Foucault, pois entendemos que o sujeito autônomo tensiona a escola-máquina-do-estado como espaço produtivo.

Palavras-chave: *Re*cognição; Currículo Escolar; Resistência; Aprendizagem; Educação Matemática.

Abstract

This article aims to problematize the usual school practice of memorizing the tables as part of the recognition policies present in school curriculum, looking for other ways of looking at learning and teaching *mathematicS*. We approach the Philosophy of Difference to discuss multiplying as an event that allows practices and tactics to resist recognitive curricular policies, understood as a possibility of fighting the production of docile bodies. For this, we approached the concept of the autonomy of the subject, in the perspective of Michel Foucault, because we understand that the autonomous subject tensions the school-machine-of-the-state as a productive space.

Keywords: *Re*cognition; School Curriculum; Resistance; Learning; Mathematic Education.

Memorize

"'Keep from memory' comes from the Latin COR, 'heart', as this was thought to be the organ of memory, [...] garnish, decorate, comes from DECORARE, garnish, honor', from

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DECUS, garnish, ornate'"[3] , we use the word decorate inserted in linguistic contexts with different senses, some of the ones we highlight are:

> 1 - To garnish with decorations: To adorn, To adorn, To ornament, To ornate.
> 2 - Serve as decoration to: Adorn, Embellish, Ornament, Ornate.
> 3 - To make aesthetically more pleasing: embellish.
> 4 - To illustrate, to honor.
> 5 - **To learn in such a way as to be kept in memory; to learn by heart** (Ferreira, 2009, emphasis added).

Memorize to learn the multiplication table. Learning to commit to memory. Learn by heart. Decorating to know the multiplication table while assimilating by decorating the multiplication table. Decorating to structure a mathematicS with the multiplication table, while formulating 'new' problems. A learning that, by memorizing, takes us from one level to another. The learning of cause and effect, of representation, of recognition. Learning to memorize in order to assimilate what is already known, what manifests itself in an organized way in the world of ideas (Plato, 427? - 347? B.C.). The memorized multiplication table that is justified in the need to learn, a need to mean why we say that mathematicS 'is in everything'. To memorize the multiplication table in order to use it in everyday practices. And, thus, it is necessary to practice memorizing the multiplication table at school in order to know and then learn. Cognitive subjects memorizing multiplication tables and the classroom as a space to learn the real,

> which is understood as a world already given and constituted. Its existence is independent of human reason, imagination or action. The space constitutes a depository of this reality. The subject, or individual, categorically incorporates this given world. Reality is, and thus becomes, composed in and through the dichotomy between subject and object, interior and exterior. We mean: there is a subject, given as interiority, which constitutes its identity in opposition to the outside, the object. Knowledge takes place in the relation of the subject -pure interiority- with the object -pure exteriority. Knowledge is on the level of the subject that, by launching itself over the exterior, the object, represents it. Knowledge and representation are identified in the object. **The cognitive policy here is that of recognition**. (Clareto, 2012, p. 308; emphasis added).

By memorizing the multiplication table, the school subjects are trained to practice a conception of learning in which the intelligible world and the sensible world, in the Platonic view of knowledge (Plato, 427? - 347? b.c.), are separated, disembodying not only knowledge, but also the subject that learns, giving priority to the representation of the world that is only possible when the subject makes use of the knowledge of the world of ideas. A cognitive policy that legitimizes the recognition as a constitutive and necessary characteristic of school curricula, in which "the modern subject is not the origin of knowledge; he is not the producer of knowledge, but, on the contrary, he is a product of knowledge" (Veiga-Neto, 2005).

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[3] Available at: https://origemdapalavra.com.br/pergunta/diferentes-etmologicamente/

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The school manufactures subjects that repeat and repeat disciplinarized knowledge, such as repeating and repeating the result of multiplication tables. A legitimate knowledge is memorized in school curricula, for example, the memorization of the multiplication tables of 2, 3, 4, up to 10. We have as a product of this institution subjects subjectivized by the relations of knowledge and power (Foucault, 2009). It is a school-machine-of-the-state that molds subjects based on a regime of truth established in school curricula at the service of liberal and neoliberal rationalities and the capitalization of human life.

But how to resist this school-machine-of-the-state? How to deterritorialize school curricula? How to destabilize the practice of memorizing multiplication tables as constitutive of the recognitive policies of the state-school-machine? These questions require exercises and practices of resistance as a possibility of recognition of the forces outside, school micropolitics that enable the exercise of the subject's autonomy[4], since "[...] the autonomy of which we speak is something of conquest of the individual; it is not given to the subject, but it is a force that comes from within him, unlike that autonomy decided in higher hierarchical instances" (Souza & Silva, 2015).

In this direction, we understand that the autonomous subject is contrary to the subjects of education that are produced in and by standardized curricular discourses (Foucault, 2010). Discourses that name it and institutionalized practices that capture it. Curricular discourses that privilege some knowledge over others, thus, "the curriculum acts ideologically to maintain the belief that the capitalist form of organization of society is good and desirable" (Silva, 2000, p.148), legitimating social and political projects.

In practicing memorization of the multiplication table, as part of the politics of recognition present in school curricula of mathematicS, we would be facing something that is already known, something that gives access to the world of ideas, something pre-existent to us, that already exists independently of us, abstract and absolute, built on theoretically solid bases, accepted by mathematicS. A movement that engenders practices and techniques that contribute to the production of docile subjects. The school-machine-of-the-state, manufacturing subjects who are reproducers of knowledge preexistent to them, producing bodies subjected by the institutionalized practices of the school.

With mathematicS teaching practices that legitimize a notion of learning as *re*cognition, that is, a learning that starts from the conception that we are remembering what we already know, what is in the world of ideas, and therefore, learning is "returning to know something that was already known. This process can be "accelerated" and enhanced with training - the educational process - and culminates with the exercise of Philosophy, the knowledge of the pure Ideas" (Gallo, 2012, p. 1).

An education that trains, a mathematicS teaching that shapes bodies by practicing the memorization of the multiplication table as part of the school's politics of recognition.

[4] Foucault (2010).

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Naturalized practices in the school institution, as already announced in 1985 in the autobiographical narrative of Felicidade Arroyo Nucci (1985, p. 81-83 *apud* Gomes, 2014, p. 830-831; emphasis added):

> In the neighborhood where I taught, parents left early to work in the factories and the children were left alone to watch their younger siblings, heat their lunches, and take care of the house: they had no time to study. To these as well as to the others I taught the method of studying the multiplication table or learning the landmarks in a more interesting way.
>
> And what about the multiplication table?
>
> It was a big problem to memorize the multiplication table: it was a monotonous, insipid class, in which the students had no interest, hence the difficulty in memorizing it. **I started to use several resources that helped memorization and made the class less boring**. First I taught them that all even tables were made up of equally even numbers, the odd tables started with an odd number, followed by an even number, and then odd, even, odd, even... until the first number was multiplied by ten. For the first grade classes I would say childishly: the last number is the first number kicking a little ball...
>
> Then I would tell them that in the even tables, the end of the first number was equal to the sixth, the second equal to the seventh, the third equal to the eighth, and so on.
>
> Ex:
>
> 2 × 1 = 2 2 × 6 = 12
>
> 2 × 2 = 4 2 × 7 = 14
>
> 2 × 3 = 6 2 × 8 = 16
>
> 2 × 4 = 8 2 × 9 = 18
>
> 2 × 5 =10 2 × 10 = 20
>
> So, from the first to the fifth: 2, 4, 6, 8, 0 is the end from the sixth to the tenth: and so it is the same in all even tables.
>
> In the table of nine the numbers on the left are in ascending order: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and the number on the right, in descending order: 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. Adding the two numbers always gives nine, thus: 0 + 9 = 9; 1 + 8 = 9; 2 + 7 = 9; ... and the numbers are reversed, like this: 09 = 90; 18 = 81; 27 = 72; 36 = 63; 45 = 54,... **And in fact it becomes easier to memorize the multiplication table using these "little secrets", yes, that was the word I used.**
>
> This curiosity always attracted the attention of the students, who liked to show their relatives these "little secrets".
>
> Some would tell me, "My brother is in college and didn't know about these curiosities; I taught him everything, teacher." They said this with pride stamped on their faces.

The teacher Nuci, subjected to the relations of knowledge and power established by the curriculum of mathematicS, seeks to facilitate for her students the **memorization of the multiplication table**, showing them the "little secrets" that manifest themselves in conceptual relations of multiplicative structures, understood as some arithmetic recurrences from the results of the multiplication table. In other words, Nice points out possibilities to develop the

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teaching of multiplication tables along with other teaching practices, different from recognition, but her speech suggests that the purpose is memorization.

This example of teaching multiplication tables in the classroom shows how the policies of recognition are embedded in teacher Nucci's practice, thus, teaching is practiced as a conduit for students to perceive and recognize these ideas in order to memorize the products of the table. This process is natural for Nucci and also, even today, for most of the school participants. This learning as recognition legitimized in school math curricula is tied to the idea of a rational, centered, unitary subject, a modern subject

> considered as an essence that pre-exists its constitution in language and the social. He is rational and calculating, that is, his action is based on the conscious consideration of hypotheses and alternative courses of action. He is seen as capable of autonomy and independence - if properly educated - from society. His consciousness is endowed with a center, the origin and unique source of all his actions. Moreover, this consciousness is unitary and not divided, broken or fragmented. It is self-identical, having as its only reference only itself (Silva, 1995, p. 248).

In view of the current neoliberal policies in Education and in MathematicS Education, as well as the struggle and resistance movements consolidated in both areas in the last decades, we consider it important to problematize other conceptions about learning MathematicS at school, for example, destabilizing the belief of this being neutral and universal by thinking of mathematicS[5] , in the plural, as an event.

> The event is not what happens (the accident), it is in what happens the pure express that signals us and waits for us. [...] it is what must be wanted, what must be represented in what happens [...] to become worthy of what happens to us, therefore, to want and capture the happening, to become the child of its own happenings and thereby be reborn, to remake for itself a birth, to break with its birth of flesh. (Deleuze, 2003, p. 152).

To think of learning in terms of an event is not amenable to exemplification, because the event is singular. Not always the encounter with signs allows a production of cause and effect. It does not always produce sound and optical and olfactory and tactile and affective effects... but something is produced, transforming the subject.

In this sense, we intend to do a theoretical exercise with the concepts of the Philosophy of Difference and the practice of memorizing tables, aiming at a different look at learning, as Deleuze would say, to characterize learning as an "encounter with signs". And, also, a practical exercise, of the possibility of resistance to the politics of recognition present in school curricula of MathematicS that were and are being institutionalized nowadays in Brazil and in the world.

[5] We adhere to the way in which Tamayo and Mendes (2018, p. 209) understand this form of transgression in writing. "The choice for the capital letter "S" at the end of the word makes a deconstructive movement that operates in the amplification of signification, inspired by Jacques Derrida. The "S" also tenses the desire to maintain a universal and totalizing explanatory system, linked to the word Mathematics with a capital "M"." That is, to open the possibility of the deconstruction of the word Mathematics - with a capital 'M' - understood as an academic discipline.

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This writing seeks to contribute to the discussion and problematization of these ideas already contained in several references in the area of Education and MathematicS Education pointing to the valorization of other ways of learning and teaching, possibilities of other teaching practices, resistance to homogeneous and homogenizing curricula and to discourses that may be deterministic and that we understand to work in favor of the production of docile bodies (Clareto, 2012; Gallo, 2012; Miguel, 2014, 2016; Gondim & Miarka, 2017; Tamayo & Tuchapesk, 2018; Tuchapesk, 2014).

Learning as an "encounter with signs": tensing the practice of memorizing tables.

> Saturdays were called "argument" days at school. The students of the same class would stand in a semicircle and the teacher would sit in her chair facing them. And she would begin the inquiry, or "argument" of the multiplication table:
>
> _ Eight times four?
> The student had to answer promptly, without thinking or blinking:
> _Thirty-two.
> (...)
> Forward... forward... .... forward... he said, changing targets as the student hesitated.
> _ Twenty-five.
> _Nines out?
> _Seven!
> _Smack! - Dona Marocas ordered.
> The victorious pupil took the spank, which was on the table, and ran around the circle, punishing with a smack, sometimes hard, sometimes softer, according to the sympathy that bound them together or the mutual antipathy, the companions who had not answered, or had answered wrongly.
>
> Resolved to compensate by effort for Nature's injustice, I soon became a respectable element in the multiplication table. And it was with real delight that, on Saturdays, during the "argument", I held with my short and thick plebeian hand, the thin fingers of fourteen or fifteen year old girls, in order to apply in their palms a crisp and safe smack, - the kind we called "back foot", - that sometimes made them cry (CAMPOS, 1951, p. 213-215). [...] **I had, guaranteeing myself against the nicknames and against any attempt at ridicule, a good memory for the multiplication table and a heavy hand for the smack** (Campos, 1951, p. 217 *apud* Gomes, p. 834-835, 2014; emphasis added).

The practice of the "argument", in the above excerpt, used for memorization of the multiplication table, indicates an encounter with the signs of punishment, discipline, order, moving us away from the encounters with the signs of learning as an event. The repetitions are nothing more than processes experienced by the body in its individuality, repetitions that subject us to a way of seeing and understanding the world. But for Deleuze, learning as an event means the encounter between bodies that generate signs. Deleuze (2006) uses the example of the swimmer: learning takes place in the search for a gestural response to a problem generated in the encounter between two bodies, the swimmer, and the water. Such a

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response is only given by the singularity of each body, therefore, varying from body to body. That is why "[...] it is so difficult to say how one learns". (Deleuze, 2006, p. 48).

Eight times six. Seven times nine. Two times four. Nine times nine. Five times eight. Over and over again, memorize to learn, learn to memorize. Encountering the pre-existent in the world of ideas, coming back to know something you already knew. Repeating to internalize, internalizing by repeating, and so we control learning, regulate teaching, and recognition remains in school practices, feeding them, nurturing them, organizing them. Differences remain invisible. One teaches as and not with (Deleuze, 2003). The processes and paths and encounters and signs and singularity and ... are disregarded. At school we are distanced from a singular learning. A learning as an event of the problematic order, a learning that happens, singularly, with each one (Gallo, 2012).

> Learning does not take place in the relationship of representation with action (as reproduction of the Same), but in the relationship of the sign with the response (as an encounter with the Other). The sign comprehends heterogeneity in at least three ways: first of all, in the object that emits it or that is its bearer and that necessarily presents a difference in level, as two disparate orders of magnitude or reality between which the sign shines; on the other hand, in itself, because the sign involves another "object" within the limits of the bearer object and embodies a potency of nature or of the spirit (Idea); finally, in the response that it solicits, there being no "similarity" between the movement of the response and that of the sign. (Deleuze, 2006, p. 48).

Concerned with the product, the school disregards the process. Everyone memorizing at the same time, five times eight, a school practice and tactic that reinforces the idea that everyone learns the same things, in the same way, by memorizing. The learning that takes place by memorizing the multiplication table implies the exercise of recognitive practices that take place in the mathematicS classroom. Someone pretends to teach while others pretend to learn. This way of seeing teaching and learning is a mark of modernity that influences contemporary education and the school curriculum.

In opposition to this "politics of recognition" practiced in the school context, some trends, and methodologies of MathematicS Education, printed in school curricula, teaching materials and teacher training programs, point to theories and practices that contribute to other encounters in the classroom. Encounters with signs in the multiplicity[6] of the mathematicS classroom. Even so, the effects of these theories in school have been localized mainly in specific situations related, for example, in the development of research.

> The problem of cognition is not only a theoretical problem, but fundamentally a political one. While the representation model presupposes the prior existence of the cognizing subject and the object that is made known, proposing the inseparability subject and object, self and world, implies an invitation to exist in such a way as to accept the world as an effect of our cognitive practice (Kastrup & Tedesco; Passos, 2008). (Cammarota & Clareto, 2012, p. 558).

[6] This concept can be further explored in Zourabichvili (2004).

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Such a policy of recognition is based on the conception of learning to constitute a representation of the world, for example, in the works of Mesquita and Oliveira (2016), regarding the history of the teaching of multiplication tables in primary school, it is recommended the studies of Sampaio Dória in dealing with arithmetic knowledge, considering his analytical intuitive method for the teaching and learning of multiplication tables. For these authors, already at this time, mid-1932, Dória, a São Paulo pedagogue, announced the negative side of the practice of memorizing the multiplication table, as well as the need to remove from the teaching of the multiplication table and mathematical laws in the São Paulo elementary school the practice of memorized teaching. "The antidote, suggested by him, was the intuitive teaching cadenced by analysis" (Mesquita & Oliveira, 2016, p. 358).

According to the authors, for Dória, "memorizing the multiplication table, flat, in rhythm, or however it is done, is an infraction of the natural laws" (Dória, 1923a, p. 161 apud Mesquita, Oliveira, 2016 p. 353). Considering that the natural laws were related to the student's mental order. Thus, seeking, already at that time, to inhibit the idea of memorizing and even prevent such practice, the pedagogue proposed his teaching and learning from the method of analytical intuition. Since, for the author, "[...] intuition must begin with all, or realities found in nature, and then proceed to analysis, [...]" (Dória, 1923b, p. 91, apud Mesquita & Oliveira, 2016 p. 353-354).

> One of these practices can be announced as follows: a set of objects was presented; then, this set was decomposed in parts of equal quantities; the counting of the objects in each group aimed to confirm the equality of the quantities - the comparison of the groups would also indicate this equality; finally, there was the regrouping of the objects, indicating the represented total - in the example given, the number fifteen would be constituted by three groups of five objects. Thus, the first learning of calculus would not be in memorizing the Arabic symbols (1, 2, 3, 4, ...) nor in the fundamental signs (+, -, ×, ÷, =), but in the recognition of a set of concrete things as a result of an addition, subtraction, multiplication and/or division of objects. (Mesquita & Oliveira, 2016, p. 358).

Against the practice of memorizing the multiplication table and teaching based on "analytical intuition", still predominant in schooling - in which learning is understood as the discovery of laws to link the parts and the whole -, we point to a vision of learning as becoming, as happening and, in this sense, Kastrup (2005) states that learning happens in the encounter between teachers and students, and takes place between the meeting of forces, powers and non-recognitive experiences, for her,

> [...] the so-called teaching/learning relationship is made in the heart of the experiences of becoming, where the new is experienced. [...]. For teaching is, to a great extent, sharing experiences of problematizations. These may be fleeting, emerging in the field of perception, and then dissipating. But it is essential to maintain their potency for the invention of new subjectivities and new worlds. (Kastrup, 2005, p. 1287).

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Thinking with Deleuze, we approach an understanding of learning as a becoming of afectos[7] and perceptos[8]. The afectos as effects of power on life, of experience, and the perceptos, understood as new ways of seeing or perceiving. This is because signs refer us to the ways of life in which we are inserted, in which any attempt to capture their essence, to produce an ultimate meaning or representation is frustrated, because thinking about ways of life is to think about social practices as producers and mobilizers of knowledge.

The signs are no longer defined by the imperialism of the signifiers and, by themselves, allow us to live the body as an external relation and as an encounter of forces, for "the sign is deeper than the object that emits it, and its meaning is deeper than the subject that interprets it" (Deleuze, 2003, p. 34).

> Learning is essentially about signs. The signs are the object of a temporal learning, not of an abstract knowledge. To learn is, at first, to consider a matter, an object, a being, as if they emitted signs to be deciphered, interpreted. There is no apprentice who is not an "Egyptologist" of something. One only becomes a carpenter by becoming sensitive to the signs of wood, and a doctor by becoming sensitive to the signs of illness. A vocation is always a predestination with regard to signs. Everything that teaches us something emits signs, every act of learning is an interpretation of signs or hieroglyphs (Deleuze, 2003, p. 4).

Along with Deleuze, we understand the importance of the exercise of the senses and the exercise of other faculties in a common sense. The sensible, in the recognition, is not what can be felt, because knowledge only happens in this perspective in the relation of the subject - pure interiority, world of ideas - with the object - pure exteriority -, but it is directly related to the senses in a certain object that can be remembered, thought and invented.

> One never knows how a person learns; but, whichever way he learns, it is always by means of signs, wasting time, and not by the assimilation of objective contents. Who knows how a student can suddenly become "good at Latin," what signs (loving or even unacknowledged) would serve him as learning? We never learn anything from the dictionaries that our teachers and parents lend us. The sign implies in itself heterogeneity as a relation. One never learns by doing as someone, but by doing with someone, who has no relation of similarity with what one learns (Deleuze, 2003, p. 21).

In this perspective, the sign appears in the opening, in the encounter, it is not limited to the linguistic stratum, the sign understood as a form of expression, this means that as everybody is expressive, everybody is a sign. Bodies that interact in sociocultural practices, in the movement between afectos and perceptos, build knowledge of the unknown based on experience. With the practice of memorizing the multiplication table we learn to understand mathematicS as a disciplinary domain of apparently disembodied knowledge. The unfolding of this stance is in understanding multiplication as a sign which implies in itself, thinking of it

[7] Affection [...] is not an imitation, a lived sympathy, not even an imaginary identification. It is not similarity, although there is similarity. It is rather an extreme contiguity, in an entanglement between two sensations without similarity [...] (Deleuze & Guattari, 1992, p. 224-225).

[8] Percepts are not perceptions, affections are not feelings or affections, but non-human becoming. "Sensation is not realized in the material, without the material entering entirely into the sensation, the percept or the affection. All matter becomes expressive" (Deleuze & Guattari, 1992, p. 217).

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as a 'verb', going beyond the 'noun' present in the practice of memorizing the multiplication table, just as Clareto and Rotondo (2015) look at other concepts in MathematicS Education, that is:

> A *noun*: multiplying. Masculine. Singular. "Nouns name, categorize, classify. What class of things does the noun multiplicand refer to? Noun also refers to that which characterizes a substance, its essence, or which refers to it?
>
> What is the substance of the multiplicand?[9]"
>
> What makes the multiplying catch delirium?
>
> A *verb*: multiply. "It expresses action and also powers, forces, and modes. What actions, powers and forces does the verb multiply express? It also concerns the time of the actions, situating them in relation to the moment in which the knowing is taking place. Time, what time? The verb evokes a mode. What modes does the verb multiply evoke[10]?

To think of multiply as a verb places us before an outside, before exteriority, before bodies that interacting with each other encounter the problematic no longer as an obstacle, but as an overcoming, a crossing, as an event, as experimentation, a lived experience. Multiplication as part of the problematic means going beyond multiplication understood as the addition of equal parts, it also means the possibility of understanding the proportionality between two magnitudes and their properties.

Thus, we understand that there are other possibilities for teaching and learning in the mathematicS classroom based on these recurrences of thinking about multiplication. For example, the result of 6 x 1 is smaller than that of 6 x 2, which is smaller than that of 6 x 3, and the values increase from 6 to 6. This is repeated in the multiplication table of 4, which varies from 4 to 4, of 5, which varies from 5 to 5, and so on. Let us see that, from these multiplication results we can discuss and think about the concept of proportionality - the royal property of multiplication. For, when we increase a factor in these "tables", the result of the multiplication by it grows in the same proportion.

We can also observe that, when one quantity doubles, the other also doubles; when one triples, the other triples, so we have a direct proportionality. To perceive the regularity represents to understand multiplying as an action, as a verb. To know the results without observing the presence of regularity would mean not having understood multiplication as an action, but rather as the recognition of the multiplication table.

To relate the numbers and the concepts, to verbalize proportionality and commutativity, to problematize them as legitimate properties of multiplication. Verbalize that if 6 is the double of 3, makes it possible to discuss and think that the results of the multiplication table of 6 will always be the double of the results of 3. Exchange, commute, discuss the results of 9 x 4 and 4 x 9, study the commutativity property between the factors. Calculate 6 x 9, subtracting 6 from the result of 6 x 10. Think, discover, invent mathematicS.

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[9] Returned to Clareto and Rotondo (2015, p. 674) with modifications to think about the problem at hand here.
[10] Returned to Clareto and Rotondo (2015, p. 674) with modifications to think about the problem at hand here.

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Explore the relationships among doubles, triples, and quadruples in the "table" of the multiplication table. Realize that the products of the 8's column are twice the products of the 4's table and also four times those of the 2's table. Verbalize that multiplying by 8 is equivalent to multiplying by 4 and then by 2. Verbalize that 6 is the double of 3. And, to find out the result of 6 x 9, it is possible to first calculate 3 x 9 and then multiply this result by 2.

We have pointed out some possibilities for a multiplication that is learned by experimentation. In the encounter with these relations something can be transformed, relations can be created, invented. A mathematicS class that is concerned with processes, which engenders spaces for the invention of paths. MathematicS class-of-math-rizome. Experimentation that proposes concepts that are not necessarily sequentially arranged, that allows thinking and creating with the concepts and not repeating/decorating, except if it is repeating for the different (Deleuze, 2015). Creating trails that connect with new trails and with others and with others and with others ...

On the other hand, in the recognition policies of the school, in the teaching of multiplication tables, the numbers are generally organized in a uniform and systematic way: **2** x 0= 0; **2** x 1= **2**; **2** x 3= 6; **2** x 4= 8; **2** x 5= 10; **2** x 6= 12; **2** x 7= 14; **2** x 8 = 16; **2** x 9= 18; **2** x 10= 20. The idea is to start memorizing from the multiplication table of 2 and, in this way, keeping the sequence from lower to higher, between the numbers 0 to 10, the result is presented from the multiplication table of 3 to the multiplication table of 10. The multiplication tables 11, 12, 13, ..., 24, 25, ... are not practiced at school. The student keeps the image of the sheet of cardboard paper with the results of multiplications from 0 to 10.

> Who says 'good morning to Theodore' when Theetetho passes by who says 'it's three o'clock' when it's three thirty, who says that 7+5=13? The myopic, the distracted, the child at school (Deleuze, 1998, p. 246).

Memorizing once, twice, three times, four times the multiplication table, the children go on multiplying factors, the so-called multiplier and multiplying, nobody is knowing why they are called factors, but they are because "that is what it is called in mathematicS". Up to here, no deviation, everyone repeating and teaching appears as a "putting signs so that others can orient themselves", however, learning is to meet with those signs (Gallo, 2012). Thus, year after year, teachers, questioned about the multiplication table, will also give as an answer this result, the image of multiplications from 0 to 10 on the sheet of paper.

Thinking about MathematicS means a reinvention in the teaching and learning process beyond the practice of memorizing the multiplication table, a unique mathematicS that circulates in the classroom, which opens the possibility of questioning itself, by destabilizing the belief that science is preexistent to the subject. At the same time, we can understand the school curriculum as a device[11] of enunciations and visibilities, with the function of defining what can be taught and what can be learned. Curriculum as a discursive practice that conducts

[11] "The device is the network of relations that can be established between heterogeneous elements: discourses, institutions, architecture, regulations, laws, administrative measures, scientific statements, philosophical, moral, philanthropic propositions, the said and the unsaid" (Castro, 2009, p. 124).

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the processes of subjectivation of the subjects in the school environment, curriculum that "embodies the nexus between knowledge, power and identity" (Silva, 2000, p.10).

In this process of a reinvented [M]mathematicS, the thinking of multiplication as a verb is born in the thinking of the problematic, and becomes a thought without image[12], making possible the singularity in the thinking of multiplication. The difference in itself manifests itself in becoming being, transgressing the model of thought guided by the Western philosophical tradition, thus.

> [...] to centralize institutionalized mathematicS is a way of domesticating the school. In this domestication, the possibility that the student has of getting involved with the mathematical object and mobilizing it in a sense of profanation is lost in the name of the usual meanings, and the school time, the free time, is converted into productive time in which mathematicS is kept in the path of stratification. Learning mathematicS would mean, then, to preserve the purposes of the institutionalized mathematical contents, either in the scope of reproduction or the usual application of each of them. (Fernandes, 2016, p.26-27).

In this sense, we point to the need for resistance practices, micro-revolutions, in face of the politics of recognition present in school programs, understanding that these can manifest themselves by bothering us, for example, with the practices established in the MathematicS curricula, problematizing them in the sense that is discussed in this text. Once we understand that they contribute directly or indirectly with the production of docile subjects. The above is linked to the relevance of challenging the representational model of knowledge of the Western philosophical tradition, which supports the idea of a subject that possesses a priori the ability to know and represent things.

So, what does it mean to learn to multiply? We learn to multiply when our body is in tune with the signs of multiplication. There is no point in "doing like", that is, memorizing the multiplication table, since it is perfectly possible to know how to represent and reproduce all the gestures of someone who has memorized the list on cardboard paper and does not know how to multiply. Someone who does not launch himself into multiplication, into mixing with the problems that surround it, letting himself be carried along by it, in his own movement, being able to get in tune *with* the teacher, will not have learned.

Effects of multiplication as event: beyond the production of docile subjects in *MathematicS* Education.

The practice of memorizing multiplication tables conventionally is linked to the perspective of the traditional school curriculum - view of the curriculum as a list of content to be taught that embodies the selection of some knowledge and the exclusion of others - reaffirming and legitimizing Eurocentric histories in various territorialities that currently experience the effects of the coloniality of knowledge, power and being (Quijano, 2005) that marginalize the experiences and cultural memories of oppressed social groups and collectives.

[12] Deleuze (2006).

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The destabilization of school practices considered legitimate, such as, for example, the practice of memorizing the multiplication table in mathematicS class, certainly leads to a move away from Eurocentric narratives and disciplinarily organized knowledge and brings us closer to other non-disciplinary ways of understanding knowledge, with the purpose of democratizing schools and learning other ways of organizing knowledge. In this way, it is possible to open room to deal with the difference within the difference itself, that is, to link the school and the curricula to political and social claim practices, of collectives that recognize that "the colonization of knowledge and being has been constituted by using imperial knowledge to repress subjectivities" (Mignolo, 2010, p. 112). Such practices of claiming can contribute to the possibility of an epistemic disobedience, that is, they can create possibilities of rupture of the colonial thought (Mignolo, 2010).

In this sense, it is understood that we need new types of relations at school, for example, we point out the need to practice resistances, struggles, break with the imaginary lines of power and knowledge, micro-revolutions. To do this, we choose flows instead of units, difference instead of uniformity, the option for the multiple, mobile agencies to systems, deterritorialization, and lines of escape. Practices that allow us to recognize the powers in force and also our resistances, produced from singular ways of living, which allow, therefore, exercises for the subject's autonomy.

When thinking about the subject's autonomy (Foucault, 2010) we speak of autonomy as an instance of decision. Since we understand that the power relations (knowledge-power) present in school institutions, do not fail to reach the subjects of education, however, in the exercise of autonomy, reach him as he wants. That is, the autonomous subject of education emerges in these struggles, resistances, and control of the subjectivations that act upon him.

The autonomous subject tensions the school as a productive space, every time that "learning would not be, then, to report to the previously established knowledge, but precisely to deviate from these: to try to escape" (Fernandes, 2016, p.33), to escape from an education thought for the industry that assumes the Western epistemology based on the assumption of the existence of universal principles capable of ensuring access to essential truths. The autonomous subject, permanently attentive and vigilant, resists the impositions of this established curriculum, enabling new forms of visibility in school, other ways of getting involved with mathematicS, with the recurrence of multiplication tables, with multiplication as a verb.

References

Castro, E. (2009). *Vocabulário de Foucault-Um percurso pelos seus temas, conceitos e autores.* Tradução de Ingrid Muller Xavier. Belo Horizonte: Autêntica Editora.

Clareto, S. M. A. (2012). Sala de aula e a constituição de um currículo-invenção. *Currículo sem Fronteiras*, 12(3), 306-321. Retrieved from: https://www.curriculosemfronteiras.org/vol12iss3articles/clareto-nascimento.pdf

DOI: 10.20396/zet.v30i00.8664318
Clareto, S. M., & Rotondo, M. (2015). Pesquisar: inventar mundos com Educações Matemáticas. *Perspectivas em Educação Matemática*, 8 (18), 671-686. Retrieved from: https://periodicos.ufms.br/index.php/pedmat/article/view/1457/975

Cammarota, G., & Clareto, S. M. (2012). A cognição em questão: invenção, aprendizagem e Educação Matemática. *Práxis Educativa*, 7(2), 585-602. Retrieved from: www.revistas2.uepg.br/index.php/praxiseducativa

Deleuze, G., & Guattari, F. (1992). *O que é a Filosofia?*. Trad. Prado Jr. B. & Muñoz, A. São Paulo: Editora 34.

Deleuze, G. (2003). *Proust e os Signos*. 2ª ed. Rio de Janeiro: Forense Universitária.

Deleuze, G. (2003). *Lógica do sentido*. Trad. de Salinas Fortes, L. R.. São Paulo: Editora Perspectiva.

Deleuze, G. (2006). *Diferença e Repetição*. 2ª ed. Rio de Janeiro: Graal.

Deleuze, G., & Parnet, C. (1998). *Diálogos: Gilles Deleuze e Claire Parnet*. Trad. Eloisa Araújo Ribeiro, São Paulo: Escuta.

Fernandes, F. S. (2016). Didática da Matemática e Domesticação da Escola. *Perspectivas da Educação Matemática*, (9)19, 22-38. Retrieved from:: https://periodicos.ufms.br/index.php/pedmat/article/view/1547

Ferreira, A. B. H. (2009). *Novo dicionário Aurélio da língua portuguesa*. 3.ed. rev. e atual, São Paulo: Fundação Dorina Nowill para Cegos.

Foucault, M. (2009). *Vigiar e Punir: nascimento da prisão*. 36 ed .Trad. Ramalhete, R. Petrópolis, RJ: Vozes.

Foucault, M. (2010). *A hermenêutica do sujeito*. 3 ed. São Paulo: WMF Martins Fontes.

Gallo, S. (2012). As múltiplas dimensões do aprender… *Anais do Congresso de Educação Básica: aprendizagem e Currículo.* Retrieved from: http://www.pmf.sc.gov.br/arquivos/arquivos/pdf/13_02_2012_10.54.50.a0ac3b8a140676ef8ae0dbf32e662762.pdf

Gomes, M. L. M. (2014). História da Educação Matemática, Formação de Professores a Distância e Narrativas Autobiográficas: dos sofrimentos e prazeres da tabuada. *Bolema*, 28 (49), 820-840. Retrieved from: https://www.scielo.br/j/bolema/a/9T65wwZSJgXj4Mdjcd7zdjt/abstract/?lang=pt

Gondim, D. M., & Miarka, R. (2017). A Constituição de um Plano de Intensidades: aprender e matemática e diferença e escrita-avalanche e. *Perspectivas Da Educação Matemática*, 10(22), 115-131. Retrieved from: https://periodicos.ufms.br/index.php/pedmat/article/view/3359

Kastrup, V. (2005). Políticas cognitivas na formação do professor e o problema do devir-mestre. *Educação & Sociedade, 26*(93), 1273-1288. Retrieved from: https://www.redalyc.org/comocitar.oa?id=87313713010

Mesquita, I. M., & Oliveira, M. A. (2016). A escola primária idealizada por Sampaio Dória: como ensinar a Tabuada?. *Revista Diálogo Educacional*, 16(48), 339-363. Retrieved from: https://www.redalyc.org/articulo.oa?id=189146904005

DOI: 10.20396/zet.v30i00.8664318

Mignolo, W. (2010). *Desobediencia epistémica: retórica de la modernidad, lógica de la colonialidad y gramática de la descolonialidad*. Buenos Aires: Del Signo.

Miguel, A. (2014). Is the mathematics education a problem for the school or is the school a problem for the mathematics education? *Revista Internacional de Pesquisa em Educação Matemática*, 4(2), 1-35. Retrieved from: http://funes.uniandes.edu.co/26137/

Miguel, A. (2016). Historiografia e terapia na cidade da linguagem de Wittgenstein. *Bolema*: *boletim de educação matemática*, 30(55), 368-389. Retrieved from: https://hdl.handle.net/20.500.12733/2499. Accessed in: 16 jan. 2023.

Quijano, A. (2005). Colonialidade do poder, Eurocentrismo e América Latina**.** *A colonialidade do saber: eurocentrismo e ciências sociais. Perspectivas latino-americanas*. Buenos Aires. Retrieved from: http://biblioteca.clacso.edu.ar/clacso/sur-sur/20100624103322/12_Quijano.pdf

Platão (427?-347? a.C). (2011). *Diálogos VII (suspeitos e apócrifos): Alcibíades, Clitofon, Segundo Alcibíades, Hiparco, Amantes rivais, Teages, Minos, Definições, Da justiça, Da virtude, Demódoco, Sísifo, Hálcion, Erixias, Axíoco/ Platão.* Trad. textos complementares e notas: Bini, E. Edipro. Bauru, SP.

Silva, T. T. (1995). O projeto educacional moderno: Identidade terminal?. In A. Veiga-Neto (Org.), *Crítica pós-estruturalista e Educação*, (pp.245-260). Porto Alegre: Sulina.

Silva, T. T. (2000). *Documentos de identidade: uma introdução às teorias do currículo*. Belo Horizonte: Autêntica, 2ªed.

Souza, A. C., & Silva, M. T. (2015). Do Conceito à Prática da Autonomia do Professor de Matemática. *Bolema*, 29 (53), 1309-1328.

Veiga-Neto, A. (2005). *Foucault e a educação.* 2.ed. Belo Horizonte: Autêntica.

Tamayo, C., & Mendes, J. (2018). Aspectos: o problema na matemática escolar e o dilema como acontecimento. *Revista Alexandria.* 11(3), 207-231. Retrieved from: https://periodicos.ufsc.br/index.php/alexandria/article/view/1982-5153.2018v11n3p207

Tamayo, C., & Tuchapesk, M. (2018). E se nós tivéssemos escolas Mukanda que contassem diversas histórias africanas para todo o mundo? *Educação Matemática em Revista*, 23(60), 263-282. Retrieved from: http://www.sbemrevista.com.br/revista/

Tuchapesk, M. (2014). *A educação matemática e o cuidado de si: possibilidades foucaultianas.* Tese (Doutorado em Educação Matemática), Universidade Estadual Paulista, Instituto de Geociências e Ciências Exatas. Rio Claro: Unesp.

Zourabichvili, F. (2004). *O vocabulário de Deleuze.* Trad. A. Telles. Rio de Janeiro: Relume Dumará.