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EDITORIAL

Decentring research on mathematics teacher education: Why does it matter?

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Introduction

The current Special Issue, titled "Decentring research on mathematics teacher education", adds to the journey that the research community of mathematics teacher education is doing towards the growing and strengthening of a more equitable, diverse and inclusive domain. There is not a punctual occasion in which this journey started. Several initiatives over a period of decades have been and are contributing to the process of becoming a research domain that also represents the contexts, cultures and voices of historically marginalised world regions (Scheiner et al., 2024) and groups in society (Abtahi & Planas, 2024), by examining ways of addressing their needs, concerns and challenges.

An example of historic initiative in this direction was the ICME-10 Survey Team 3, in July 2004. A diverse group of five researchers had been asked to survey international emerging research on the professional development of mathematics teachers (Adler et al., 2005). The mapping of published research in mathematics teacher education in the years 1999–2003 served this group to reflect on and offer a range of suggestions regarding "issues of authorship and voice, and consequences for the substance of the research being done" (p. 360). These researchers described a field dominated at that moment by small-scale studies in English-speaking countries and by illustrations of mathematics teaching in school classrooms with 30 or less students sharing a common language and culture with the teacher. Not only a problem of representation was stated, but also a problem of quality because, by including a wider range of illustrations of mathematics teaching and teacher education, theorising and empirical research in the domain could be improved. In discussing the prevalence and increasing hegemony of certain world regions and empirical contexts in the research domain, the following concern was raised:

> For some people in our community, their "local" become global. Their particulars become the basis of the general. In others, their local remains local; indeed, they do

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> not even get heard. What problems, and whose problems then come to constitute the field? This is a critical question for us … (p. 373)

"Whose local?" and "whose problems?"—hence, whose work?—are significant questions in understanding more generally the configuration of contemporary research in mathematics education, as well as some resulting inequalities of representation and quality. In the particular study of mathematics teacher education, the debate between local and global can be traced back to our second example of historic initiative: the first issue of the Journal of Mathematics Teacher Education (JMTE), launched in January 1998. A message was that what would be published in JMTE would aim at representing diversity, with facets such as geography, culture, language or ethnicity. One paper in that issue was on culture and mathematics teacher education, and on how the varied cultural and linguistic backgrounds of students and teachers made mathematics teacher education especially challenging and deeply related to processes of developing an awareness of the social and cultural bases of mathematics and mathematical pedagogies (Gerdes, 1998). Another paper was on processes and practices around the development of mathematics teaching, with some concluding remarks on the importance of research in collaboration with teachers and respectful of their school culture and professional knowledge (Jaworski, 1998). These ideas were aligned with the introductory editorial content (Cooney, 1998), where it was stated:

> It is my intention that JMTE will honor diversity and that this diversity will subsequently define mathematics teacher education as a field of disciplined inquiry driven by its own set of questions … An appreciation for diversity of ideas, of approaches, and of context can only contribute to our understanding of teacher education and to our own professional development. It is my fervent hope that JMTE contributes to this dialogue of understanding. (p. 1)

In 2024, as argued in the recent JMTE commentary paper by Scheiner et al. (2024), many of the challenges indicated, for example, in the first JMTE issue and in the ICME-10 Survey Team 3 still remain. Between 2018 and 2022, for instance, scholars in the USA accounted for a large share—58%—of the papers published in JMTE. The position of these scholars is thus powerful. Despite the significant advances, the complexity of widening the contexts, cultures and voices represented in the research community is enormous and difficult to navigate because this complexity is not always visible, known or discussed. The purpose of this Special Issue is to present research that contributes to making visible and discussing contexts, cultures and voices which are largely excluded or left unheard in the mainstream of the study of mathematics teacher education. A major argument is that by allowing for more contexts, cultures and voices in studying mathematics teacher education, a richer and stronger research domain is possible.

The epistemic function of diversity in studying mathematics teacher education

The knowledge and results that a research domain achieves are the product of continuous reconstruction, mediated by the diversity of problems it sets out to investigate. For identifying and setting out such a diversity of problems, the domain in turn needs to be attentive to, interested in and inclusive of the diversity of contexts, cultures and voices. The cultivation of attention, interest and inclusion, so that the research community does not fail in scope and achieves a richer and more representative knowledge basis, is not trivial though.

As posed in Darragh et al. (2024), a paper of the current Special Issue, there is a representation problem, specifically in the academic publishing landscape that shows the under-representation and mis-representation of authors from various world regions, paired with the over-representation of authors from a few regions in the journal papers and paper references. The alleged dominance of the research domain by a few, and the perceived higher status of these few in the eyes of colleagues across the globe, implies enormous challenges for the research produced outside of the privileged regions.

In this section, we develop the argument that allowing for more contexts, cultures and voices in studying mathematics teacher education serves an epistemic function by enabling the research community to build knowledge substantiated on a wider base of realities and experiences. Therefore, any movements in the research domain that bring in traditionally marginalised contexts, cultures and voices play an epistemic function, because by doing so additional knowledge and complementary insights are provided. This additional knowledge and complementary insights can actually alter or challenge some of the knowledge claims and certainties that have been substantiated on a more constraint or restricted basis of realities and experiences. For example, the knowledge produced and the certainties largely assumed about what counts as quality in mathematics teaching, or in mathematics teacher professional development, would likely vary and be expanded by means of a broader base of studies including voices from and responsive to contexts of poverty, with limited access to electricity, pedagogic materials, textbooks…, as well as studies including research frameworks that tackle issues of widespread poverty and inequality.

What might it mean mathematics teaching that enacts participation in a school classroom with 60 students and hence a physically-distant teacher? How can mainstream teaching models such as the "5 practices for orchestrating productive mathematics discussions" (Smith & Stein, 2011) be situated or interpreted in these large classrooms? The knowledge in the research domain about quality in mathematics teaching in relation to facilitating mathematics discussions rather than telling is inspired by a particular type of lessons in some world regions and schools. The under-representation of other types of mathematics lessons may have hindered the elaboration of knowledge around the teaching practice of telling in interaction or balanced with the practices of selecting tasks, anticipating student responses, monitoring student work, selecting and sequencing student solutions, connecting student solutions, and others from other mainstream models of mathematics teaching. Instead, the representation of teacher telling tends to remain equated to traditional lecturing and viewed as a non–innovative practice that needs to be minimal, because it does not promote student discussion and participation in mathematics. The understanding of telling is, however, relative and does not imply necessarily mathematical pedagogies in which the teacher has all the responsibility for developing the mathematics. Studies on mathematics teaching with groups of secondary-school teachers in Malawi (Mwadzaangati, 2023) and in South Africa (Venkat & Adler, 2020) have examined mathematics teaching talk, showing how telling models participation in mathematics and opens up opportunities for student mathematics thinking, discussing and learning.

What has been said about the construction of knowledge regarding quality in mathematics teaching may be extended to other problems of research in mathematics teacher education. The attention to, interest in and inclusion of the diversity of contexts, cultures and voices operate epistemically in a variety of ways for any problem of research, for example by taking rural cultures of school mathematics as objects of investigation, tensions of mathematics teacher professional development in multilingual settings as data, or mathematics teaching materials as instruments of observation. In all this, not only research problems require different contexts, cultures and voices for the development of knowledge that

contributes to their framing and understanding. A body of knowledge, in either stage of maturity, also requires to be revised and strengthened by introducing results of investigations conducted with groups and in contexts other than those considered in the past. This does not preclude the possibility of very concrete research problems being investigated and framed regardless of a diversity of contexts and cultures and, hence, intended to serve *one* context and *one* culture. Such a case of problems is rather exceptional or at least not the norm. On the one hand, there are problems clearly global such as the shortage of mathematics teachers and the myriad of reasons for this to happen. On the other hand, there are problems locally stated, such as supporting teachers' reflections on their practices in a university mathematics course, which can be investigated by introducing a diversity a voices, for example, those of the students who dropped out of the course.

In the two subsections below, we discuss two illustrative examples of the challenges that the realisation of the epistemic function of the diversity of contexts, cultures and voices faces in current research on mathematics teacher education. Specifically, we contend that (i) the domination of the English language in the production of ways of knowing, (ii) the binary epistemic dynamics interacting with the construction of research in mathematics teacher education, and (iii) the distance in the work with marginalised groups in fragile contexts challenge the growth and development of the research domain. We exemplify initiatives reported in the papers of the Special Issue and in other publications that contribute to mathematics teacher education research by countering these challenges.

Challenging the English language as way of knowing

Several researchers, in mathematics education (e.g. Morgan et al., 2009) and in language (e.g. Halliday & Hasan, 1989), have supported the position that language is epistemic, which is to say that language mediates the generation, development and maintenance of knowledge. Hence, the use of English in research on mathematics teacher education serves at least communicative and epistemic functions. In this respect, the initiative of naming important notions by introducing other languages works per se as a decentring and widening strategy. For example, the notion named as *political conocimiento* in teaching mathematics in the paper of Gutiérrez et al. (2024) or the three-spatial perspective named as *nosotras, otras, and nos/otras* in the paper of López Leiva et al. (2024), both in the current Special Issue, are ways of challenging the dominant epistemic privilege of English in the construction of the research domain. The use of these names in or with Spanish brings in the argument that literal translations would not suffice to communicate the idea that the contexts and meanings for the notions named are different from those reported in other works in the domain with emphases on either knowledge in teaching mathematics or alterity and otherness. The choice of non-English word names within the English academic discourse argues for "the right to name, to speak and to project a voice that counters the assumptions of the privileged center" (Bornstein-Gómez, 2010, p. 47). In the examples above, the use of Spanish is aimed at describing and discussing aspects of the realities of those who experience the world with this language and/or who participate, in contexts of mathematics teacher education, with those who experience the world with this language.

The meaning associated with the choice of word names in any particular language is, nonetheless, relative to the world in which the speakers of that language find themselves in particular contexts. The framings in Gutiérrez et al. (2024) and in López Leiva et al. (2024) are centred on Anglo–American interpretations of Spanish as racialised and representing minoritised voices and cultures in the USA. But the use of Spanish for other authors and in

some other world contexts can be viewed as rooted in the legacies of the colonisers, rather than those of the colonised. By using a language other than English, thus, tensions around the mis-representation and under-representation of some groups may still arise. More than paying attention to the tensions embedded in the use of a language other than English, or of non–dominant variants of Englishes, the naming of *political conocimiento* and of *nosotras*, *otras*, and *nos/otras* suggests norms in writing and talking that contest the centre represented by some hegemonic studies in the research domain. In a similar vein, by presenting the original quotes of the mathematics teachers, in languages other than English—i.e. Catalan and German—Ingram et al. (2024) aim to put at the centre the voices and understandings of the participants in their research on teaching mathematics in classrooms with linguistically disadvantaged students. Meaney and Rangnes (2024) present original data quotes in Norwegian, together with an English version, of pre-service mathematics teachers during a workshop discussion of an algebra lesson videoclip in which the language of teaching was English and the classroom was multilingual. The option of presenting original quotes communicates that the linguistic diversity of the research participants is important for the research design and practice.

Alongside the collection of papers in the current Special Issue, we also find examples of investigations challenging the English language as *the* way of knowing by showing direct quotes of participants in their original languages and/or by introducing word names that represent a focus on marginalised voices and cultures in the study and practice of mathematics teacher education. In workshops with bilingual families of immigrant origins, Civil and Quintos (2022) present implications for teacher learning substantiated on the notion of parents as intellectual resources and communicate knowledge of the research participants in Spanish. In the discussion of the distinction between area and perimetre, in a research context characterised by *confianza*, we can read that Sonia said to her daughter Dania, "El perímetro, no la área, Dania, estás sacando tú la área de adentro" (p. 22), followed by a translation into English. It is not unimportant the effect on the research of analysing the data before translated into English, and the effect on the authors' writing of knowing that both sets of words for quoted data will be counted. Civil and Hunter (2015) give voice to the respect-based idea of *Pasifikama* in mathematics teaching developed in an Aotearoa classroom with students from Maori and Pasifika cultures, in which participation in mathematics is associated with careful listening to the mathematics talk of the teacher—similar to the cultures and ways of participating reported in Mwadzaangati, 2023, and in Venkat & Adler, 2020. Huencho and Chandía (2023) give voice to Mapuche rural funds of knowledge in the classroom enactment of mathematical reasoning by means of *püron* cultural practices and *Mapudungun* linguistic awareness in the Spanish-dominant context of Chilean school mathematics. All these studies invite us to rethink the opportunities of knowledge growth limited by considerations of some exclusive epistemic role of English in the research domain.

Challenging the binary epistemic dynamics

In the social sciences research, the dominance of either–or binary epistemologies has been associated with and discussed in relation to Aristotelian-founded Western cultures (e.g. Reiter, 2020; Sousa Santos, 2007). Binary epistemic dynamics particularly influence and interact with the construction of the domain of research in mathematics teaching education, in ways that condition nuanced understandings of the aspects that intervene in a problem and in the positions embedded in its framing. In this sense, the

initiative of relativising discrete binaries works in the direction of decentring, diversifying and widening the ways of knowing and knowledge in mathematics teacher education. In the paper of Barros and Skovsmose (2024), for example, the thinking of pedagogies with pre-service mathematics teachers that engage them in discussions of controversial issues—as landscapes of investigation and teaching for mathematics classrooms—transcends the binary around being and not being mathematical. In the paper of Meaney and Rangnes (2024), on learning to advocate for issues of language diversity and educational equity in a course with pre-service mathematics teachers, the binary distinction between speaking up for others and for oneself in the advocacy practices reported is overcome. In the paper of Darragh et al. (2024), on the study of the problem of representation in publishing domain research in the international academic discourse, the rigidity around the Global North and Global South categorisation is especially challenged.

The paper of Ingram et al. (2024), with the voices of mathematics teachers from seven countries and three continents, introduces important nuances in the deconstruction of the problematic binary between the Western and non-Western intellectual traditions in the representation of mathematics and mathematics education pedagogies. In talk about their mathematics teaching with linguistically disadvantaged students, two participant teachers working in Norwegian schools, for example, raise aspects of their classroom cultures and of their teaching experiences, mediated by pedagogies of teaching to the test, that are very similar to aspects raised by participant teachers working in Indian and Malawian schools. These aspects of the teaching experiences and classroom cultures are interestingly different in many respects to those reported by participant teachers from other European contexts. Moreover, the study of Ingram et al. (2024) methodologically draws on coding procedures applied to interview data, which avoid the use of discrete categories. Rather than two codes distinguishing either formal mathematics or everyday mathematics, for instance, a code in the study, is "everyday language and formal mathematics". In the discussion of the data grouped around this code and its meaning in mathematics teaching, the practices in-between everyday language and formal mathematics and their nuances can then be interpreted within a spectrum or continuum of diversity.

Alongside the collection of papers in the current Special Issue, we also find examples of investigations challenging the binary epistemic dynamics that limit the attention to, interest in and inclusion of marginalised contexts, cultures and voices in the study and practice of mathematics teacher education. Healy et al. (2024), for example, contest the binary around the abled and disabled learner of mathematics, and some related educational narratives, in their research and developmental work for the anti-ableist preparation of in-service and pre-service mathematics teachers of Brazil and the UK. The abled–disabled binary and the notion of being differently abled are also examined and contested in Alderton and Gifford (2018), in the context of teaching mathematics to primary–school learners labelled as low attainers in mathematics. A result from that study was that the development of inclusive teaching approaches with challenging mathematics was hindered by binary discourses impacting on how the "low attainers", given their perceived opportunities of mathematics learning, were seen as not able to engage in small group and whole class discussions that required participation in mathematical reasoning. None of the papers finally accepted for publication in this Special Issue has a direct focus on ableism and the abled–disabled epistemic dynamics. This is an opportunity missed, as we will discuss in the next section, because the adoption of general categorisations of ability and disability hinders knowledge on supporting mathematics teacher learning in the understanding of all students primarily through their mathematical strengths.

Challenging the distance in the work with marginalised groups

The distance, in educational research, between the researchers and the research participants and how such a distance shapes the course of the research process have been documented in several studies, some of which especially focusing on research conducted in fragile contexts of marginalisation (e.g. Lee & Makoni, 2022). This distance is implicated in preventing the inclusion of the participants' voices in the discussion of data and results and in the very design, revision and dissemination of the research. In this subsection, we outline the initiative of collaborative research in mathematics teacher education with marginalised groups, which contributes to centring and building the domain in the diverse contexts of knowledge and practice. Collaborative research, which in particular focuses on and includes the historically excluded, is an important way for research in mathematics teacher education to develop and grow. The paper of López Leiva et al. (2024) reports collaborative research in an academic context in which the participants are actively involved in deciding how they will take part in the different phases of the research. A team of researchers and mathematics teacher educators of diverse linguistic, cultural and racial backgrounds engage in professional talk and focus group discussions about issues of social justice, biases and positionalities in mathematics education. These authors see themselves as immersed in the power dynamics with the other participants in the project team, whereas we can see their study as a dynamic space in which collaboration uncovers systemic forms of oppression in the lived experiences of teacher education. The final research accounts in that paper pay attention to questions concerning power and politics encountered in the course and scope of the research process.

Like in the paper of López Leiva et al. (2024), in Barros and Skovsmose (2024) not only the distance with the marginalised groups is challenged but the authors also position themselves as experiencing different forms of marginalisation which makes them particularly reflexive in the collaborative research work. In the discussion of sexual and gender diversity as a topic in interaction with a landscape of investigation in an imaginary setting with pre-service mathematics teachers, Barros explains his association with the LGTBQ + social movement and activities in a city within the state of São Paulo, Brazil. López Leiva provides personal insights on issues related to positionality, reflexivity and power when we read that he is "the only Latinx male" of the project team. Gutiérrez, Kokka and Myers provide personal statements and reflections on their intersectional identities as "three women of Color scholar activists" having implications for their continued refinement of the activities in the collaborative developmental research with diverse teacher candidates in courses on methods of teaching mathematics. In the paper of Darragh et al. (2024), the distance with the research participants who responded to the survey questionnaire is relativised by highlighting the Global North (Australia, Greece, New Zealand, Spain, USA) and Global South (Mexico, Pakistan, South Africa) diversity experiences within the team of authors. Like in the paper of Ingram et al. (2024), Darragh et al. (2024) is a case of collaboration amongst researchers across developing and privileged world regions with a variety of lived experiences concerning equity. The implementation of conventional survey methods allow for open reflection and dialogue on issues of equity in the research community of mathematics teacher education.

Alongside the collection of papers in the current Special Issue, we again find examples of investigations challenging the distance in developmental work with marginalised groups in settings of mathematics teaching and mathematics teacher education. Padilla

et al. (2024) recognise the mediation of identity and power in knowledge production. As a way to support research collaborations with teachers on knowledge for inclusive mathematics teaching, these authors overtly reflect on the aspects of their diverse identities such as having grown up in a neurodiverse family, having been raised in the Global South, being a Chinese-American first-generation immigrant, or being a mother of a child with a learning disability. They are therefore openly reflective about partnership in research done by marginalised researchers working with marginalised participants. Civil and Quintos (2022) show how the academic distance between the researchers and the migrant families in the project workshops is challenged by introducing participatory and qualitative methods and by sharing the own experiences of the researchers as Spanish-dominant migrant speakers. Mwadzaangati (2023) sees her research work with secondary school mathematics teachers not only as a process of generating knowledge, but at the same time as developmental work and an act of valorisation of the pedagogical knowledge on teaching raised by the teachers with whom she shares linguistic, cultural and educational backgrounds. While different methods of reflexivity and collaboration, as well as situating the researcher in the research process, are not rare in the research domain, this approach is not yet mainstream or common.

Some missing world regions and topics in the Special Issue

The six papers in this Special Issue reflect complementary aspects of centring research in mathematics teacher education. Yet, the final collection lacks presentations from some geographical vast regions and about some topics related to the marginalisation of certain groups of mathematics learners, student teachers, teachers and/or teacher educators. The anticipation of a representation problem made us prepare a Call for Papers and then choose a set of candidate papers that, as a whole, were particularly responsive to developing regions and to a variety of topics of investigation and contexts. However, at this final stage of the process, the two of us have the impression that more could have been done or that, in some way, the work together with the authors could have been different to ensure more diversity. In this section, we critically reflect on some of our practices and possible reasons for the representation problem in the current Special Issue.

In terms of geographies, except for the paper of Darragh et al. (2024) with survey data collected across all continents, the accepted contributions cover world regions as diverse as North America, South America and Europe. We do believe that although they are American and European centred—in terms of the authors' affiliations and the research participants' contexts—these five papers together discuss topics and methods of global relevance in a research domain which aims to grow further and stronger by addressing a wider variety of intellectual approaches and groups of people. A representation problem remains nonetheless undeniable, despite our attempt to capture a greater diversity of regions and continents. Africa, for example, a continent with twice the population of Europe, is not represented whatsoever within the collection of published papers. Nor is Asia represented, a continent with more than four times the population of the Americas. In the invitations of paper candidates and teams of authors, based on the titles and abstracts received, careful and deliberate choices were made to invite studies from various regions around the globe, including India, Iran, Malawi, New Zealand and South Africa. However, these papers became rejected through the review process, or at some point the expected revised manuscripts were not received. The resulting outcomes are significant because the initiatives

of decentring research in mathematics teacher education are challenged by the under-representation and mis-representation of studies, realities and experiences from developing regions and communities that are not or not only Euro–Western centred.

The issue of rejected papers is an integral part of the scientific processes of academic journals such as JMTE. We were faced with recommendations of two rejections and one major revision for some of the manuscripts which had reached the third round of reviews. These manuscripts rejected after resubmission primarily failed to address major content-specific concerns expressed by two or three of the reviewers, especially unclear contribution to knowledge and unclear or disperse focus. Following the substantiated reasons in the reviews, our final decision was rejection. Given the global significance of the theme of this Special Issue and the foreseeable risks of under-representation and mis-representation of certain regions, we wonder if, in our role of guest co-editors, we could have worked more closely with the teams of authors and could have been more supportive in addressing the concerns raised by the reviewers, from the very first round of reviews. This is not to say that we were not supportive and determined to help. For example, a major concern raised in the reviews of two manuscripts was the datedness of references. In writing each letter to the authors, being aware of the difficulties generally associated with access to up-to-date literature in some world regions and institutions, we incorporated and sent file attachments with the publications recommended by the reviewers. We were also active in promoting citation from regions and groups that are often under-represented. We did not overlook either that most manuscripts included positionality statements, through which the authors narrated who they are and where they come from. Such statements exposed the authors' identities during the review process. Hence, we re-read the reviewers' comments and were careful with possibly unintended expressions of bias or discrimination directed to the authors or to their research contexts. But we could surely have been more helpful in working with some teams of authors in clarifying their knowledge contribution or in providing a clearer focus.

Some of the manuscripts were sent to their authors for revisions, but these were never carried out. Moreover, for varied and sometimes unknown reasons, not all invited teams of authors ended up submitting a manuscript. Whereas this might be a common issue in any submission or invitation, given the theme of the Special Issue and the risks of the representation problem, we are particularly critical with ourselves for not having taken a more proactive approach. Journals like JMTE aim to preserve excellence in academia. In some world regions, the issue of academic excellence could lead to a few researchers being overloaded, by being invited to contribute not only to journal publications, but also to other tasks, such as serving on international committees or as executive members of international organisations. As the guest co-editors, we could have been more insistent on and supportive of authors who were presumably overworked and decided that they could not complete the needed revision in time. Invitations and follow-ups through email communications with authors might have been too minimal and might not have expressed well enough our interest in the works summarised in an abstract or explained in a first manuscript submitted. Either way, the manuscripts that were not resubmitted and the abstracts that did not turn into a submitted manuscript will likely be cases of deferred publication, and we will see them published in another journal sooner than later.

As regards the issue of missing topics, the rejection of some of the manuscripts subsequently led to the mis-representation of vital topics which play a role in the marginalisation of different groups of people. These topics included research studies that exemplified the social, cultural and educational factors around binary discourses of ableism in mathematics teacher education. This focus is completely absent from the current Special Issue,

while it represents an important part of the research that is contributing to decentring the domain. Other areas included exploration of cultural differences in values, behaviours and expectations which can lead to marginalisation and exclusion from different activities in mathematics classrooms. Any collection of papers cannot claim an exhaustive representation or coverage of topics and its scope is in essence limited. Nevertheless, there might be missing topics representing contexts, cultures and voices that we did not have even thought of, and through their omission from the very beginning in the Call for Papers, we may have reinforced some forms of further marginalisation in the research domain. Thinking retrospectively and having had the opportunity to read and learn from a recent publication by Stathopoulou et al. (2024), we realise that we did not consider mathematics teaching and pedagogies for the enactment of mathematical literacy in the prison institution, especially curricular content relevant to prisoners' lives. In particular, we did not consider mathematics teacher education for teachers in classrooms with young adults incarcerated and strict movement rules.

We look forward to identifying other missing topics through access to studies published elsewhere. Hopefully, in future collections of papers or publications, there will be more teams of authors from the so–called Global South, more mixed teams from the Global South and the Global North, and a wider representation of marginalised voices in society, so that more diverse realities and experiences can be read, known and impacted, while at the same time impacting on the growth, development and quality of the research domain.

Concluding remarks

In the sections above, we have not summarised the content of the six papers in the Special Issue, because the different teams of authors have done that job in their abstracts. Instead, we have highlighted some nuanced ways in which these papers contribute to the growth and development of the contemporary study of mathematics teacher education. While not abandoning our concerns and awareness regarding what is missing and why does it matter, the six papers together offer insights of the significance of widening our ways of seeing, doing, knowing and communicating research in mathematics teaching education.

Elsewhere (Abtahi & Planas, 2024), we argued that being part of the research community in mathematics teacher education demands: "*awareness* of historically-produced discriminatory discourses –e.g. ableism, racism, sexism, classism–, and *practice* of mathematics teaching and teacher education that enacts opportunities of access and participation" (p. 308). These dimensions of awareness and practice and their relationship are crucial and associated with issues of reflexivity and collaboration reported in the current collection of papers, none of which with a single author. There are important lessons from the studies in these papers, some of which are related to developmental and participatory research with groups and people subjected to marginalising experiences for a variety of reasons. The learning reported is rarely on the side of the teacher educators, student teachers or teachers only, because as said by most authors, the contexts, cultures and voices involved in the research have changed them and their research work in many respects. Not everyone conducting research in mathematics teacher education needs to do work with marginalised groups and needs to aim at achieving changes in the teaching and teacher education realities of these groups. Nonetheless, for the research community to develop a richer and wider knowledge base, there needs to be researchers who consider work with marginalised groups, which makes a difference in their on-the-ground realities and improves their

educational opportunities. In line with this claim, we have focused our introductory paper on the epistemic function and benefits of attending to and including the diversity of contexts, cultures and voices in studying mathematics teacher education.

We do not want to finish these lines without thanking the teams of authors for their contributions to this Special Issue, including the teams of authors whose manuscripts were not ultimately accepted for publication and from whose ideas and thoughts we learned so much. We also want to thank the many reviewers for their helpful and generous work, as well as Despina Potari and Alison Castro, the former and the current JMTE editors, for their support during the one-year thinking and the two-year editing of this Special Issue. We encourage you to read and enjoy the excellent papers in the Special Issue.

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