

## Neoliberal Mathematics Education Research in the Service of Big Capital

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### ABSTRACT

In this paper, I argue that international Mathematics Education Research (MER) is dictated by the interests and agenda of the imperialist countries, which dehistoricizes the material conditions of imperialized and impoverished nations while deliberately obfuscating the economic reasons underlying the “failure” of mathematics learning outcomes of their students. Instead, in the guise of improving mathematics teaching/learning, such researches usually blame the very people of these imperialized countries for the ‘low learning outcomes’ of their school students, attributing it to “cultural” and “local” beliefs, mindsets, practices, etc., thereby producing academic justifications for the neoliberal destruction of their public education systems. I begin my argument by drawing from my PhD research study with visually challenged mathematics learners from socio-economically marginalized communities in India. I then follow it up with a brief overview of some mathematics education research works in the context of Sub-Saharan African countries to illustrate my point.

**Keywords:** Imperialism; Exclusion; Marxism; Neoliberalism; Political Economy.

### Pesquisa Neoliberal em Educação Matemática a serviço do Grande Capital

#### RESUMO

Neste artigo, argumento que a Pesquisa em Educação Matemática (PEM) internacional é ditada pelos interesses e pela agenda dos países imperialistas, que des-historiciza as condições materiais das nações imperializadas e empobrecidas, ao mesmo tempo em que ofuscam deliberadamente as razões econômicas subjacentes ao “fracasso” do aprendizado da matemática resultados de seus alunos. Em vez disso, sob o pretexto de melhorar o ensino/aprendizagem da matemática, tais pesquisas costumam culpar as próprias pessoas desses países imperializados pelos ‘baixos resultados de aprendizagem’ de seus alunos, atribuindo-os a crenças, mentalidades, práticas “culturais” e “locais”, etc., produzindo assim justificativas acadêmicas para a destruição neoliberal de seus sistemas públicos de educação. Começo meu argumento baseando-me em meu estudo de pesquisa de doutorado com alunos de matemática com deficiência visual de comunidades marginalizadas socioeconomicamente na Índia. Em seguida, apresento uma breve visão geral de alguns trabalhos de pesquisa em educação matemática no contexto dos países da África Subsaariana para ilustrar meu ponto.

**Palavras-chave:** Imperialismo; Exclusão; Marxismo; Neoliberalismo; Economia Política.

### Investigación neoliberal en Educación Matemática al servicio del Gran Capital

#### RESUMEN

En este artículo, sostengo que la Investigación en Educación Matemática (MER) internacional está dictada por los intereses y la agenda de los países imperialistas, que deshistorizan las condiciones materiales de las naciones imperializadas y empobrecidas mientras ofuscan deliberadamente las razones económicas que subyacen al “fracaso” del aprendizaje de las matemáticas. resultados de sus alumnos. En cambio, con el pretexto de mejorar la enseñanza/aprendizaje de las matemáticas, tales

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investigaciones generalmente culpan a las mismas personas de estos países imperializados por los 'bajos resultados de aprendizaje' de sus estudiantes escolares, atribuyéndolos a creencias, mentalidades y prácticas "culturales" y "locales", etc., produciendo así justificaciones académicas para la destrucción neoliberal de sus sistemas de educación pública. Comienzo mi argumento basándome en mi estudio de investigación de doctorado con estudiantes de matemáticas con problemas visuales de comunidades socioeconómicamente marginadas en la India. Luego sigo con una breve descripción de algunos trabajos de investigación en educación matemática en el contexto de los países del África subsahariana para ilustrar mi punto.

**Palabras clave:** Imperialismo; Exclusão; Marxismo; Neoliberalismo; Economía Política.

## INTRODUCTION

*“When a liberal sees a beggar, he says the system isn’t working. When a Marxist does, he says it is.”* – Bill Livant

The effects of economic and geopolitical factors—under neoliberal globalization—on the mathematical performance and participation of students from imperialized countries has been a neglected aspect of international Mathematics Education Research.

In this paper, I argue that the ‘underperformance’ of mathematics learners and the “failure” of the education systems of imperialized nations are outcomes of the material contradictions inherent to neoliberal capitalism — and not, as mainstream academic discourses posit, a result of non-material intangible or discursive factors intrinsic to the imperialized countries, such as the “culture” of their peoples, their language, or attitudes or mindsets, or simply the shortcomings of their teachers.

In fact, by conveniently ignoring the politically enforced poverty-generating economic factors—such as the neoliberal underfinancing and dismantling of a country’s public education system—such research that is funded and promoted by Big Capital only serves to provide academic justifications for further privatization and the NGOization of public education in imperialized countries.

My arguments begin with my mathematics teaching experiences with visually challenged students from socio-economically marginalized communities in Mumbai, India, which subsequently evolved into my PhD research project that was completed in 2021. This is followed by a brief overview of a few mathematics education research writings in the context of mathematical performances and participation in certain Sub-Saharan African countries.

## TEACHING SOCIALLY MARGINALIZED, VISUALLY CHALLENGED STUDENTS IN INDIA

My PhD thesis, titled “Exploring Implications of the Social Model of Disability for Mathematics Education” (D’Souza, 2021), was based on a six-year-long study involving teaching mathematics to visually challenged school-going children (aged between 8 to 19 years) from socially marginalized (predominantly Dalit and Muslim) working-class communities, who were enrolled with a study centre for blind children at Mumbai, India. My study alerted me to the fact the causes underlying the exclusion and disablement of students with disabilities are historically and socio-economically contingent—and therefore, structural in nature—and not an outcome of their individual bodily limitations.

One of the cases that particularly struck me was of Faiz (pseudonym), a ninth-grade student from an impoverished working-class Muslim family in Mumbai, who was really good at mathematics. In fact, during our mathematics sessions, Faiz’s ingenuity and creative insights had often enabled the other students to bring their own authentic mathematization to the classroom.

Faiz had often expressed a keen interest in and desire for pursuing higher mathematics. However, he was compelled—by the teachers of his school as well as the study centre—to opt to be tested for the 7th grade-level mathematics paper for his exams in 9th and 10th grade (an option referred to as ‘general mathematics’ or ‘easy math’), thereby foreclosing the possibility of pursuing any mathematics after grade 10.<sup>2</sup>

The reason behind Faiz being forced to take up lower level mathematics was primarily the fact that his school teachers were simply too overburdened due to overcrowded classrooms in his semi-private school (partially aided by the government, but still needing to charge fees from all students) that lacked sufficient funding and resources to provide for the needs of children with disabilities.

Despite his demonstrated mathematical brilliance, Faiz (who now works as a telephone operator in a government hospital) would have needed special attention owing to his blindness — which his overworked teachers could not provide, even though they might have been well-intentioned and sensitive to the needs of their students.

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<sup>2</sup> Students with disabilities studying in schools under the Maharashtra State Board had the option of being tested for the 7th grade-level maths paper for their 9th and 10th grade exams. However, doing so would entail not being able to pursue the science stream in grade 11 or any STEM-related higher education program. The Maharashtra Board scrapped this option in 2017.

It was the material conditions of the classroom (with a very high student-teacher ratio, lack of technological support, etc.) in his school (which was struggling for finances and was thus unable to provide accessibility resources, suitable infrastructure, etc.) that led to Faiz being unable to fulfil his mathematical potential — and not primarily the mindsets or the cultural attitudes of his teachers that inhibited his mathematical trajectory.

Similarly, Rina (pseudonym), a ninth-grade student from a working-class Dalit family in Mumbai, was also bright in mathematics, but she was also made to opt for the ‘easy math’ option. According to Rina, she began facing problems after she shifted from her old government-run school (where she did not have to pay any fees) into a semi-private school in her 9th grade. Once while I was tutoring her for her ongoing exams, Rina narrated how during her exams, she along with her writer were made to sit outside the classroom (on the pretext of other students being disturbed by the writer speaking out), where there was no fan in the summer heat and the bench on which they sat was broken. Running under conditions of scarcity of finances and infrastructure (despite charging fees from all students), the school lacked facilities to even provide a suitable arrangement for blind children and their writers during exams.

The imposition of neoliberal economic policies on India—and on other imperialized countries or the so-called “third world”—by the International Financial Institutions such as the International Monetary Fund (IMF) and the World Bank, etc., has resulted in increasingly severe cutting of funds for basic public services like education and healthcare. Therefore, underfunding of government-run schools as well as government-aided (semi-private) schools in India has become the norm—leading to resource crunches, lack of infrastructure, shortages of teachers, etc.—while private schools with better infrastructure and resources charge high fees and are unaffordable for the overwhelmingly vast majority of the population.

Neoliberalism has also paved the way for increasing contractualization of teaching jobs, even as significant numbers of positions for permanent teachers in government schools remain vacant all over the country. Thus, while qualified teachers find it increasingly difficult to get employment, the in-service teachers are forced to deal with overwhelmingly over-crowded classrooms with pathetic student-teacher ratios (and bad working conditions).

Of course, the brunt of neoliberal policies in education is faced by the most vulnerable and marginalized students. For example, Joseph Stiglitz, the Nobel Prize-winning World Bank economist, himself admitted in his 2002 book, *Globalization and Its Discontents*, that “as families in many developing countries [have] to pay for their children’s education under so-called cost recovery programs [imposed by the IMF], [their parents] make the painful choice not to send their daughters to school” (p. 20).

In fact, neoliberal policies adversely impact the employment prospects of not only teachers trained to teach in schools (including highly qualified mathematics teachers), but also of students entering the labour market — where, as I found, the subject of mathematics is often used as a sieve to justify the arbitrary exclusion of the majority of applicants in an unemployment-ridden capitalist economy.

I first observed this phenomenon when I volunteered to be a writer for Sunny (pseudonym), a visually-challenged student from the study centre, who was appearing for an entrance exam under the “handicapped” quota for a government job. Exams were held all over India for this post, and hundreds of candidates with different kinds of physical impairments appeared in Mumbai alone. What stood out in the exam question paper was that a quarter of the questions were on mathematics — even though the position (a subordinate level “low-skilled” job in the railways) would not have involved any mathematics knowledge or application at all on the job. Moreover, the questions included unnecessarily long and complex equations making it almost impossible for blind students to solve in the exam setting (in fact, even I could not solve those long equations with my eyes closed, as I tried to!).

What was even more striking was the fact that I could have easily helped my candidate cheat in the exam by solving the mathematics questions myself on his behalf — without the invigilators suspecting anything as they did not even seem to care if candidates appeared to be cheating in the exam or not.

Later, a visually challenged teacher from the study centre revealed that there was a market for “professional cheaters” who charge up to lakhs of rupees and guarantee success to visually challenged candidates in such entrance exams.

Thus, it was evident that the only reason such difficult and irrelevant mathematics questions featured in the entrance exams for the various (yet extremely small in number) vacancies for subordinate-level government posts across sectors—jobs which require no on-

the-job application of mathematics—was merely to sift out the vast majority of candidates, in order to regulate and expand the ever-increasing reserve army of unemployed labour, which is crucial for a capitalist economy to discipline workers and minimize wages as workers are faced with the ever-looming threat of being easily replaced. Indeed, such malicious uses of ‘mathematics’ only serve to justify—on meritocratic grounds—the crisis of unemployment as well as the ever-increasing precarity and dehumanizing conditions for workers under capitalism.

### **A QUICK HISTORY OF NEOLIBERALISM IN INDIAN EDUCATION**

The political changes of the 1980s witnessed the entry of neoliberal policies into India beginning with the International Monetary Fund (IMF) sanctioning their largest ever loan of \$5.8 million which was granted to India in 1981 (Rowen, 1981).

With the official entry of neoliberal policies in Indian education in the early 90s, privatization of schools increased, and profits became more internationalised. With the coming of the new millennium, public education in general and higher education in particular turned into a site for profitable investment opportunities for transnational corporations. The Indian government opened the gates for private investment into education by bringing higher education under the General Agreements on Trade in Services (GATS), a multilateral trade agreement under the World Trade Organization (WTO), so that education as a commodity could be, as Sharma (2010) described, “traded to the highest bidder” (p. 91).

Some of India’s richest capitalists expressed their vested interests in the education market in the form of “A Policy Framework for Reforms in Education” (also known as the Ambani-Birla Report) which was submitted to the Prime Minister’s Council on Trade and Industry in the year 2000. As Sharma put it, “These two industrialists made a case for full cost recovery from students and immediate privatisation of several segments of higher education. The Ambani-Birla Report sought to convert the entire system of higher education in the country into a market where profit making would be the only consideration” (p. 92).

Hiranandani and Sonpal (2010) highlighted that a “mounting burden of debt and balance of payments crisis led India to adopt economic reforms on the lines of IMF-World Bank structural adjustment programs.” However, on account of overlooking the history and class character of the Bretton Woods institutions and the United Nations, Hiranandani and

Sonpal ended up regarding the structural adjustment loans of the World Bank—a mechanism of helping transnational corporations invest their liquidity in the various sectors of the Indian economy—as “well-intentioned efforts towards full inclusion”.

Loans given by the World Bank and the IMF were meant to create a market for U.S. imperialism in India. This agenda was made explicit in 1965 by the then chairman of the World Bank, Eugene R. Black:

“Our foreign aid programs constitute a distinct benefit to American business. The three major benefits are:

- 1) Foreign Aid provides a substantial and immediate market for U.S. goods and services.
- 2) Foreign Aid stimulates development of new overseas markets for U.S. companies.
- 3) Foreign Aid orients national economies toward a free enterprise system in which U.S. firms can prosper.” (Black, 1965, p. 23)

Apart from the direct economic benefits the U.S. companies receive from investing their liquidity in imperialized countries, the academic research projects funded by U.S. companies and their allied financial institutions (including U.S. Universities, Parliaments of U.S. Client states, Bretton Woods institutions, etc.) also produce “narratives” that justify increased privatization of public services of imperialized countries.

The contradiction arises under neoliberalism that dismantles a public education system and sells each dismembered part in a piecemeal way as investment opportunities to the global market which inevitably results in the privatization and NGOization of education among other public services.

In her book, *India Goes to School*, Shivali Tukdeo (2019) highlights the various ways in which global economic forces including the IMF, the World Bank, and even corporate-backed NGOs etc., impinge on the structure of public schooling. She opens her fourth chapter in the book by citing a “casual banter” made by a school teacher: “We are not sure if we will have enough supply of chalk for next week, but there will always be an organization visiting us, teaching us how to manage our classrooms, how to improve, develop leadership skills...” (p. 57).

My PhD research work (D’Souza, 2021) with students with disabilities highlighted the disabling nature of capitalism as a whole while exposing the class character of mainstream mathematics education research interventions in India that although claim to be

about “inclusion” never address such contradictions of neoliberal capitalism as having overcrowded classrooms with low teacher-student ratios existing alongside unemployed qualified teachers facing *lathi-charge* (police-baton beatings) for demanding their due recruitment as teachers; having inclusive classrooms while neoliberal comprador governments actively neglect public schools in order to push for privatization, cut scholarships, raise fees to pay back their loans to international financial institutions; fostering collaborative learning among students while labour-market conditions worsen thereby imposing constant competition and mounting pressures on students to secure higher test scores than their peers, etc.

In this regard it becomes rather evident that economic factors play a central role in either facilitating or inhibiting the mathematics learning of students. Such material conditions also compel teachers to adopt pedagogies aimed at simply ensuring that students pass exams, even if it means (as it inevitably does) following the so-called ‘traditional rote-learning approach’.

## **A BRIEF LOOK AT MATHEMATICS EDUCATION RESEARCH ON SUB-SAHARAN AFRICA**

Just like in the context of India, mainstream Mathematics Education Research in the context of other imperialized countries—which have been devastated by neoliberal economic policies—obfuscate the economic reasons behind the mathematical ‘underperformance’ of their students by taking a country’s impoverishment for granted and locating the causes (of these ‘low learning outcomes’) within non-material factors intrinsic to the imperialized countries, such as the culture of their peoples, their language, or attitudes or mindsets (Mazana et al., 2020) or overall shortcomings of their teachers, and in some cases also inverting cause and effect. For example, in the context of Tanzania, Mazana et al. (2020) argue that “students’ performance in mathematics” being “ranked far below average in international assessments” makes “the country lose economic advantage over other countries” (p. 2) — thereby inverting the cause and effect relationship between the economic destitution through imperialist loot of a country and the mathematics education performance of its school children.

Therefore, such research deliberately diverts attention away from the real historical-material causes underlying the economic impoverishment of a resource-rich and biodiverse African country like Tanzania, which has been historically plundered by colonial Europe, and continues to be looted by the imperialist countries of the so-called “first world”.

Similarly, a research study by Gobede (2019), funded by the Norwegian<sup>3</sup> Programme for Capacity Development in Higher Education and Research for Development (NORHED), casually mentions how 60% of Malawi’s children lack access to pre-school education and numerical literacy — and yet focusses the research study only on minor technical details on how Malawi’s teachers teach using artifacts, talk and gestures, etc. (and subsequently posits the solution within the same paradigm).

In the same vein, there are research works portraying the qualified school-teachers of Malawi as having “failed” to centre their students in their teaching practices (Tabulawa, 2013; Takker, 2022), and locating this “failure” in the “culture” of this small Sub-Saharan African country that is undergoing (World Bank-imposed) structural adjustment “reforms” — entailing the destruction and privatization of public services including education, etc.

Similarly, some others blame the low performance of Sub-Saharan African students in Science, Mathematics and ICT (SMICT) subjects on “classroom practices [that] are still largely dominated by teachers, with students silently copying notes from the blackboard” (p. x Ottevanger, 2007). Subsequently, these teachers are accused of having “a limited understanding of SMICT subjects” (p. xi Ottevanger, 2007), and the reasons for their supposed lack of knowledge and capacity are attributed primarily to intrinsic intangible factors like “teacher education [being] seen as the least attractive university level option [that] attracts the weaker students into their programs” (p. xi), without explaining why!

Such evidently bogus academic discourse on the shortcomings of the teachers and students in Sub-Saharan African countries is subsequently used as a justification for the entry of foreign private players into their education sectors on the pretext of improving the learning outcomes of their children by upgrading the teaching practices of their teachers through ‘teacher training’, ‘capacity building’, ‘professional development’, etc., and thus creating a lucrative sub-field of mathematics education research focusing on narrow and immaterial

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<sup>3</sup>Norway is a member of the imperialist bloc, NATO (North Atlantic Treaty Organization)

pedagogical interventions into mathematics teaching and teacher development in Sub-Saharan Africa (for example, see Luneta 2021).

## **CONCLUDING REMARKS**

It is apparent that the unstated aim of such kinds of research discourse about and interventions into the education systems of imperialized countries as propagated and practiced by the mainstream mathematics education researchers and academics is to not only bring in and solidify the place of school-teaching within capitalist relations, but also to keep carving out newer avenues from within the teaching profession with the purpose of profiteering for global capitalist players. Researchers, knowingly or unknowingly, carry out this ulterior agenda of imperialism at the devastating cost of the present and the futures of billions of people in the majority world.

We, the mathematics education researchers, therefore, need to fulfil our human (material and ethical) obligation of exposing the destructive vested interests of Big Capital — by taking a historically informed, large view of the interconnections and contradictions that are produced under as well as drive forward capitalism.

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