

EQUITABLE AND INCLUSIVE MATHEMATICS CLASSROOMS?

BUILDING AWARENESS TOWARD GLOCAL HOPES AND FEARS ABOUT THE FUTURE

¿AULAS DE MATEMÁTICAS EQUITATIVAS E INCLUSIVAS?

Creando conciencia sobre las esperanzas y temores globales sobre el futuro

SALAS DE AULA DE MATEMÁTICA EQUITATIVAS E INCLUSIVAS?

Conscientizando esperanças e medos locais sobre o futuro

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ABSTRACT

This paper explores how the promises of equity and inclusion vanish into discourses about effectiveness, competitiveness, and meritocracy. Intentions of correcting onto-epistemic violence mutate into paradoxes of good intentions in the search for securing social order and economic prosperity. The hopes and fears about the future embody legacies of capitalist aspirations that position mathematics teachers as agents of change. Hence, mathematics teachers are granted full responsibility for correcting the wrongs generated by historical practices that shape modern society. The paper argues that Deleuze and Guattari's schizoanalysis becomes an analytical tool to map the flows of desire for equitable and inclusive education within capitalist aspirations. The desire flows are explored through global (transnational) and local (Chile) rhizomatic assemblage. Oedipus is used to reflect on the effects of power and desiring-production that positions education as a priority to safeguard the glocal future.

Keywords: equity. inclusion. ontoepistemic violence. schizoanalysis. mathematics education.

RESUMEN

Este artículo explora cómo las promesas de equidad e inclusión se desvanecen en discursos sobre eficacia, competitividad y meritocracia. Las intenciones de corregir formas de violencia onto-epistémica mutan en paradojas de buenas intenciones en la búsqueda de asegurar el orden social y la prosperidad económica. Las esperanzas y temores sobre el futuro encarnan legados de aspiraciones capitalistas que posicionan a los profesores de matemáticas como agentes de cambio. Por lo tanto, se otorga a los profesores de matemáticas la plena responsabilidad de corregir los errores generados por las prácticas históricas que dan forma a la sociedad moderna. Se posiciona al esquizoanálisis de Deleuze y Guattari como una herramienta analítica para mapear los flujos del deseo de una educación equitativa e inclusiva dentro de las aspiraciones capitalistas. Los flujos de deseo son explorados a través del ensamblaje rizomático global (transnacional) y local (Chile). Edipo se utiliza para

reflexionar sobre los efectos del poder y la producción deseante que posiciona la educación como una prioridad para salvaguardar el futuro glocal

Palabras clave: equidad. inclusión. violencia ontoepistémica. esquizoanálisis. educación matemática.

RESUMO

Este artigo explora como as promessas de equidade e inclusão desaparecem nos discursos sobre eficácia, competitividade e meritocracia. As intenções de corrigir formas de violência ontoepistêmica se transformam em paradoxos de boas intenções na busca de garantir a ordem social e a prosperidade econômica. Esperanças e medos sobre o futuro incorporam legados de aspirações capitalistas que posicionam os professores de matemática como agentes. Portanto, os professores de matemática têm total responsabilidade para corrigir os erros gerados pelas práticas históricas que moldam a sociedade moderna. A esquizoanálise de Deleuze e Guattari é posicionado como uma ferramenta analítica para mapear os fluxos de desejo por uma educação equitativa e inclusiva dentro das aspirações capitalistas. Os fluxos do desejo são explorados através do rizoma global (transnacional) e local (Chile). Édipo é usado para refletir sobre os efeitos da produção de poder e desejo que posiciona a educação como prioridade para salvaguardar o futuro glocal.

Palavras-chave: equidade. inclusão. violência ontoepistêmica. esquizoanálise. educação matemática.

Introduction

Achieving inclusive practices in mathematics education has been an unsolved puzzle in mathematics education research. How to attend diverse student groups and achieve more inclusive mathematical practices has been explored from various angles in mathematics education. For example, (1) research addressing how practices of dehumanization and epistemic violence of communities that have been highly segregated from school mathematics (i.e., the impact that mathematics teachers' racist stereotypes and educational policies have on students' performance) exclude these communities from the promised success through school mathematics (Valoyes-Chávez, 2019; Darragh & Valoyes-Chávez, 2019; Martin, 2019), and (2) research that proposes agendas to identify opportunities to promote more inclusive, democratic, and socially just mathematics classrooms (Bishop, Tan & Barktsas, 2015; Figueiras, Healy & Skovsmose, 2016; Kolloche, Marcone, Knigge, Penteado & Skovsmose, 2019; Santos-Trigo, 2020; Radford, 2021; Davoli & Planas, 2022).

Research from the sociopolitical perspective in mathematics education (Atweh, Graven, Secada, & Valero, 2011; Straehler-Pohl, Bohlmann, & Pais, 2017; Valero, 2017; Roos, 2019) invites to rethink how diversity is configured from hegemonic discourses that define and perpetuate the conditions to identify particular groups as minority—or subaltern—, and therefore belonging to the diverse, while recognizing a majority group as universal, and therefore, within of the norm. UNESCO (2020) also recognizes this phenomenon by pointing out that "society and culture determine the norms, define normality and treat difference as an anomaly" (p. 13). From here, there is a need to look for decolonizing tools in mathematics education (Schubring, 2017; Gutiérrez, 2017). These tools allow exploring possibilities of inclusion by identifying and challenging the causes that generate exclusion, marginalization, and segregation in the mathematics classroom. In this line, for example, Martin (2019) problematizes how equity-oriented discourses are positioned in two trajectories: "inclusion accompanied by marginalization and assimilation into existing cultures in mathematics education" (p. 460). However, both end up limiting school mathematics practices and restricting the possibilities of inclusion by keeping mathematical knowledge intact. Staurov and Miller (2017) point out that a decolonizing and anti-oppressive education implies much more than recognizing cultural diversity and other forms of

mathematical knowledge – i.e., Mapuche knowledge in Chile (see Andrade-Molina, 2021). To achieve an education based on equity and inclusion, as Staurov and Miller 2017 contends, "the initial causes that generate oppression must be identified and challenged, how inequality is produced in the classroom, and find strategies to counteract educational discourses" (p. 99) that have established who is taken as "normal" and who is "abnormal". Then, the bet is not to make students "eligible" through school mathematics for future opportunities—accommodate students to the norm—but to empower them through mathematical knowledge (Gutiérrez, 2017; Martin, 2019; Stinson, 2017; Stinson & Bullock, 2012; Valero & Meaney, 2014; Wolfmeyer, 2017).

Various questions can be raised that, particularly in the field of mathematics education, continue problematizing and challenging the guidelines and agendas for inclusion, namely, is it possible to structure a mathematics education that is potentially "for all" and not only for those recognized as "normal"? Is it possible for mathematics teachers to empower students, through mathematics, by recognizing "the[ir] particular characteristics" (MINEDUC, 2020, p. 76) in the mathematics classroom? Is it possible to set "learning objectives that are relevant, of quality for everyone, regardless of their sociocultural, ethnic, racial and gender origins" (UNESCO, 2018, p. 14)? Achieving inclusion in the mathematics classroom is not straightforward. Exploring more inclusive practices in the mathematics classroom that allow students to be empowered by mathematics and embrace diversity requires challenging the current school system configuration and structure. It also requires examining the impact of socially constructed prejudices on groups labeled as "minority." As Aguirre, et al. (2017) assert,

Together we need to find ways to solve this problem with all its facets and employ a more clearly antioppressive and humane course for mathematics education: a mathematics education that does not result in the negative experiences, fears, anxieties, and disaffected mathematical identities that we continue to encounter in schools and society. Research is needed for this to happen. (p. 215)

Global desire flows: toward equity and inclusion

Achieving equity and quality of education has been an increasing concern in the field of mathematics education. Even more after the release of the United Nation's 2030 Sustainable Development Goals, in 2015. These Goals aim at ending poverty, fighting climate change and diverse forms of injustice and discrimination, among others. The UN's current commitment is securing the inclusion of "all" by embracing diversity and assuring equal opportunities with the banner "leaving no one behind".

According to the UN, the 2030 agenda offers possibilities to effectively respond and recover from the pandemic while building a more inclusive and resilient future for "all". For this, they emphasize their promise of transforming the present towards a more just, equitable, tolerant, open, and socially inclusive world in which the needs of the most vulnerable people are taken into account (UN, 2015). Sustainable Development Goal 4 (SDG 4) focuses on "ensur[ing] inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN, 2015, p. 16). A transformative educational agenda—a new vision for education—is built under the assumption that inclusion and equity are achieved in and through education (UNESCO, 2016). Then, education becomes a priority to safeguard the *glocal* future—*glocal* to denote that the global and the local are intertwined. The promise is to "addressing **all forms of** exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes. No education target should be considered met **unless met by all**" (United Nations, 2016, p. 7, emphasis added).

To tackle "*ALL FORMS OF*", UNESCO (2020) acknowledges a collective responsibility to reverse all hurdles threatening the fantasized future. Building a more inclusive and democratic society is envisioned by honoring differences of opinion in the search for social cohesion and celebrating diversity, "dropping any stigmatizing labels assigned to children" (p. v). To reverse social hurdles, UNESCO (2020) proposes taking a step back and questioning the current state of things, such as being mindful of the dilemmas and tensions created by the critical design of educational systems. UNESCO, then, draw awareness on how the good intentions of Modern schooling might contribute to "slide into pressure to conform, wear down

group identities, and drive out languages. Recognizing and helping an excluded group in the name of inclusion could serve to marginalize them at the same time” (p. v). This phenomenon recognized by UNESCO has already been documented by Thomas Popkewitz as a process of *abjection* of educational policies (Popkewitz, 2008). From which poses an involuntary segregation in the effort to include, then certain groups are excluded in the impulse of including all in the practices of schooling. UNESCO (2020) has become conscious of the process of abjection produced by well-intended actions, by contending, for example, that:

Categorizing students is important to shine a light on specific groups and help make them visible to policymakers [...] Certain groups of children may be excluded not only by omitting them from textbooks, placing them at the back of the class or never calling on them, but also by lack of explicit recognition in data collection. Lack of data both results from and contributes to their invisibility [...] Outcomes can be monitored at the population level; service delivery can be monitored at the student level through administrative systems that identify needs. Understanding the purposes and types of inclusion-related data can therefore ease dilemmas of identification: **Identifying groups for statistical or policy purposes need not create a false dichotomy between ‘normal’ and ‘special’ groups that distorts efforts at inclusion.** (p. 67, emphasis added)

An example from Chile of these concerns is the rhetoric that circulates from large-scale studies. Damm et al. (2009) reported that the recurrent expressions about inclusion from people were more aligned toward emphasizing students’ differences and deficiencies rather than considering diversity as a learning opportunity. Some of the notions of inclusion voiced by the study’s participants were: “an inclusive school is well-equipped to receive all children having a problem”, “attending all types of need without discrimination” (p. 35). From these notions, an inclusive school is the one equipped to admit the ones in need of salvation. The solution, as contended by UNESCO, is to create monitoring mechanisms that escape from sorting out students into groups of “normal” and groups of incomplete students: “deficient”, “problematic”, “with special needs”.

Despite these good intentions, segregation and exclusion have been an important part of the school life of students from historically marginalized groups. Socio-economic disparities are taken as a persistent challenge in countries participating in PISA (UNESCO 2020), as an example.

More than two-thirds of immigrant students attended schools where at least half the students were immigrants (OECD, 2015). Another analysis using PISA data showed that half the students in Chile and Mexico but less than one-third in Scandinavian countries would have to be reassigned schools to achieve a uniform socio-economic mixture. (p. 80)

UNESCO (2018) has revealed that despite the success of policies in securing access to education, meaning that most children have a place/seat in a classroom, it has not been possible to guarantee access to knowledge and development of competencies and skills for all. This generates teaching and learning needs that are complex to attend, such as the need for teaching tools and abilities to build inclusive classrooms. For example, UNESCO (2020) has report that “One in three teachers in 43 mostly upper-middle- and high-income countries in 2018 reported that they did not adjust their teaching to students’ cultural diversity” (p. ,1). And that “25% of teachers in 48 education systems report a high need for professional development on teaching students with special needs (p. 1)

Local desire flows: toward inclusion

In Chile, education has begun to be framed as a more humane development toward securing access and inclusion to quality education as part of the local agenda (Castillo Peña, 2017). Despite enacting inclusion policies, students’ future possibilities are still conditioned by marginalizing practices (González, 2017). As aforementioned, UNESCO (2020) states that safeguarding inclusion in the classroom requires various measurements and actions tailored to embrace diversity, contributing to the awareness of everyone’s value and potential. In the same light, the Chilean Ministry of Education (MINEDUC, 2020b) states that educational inclusion turns into a model that "identifies and responds to the diversity of needs and characteristics of children, youth, and adults, considering educational

institutions as equitable spaces, without inequality or discrimination to guarantee learning” (p. 173). Then, inclusion is understood as a process that seeks to eliminate the barriers that hinder students’ learning experiences and full participation in the classroom: “[T]hrough changes and modifications in content, approaches, structures or strategies, so that each student has a place in the educational process tailored to their characteristics, interests, capacities and needs” (Centro de Perfeccionamiento, Experimentación e Investigaciones Pedagógicas [CPEIP], 2021a, p. 69).

In 2020, the Chilean government released the 2020-2028 agenda: *Primera estrategia nacional de educación pública 2020-2028* (First National Public Education Strategy). This agenda becomes the first approach to secure a “free, laic, pluralistic, quality education, capable of promoting social and cultural inclusion, equity, tolerance, respect for diversity and freedom, aware of regional and local particularities and guaranteeing the right to education” (MINEDUC, 2020a, p. 17). Like the UN’s 2030 agenda, the Chilean 2020-2028 agenda focused on promoting inclusive educational policies that address national concerns, such as embracing gender, ethnic, racial, linguistic, mobility, and neuro diversity, particularly in early childhood. To achieve this promise, MINEDUC aims at five targets: learning, quality, equity, participation, and inclusion. MINEDUC, similarly to UNESCO, emphasizes the importance of inclusive teachers’ practices and the need for teaching education to develop tools and abilities to build inclusive classrooms. For example, CPEIP (2021a) acknowledges the importance of the role played by teachers while attending diversity in their teaching practices to provide feedback to students or to strengthen their own practice and competencies to ensure inclusive education:

Students’ diversity and the expectation of teaching under the principle of inclusion (...) demand from teachers a planning of differentiated adjustments according to their students’ educational needs and cultural belonging (e.g., Decree No. 170 of 2009 and Decree No. 83 of 2017, Inclusion Law No. 20,845, First National Human Rights Plan 2021. (CPEIP, 2021a, p. 12)

MINEDUC (2020) proposes a plan to secure inclusion in Chilean classrooms that should reshape schools and the curriculum. The plan includes measurements such as: To improve the learning levels of “all” students through the implementation of a quality “inclusive, equitable curricular management” able to “reduce gender gaps” and, also, “improving equity and quality, with a seal on the fundamental competencies for the 21st century, citizen training and socio-emotional aspects, following the national curriculum” (p. 64). Alongside improving management, MINEDUC advocates for improving practices and strengthening human and technical capacities, abilities, and competencies of key actors (teachers, educators, principals, educational assistants) by accompanying teachers and principals’ work “to improve the quality of their practices in order to achieve more and better learning opportunities in Public Education as well as promoting innovative practices in the classroom, such as innovative teaching methods, evaluation, and use of technology in order to improve students’ learning experience (MINEDUC, 2020).

Mathematics teachers and capitalist desires

Historically, teachers have been considered agents of change in promoting and enacting educational policies (Luschei y Chudgar, 2015; OECD, 2016). It has been said that teachers are able to increase and improve students' opportunities in life (UNESCO, 2007) in building a fairer society (OECD, 2014a) and in guaranteeing equitable and inclusive education that leaves no one behind (UNESCO, 2016). Particularly in mathematics, teachers have been granted a Promethean task given that mathematics is considered valuable knowledge that not only permits the development of core abilities and skills for productive and active citizenship but also impacts students' futures. OCDE (2014), for example, contends that "basic math skills have a huge impact on people's life chances (...) poor math skills severely limit people's access to better paying and more rewarding jobs" (p. 6). Therefore, school mathematics is more than valuable knowledge to develop skills needed for daily life but, at the same time, becomes a gatekeeper for students' social mobility and well-being. Mathematics teachers' practices seem to be taken as decisive for inclusion. The European Commission (2011) states that teaching mathematics to face social challenges requires more than effective teaching related to content knowledge and pedagogical

tools (knowing how to teach mathematics) but knowing how each student learns. Then, "equity in the mathematics classroom becomes another primary challenge along with the inclusion and cohesion of students, considering cognitive, ethnic, and socioeconomic diversity" (CPEIP, 2021b, 73). Even more challenging when students' achievement levels are so unequal. Ramírez and Viteri (UNESCO-ORELAC, Ramirez, & Viteri, 2016) reported that, in 15 surveyed countries, differences in student performance in the same classroom are significant: "48% of students are in Level I, 24% in Level II, 20% in Level III, and 8% in Level IV" (p. 28). These disparities present a great challenge for mathematics teachers, "who must simultaneously teach students in levels I, II, III and IV, that is, students that have extremely dissimilar mathematical competences. who must simultaneously teach students who are in levels I, II, III, and IV, and who therefore have very different mathematical competencies" (p. 29).

Then, the role of mathematics teachers is far beyond teaching mathematics through innovative methods and technology. Mathematics teachers are responsible for their student's future success (success translated into, for example, well-paying jobs, social mobility, and active citizenship). Avoiding the process of abjections in the quest for equitable and inclusive mathematics classrooms does not require a new, improved, better-tuned method for monitoring individual, national, and international progress that takes into account students' diversity of a wide range of incommensurable variables that make them who they are. Instead, it requires being mindful of social and historical factors that enable to pathologized individuals. How people conceive and express themselves is conditioned by the structures with which Oedipus is the figure of power. Schizoanalysis helps in exploring the forces of continuity and change within the assemblage along a deterritorialisation/reterritorialisation that permit to contend that, contrary to *Glocal* beliefs, mathematics teachers are inserted, subjected to the very dominant narratives that make the exclusion of historically marginalized groups possible. Their practices and tools are subjugated into the added value rhetoric of mathematics as a gatekeeper that secures social order and economic stability. This rhetoric obscures the mathematics practices in the classroom, which perpetuates forms of onto-epistemic violence toward marginalized, pathologized children.

Glocal concerns about the exacerbated inequalities produced when trying to promote inclusive practices demand mathematics teachers to develop a mindfulness state. Mathematics teachers are expected to solve, in practice, every gap that precludes students from achieving the promises of success and well-being. However, mathematics teacher practices occur within a Super Massive Black Hole (its density and intensities within education policies, guidelines, reforms, and national and international reports, create enough matter to collapse in an infinitely dense region to conform a SMBH) embodying legacies of capitalist aspirations (Andrade-Molina, forthcoming). Hence, the effective teacher—as an ideal amalgamated by salvation themes, dominant narratives, hopes and fears—is thought as able to develop hyperawareness and metaphysical competencies for correcting the wrongs generated by historical practices that give shape to modern society and conform the “backstage” of teacher education and practice. The intentions of correcting onto-epistemic violence mutate into paradoxes of good intentions in the search for securing social order and maintaining the commodities of modern life; the promises of equity and inclusion vanish into discourses about effectiveness, competitiveness, and meritocracy.

Drawing awareness into Oedipus

[C]apitalism, through its process of production, produces an awesome schizophrenic accumulation of energy or charge, against which it brings all its vast powers of repression to bear, but which nonetheless continues to act as capitalism's limit. For capitalism constantly counteracts, constantly inhibits this inherent tendency while at the same time allowing it free rein; it continually seeks to avoid reaching its limit while simultaneously tending toward that limit. Capitalism institutes or restores all sorts of residual and artificial, imaginary, or symbolic territorialities, thereby attempting, as best it can, to recede, to rechannel persons who have been defined in terms of abstract quantities. Everything returns or recurs: States, nations, families. That is what makes the ideology of capitalism "a motley painting of everything that has ever been believed." The real is not impossible; it is simply more and more artificial. (Deleuze & Guattari, 1983, p. 34).

Glocal concerns have voiced particular hopes and fears about the future. These are not solely enunciated in terms of individual gains such as social mobility and well-being but are framed under national

aspirations and transnational anxieties about social progress and economic growth. These anxieties enable the dismantling of individuals into a *body without organs* (see Deleuze & Guattari 2004; Deleuze, 2004) conceived as potential GDP gains when outcomes on international standardized tests rise. Then, inclusive anthems like the *leaving no one behind* phantasies turn into a utopian desire for the desiring-machine. Desire becomes a schizophrenic flow and multiplicity that masks psycho-political modes of control. As Deleuze and Guattari (1983) contend, “[s]chizophrenia is desiring-production as the limit of social production. Desiring-production, and its difference in regime as compared to social production, are thus end points, not points of departure. [...] an ongoing process of becoming that is the becoming of reality” (p.35).

The *sociopolitical turn* in mathematics education opened the path to explore the tensions in how students—as discursively produced—position themselves in the mathematics classroom. Hence, post-structural methods, such as post-structural psychoanalysis (Walkerline et al., 2001), help exploring how the subject negotiates discursive positionings (Frosch et al., 2003). Butler’s (2004) elaborations of the psychological costs of subjectification via discourse and language, specifically on how discursive subjectification helps explore possibilities of change through discursive re-signification from social re-signification, have allowed problematizing the symbolic and discursive order in mathematics classroom interactions. Deleuze and Guattari’s schizoanalysis permits to identify the assemblages of discursive materiality as flows of desire. Assemblages are always in a process of becoming; these are not fixed entities. As Feely (2020) illustrates, “a disability service assemblage might encompass components including buildings, bodies, emotions, discourses that create subject positions, and service rules and policies. These components work together and affect each other in a complex, multidirectional [...] fashion to produce the disability service” (p. 6)

Schizoanalysis renders an image of the contradictory conditions surrounding individuals inserted on a system of reason from late capitalist modernity (see Braidotti, 2006). Schizoanalysis presents an opportunity to draw awareness into power relations in school mathematics practices that intensify students’ disparities, pathologizing differences. Particularly on how capitalists’ desires move in the social sphere, conceiving bodies as “desiring machines”, with which schizoanalysis is used to map how desire flows and power operates in the relationship between school and assemblages and bodies (Deleuze & Guattari, 1983). The mapping of this complexity of chaotic multiplicities is built under the idea that “a body’s function or potential or “meaning” becomes entirely dependent on which other bodies or machines it forms an assemblage with” (Malins, 2004, p. 85). Schizoanalysis provides a toolbox to underpin assemblages and to identify and arrange its components within a material/semiotic continuum (Deleuze & Guattari, 2004). Heterogeneous components or forces form a material and discursive assemblage to explore how things come together and fall apart to produce something. As Seem (1983) emphasizes “Oedipus is belief injected into the unconscious, it is what gives us faith as it robs us of power, it is what teaches us to desire our own repression. Everybody has been oedipalized and neuroticized at home, at school, at work” (p. xx). Then, to achieve equitable and inclusive mathematics classrooms we should take a radical position to fight against Oedipus and its effects of power.

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