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‘Critical uses’ of knowledge and identity: Embedded mathematics as a site for/of class struggle in educational praxis

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This paper considers what the praxis of ‘Funds of Knowledge/Identity’ (FoK/I) might offer to researchers and practitioners of mathematics education. Building on a critique of FOK/FOI as reflecting cultural capital (in Bourdieu’s sense) we posit the notion of ‘use value’ in the knowledge and practices of oppressed communities: in knowing how to live poor, how to resist capital, and how to solidarise in social movements related to class, nationality, race, gender, sexuality etc. We focus on ‘dark’ FOK - defined as difficult or challenging experiences for learners and/or communities; we reconceptualise these as related to the objective relations of oppression under capitalism whereby ‘dark funds’ are the surfacing of class contradictions in our learners’ experiences. The implications for critical mathematics education are led by these considerations: in the problems we choose to tackle, the partners we choose to work with, and the research methodologies we adopt.

Keywords: Funds of knowledge, funds of identity, social class, mathematics.

Introduction

The Funds of Knowledge (FoK) (and more recently Funds of Identity – FoI) perspective has increasingly been utilized by those interested in addressing issues of inequality and oppression in education (including mathematics education, González, Andrade, Civil, & Moll, 2001). Arguably, mathematics is a significant area of the curriculum for such work given the commonly accepted ‘gatekeeper’ role it plays in sorting and selecting who has access to high status careers/subjects and its function in excluding those from disadvantaged backgrounds (Jorgensen, Gates, & Roper, 2014). In this paper, we present a narrative review of the literature on FoK/FoI in order to demonstrate how key critiques present important implications for how we conceptualise and how we ‘do’ critical mathematics education.

Funds of Knowledge/Funds of Identity in/for Mathematics Education

The ‘Funds of Knowledge’ (FoK) approach, originally developed by Moll and colleagues at the University of Arizona working with Latino immigrant communities and schools, has sought to emphasize the rich resources children have access to and experience in the home/community environment. In order to challenge the normative assumption that children from such communities are in some way ‘deficient’, it presents home activities (and the associated knowledge) as a rich resource for developing and teaching a school curriculum orientated towards social justice which are embedded in complex/rich social networks. The premise is that building a curriculum on these ‘funds’ will establish more meaningful connections between the school curriculum and learners

lives beyond school. In one example, Moll, Amanti, Neff, and Gonzalez (1992) documented the development of a learning module around the FoK evident in the home of one child, Carlos, who engaged in buying and selling Mexican sweets to friends and relatives after visits to Mexico. This is presented as a hybrid curriculum since it initially involved bringing the home experience into the classroom (e.g., parents came into the classroom to make Mexican sweets with the children) but then incorporated formal curriculum knowledge (e.g., the ingredients of Mexican and American sweets and comparison of their nutritional value). According to Moll et al. (1992) the term ‘funds’ originated from the ‘household funds’ paradigm (in anthropology) and refers to the funds that households must juggle to make ends meet – rent, social funds, ceremonial funds – each fund entailing a wider set of activities requiring a specific body of knowledge.

The essential cultural practices and bodies of knowledge and information that households use to survive, to get ahead or to thrive [...] acquired primarily, but not exclusively, through work and participation in diverse labour markets. (p. 21)

More significantly, Moll et al. (1992) were keen to point out that a FoK approach is not merely a culturally sensitive curriculum – or rather a ‘static grab bag’ of food, dances and celebrations which prove tokenistic (here they align with studies on ethnomathematics/culturally responsive pedagogies in mathematics education which also makes a similar critique). But rather this type of knowledge is strategic to households’ or communities’ functioning, development and well-being, and particularly may relate to the social, economic and productive activities of people in a local area.

More recently, Esteban-Guitart and Moll (2014) extended their approach to include ‘Funds of Identity’ (FoI) which refers to moments where a FoK is used to make some claim to be a certain kind of person:

funds of knowledge become funds of identity when people actively internalize family and community resources to make meaning and to describe themselves. (p. 33)

In this sense, they argue that education/teaching-learning should be about identity development as well as knowledge creation since the two are interwoven. Drawing on Vygotsky’s notion of *perezhivanie* (defined as an emotional experience having developmental potential, Blunden, 2016) they emphasise the subjective significance of the situation on the persons as they consume and use FoK. More so Esteban-Guitart and Moll (2014) define ‘the term *funds of identity* ... [as] a set of resources or *box of tools and signs*’ (p. 37). The authors highlight five types of funds of identity: ‘(1) Geographical Funds of Identity..., (2) Practical Funds of Identity..., (3) Cultural Funds of Identity..., (4) Social Funds of Identity..., and (5) Institutional Funds of Identity’ (p. 38).

FoK/FoI approaches have been utilised within mathematics education (Moll et al., 2009; Gonzalez et al., 2001) and clearly there is commonality with the ethnomathematics tradition (d’Ambrosio, 1985) and Critical Mathematics Education (CME) (Gutstein, 2006; Skovsmose & Nielsen, 1996); although CME is usually viewed as perhaps more explicitly political, involving critical interpretations of the world and political engagement (see, e.g., Skovsmose, 2016). The FoK approach is largely deemed critical because it rejects a deficit point of view on the learners (typically of immigrant or otherwise disadvantaged or marginal communities) vis a vis their ‘capital’. Moll and colleagues (2009) argue, and their research findings establish this, that many

children bring funds or resources that could be useful to teaching/learning, but that go unrecognized by the teachers/schools because of their ignorance of the culture involved. In this respect, this perspective also sits well with the Vygotskian idea of the everyday/spontaneous practices of the learner as providing potential for ‘making sense’ of the formal, academic concepts of the school curriculum and its teachers.

Critiquing the ‘Funds’

Williams (2016) has offered a critique of this work, drawing on Bourdieu, which illustrates how FoK/FoI has been used to refer to the surfacing of capital in the home/community as a means to reposition the learner with ‘access’ to the school curriculum. For instance, Moll et al. (2009) describe how the teachers-researchers involved in their projects discover one Mexican family’s educational values and high aspirations for their children which were previously been unseen/unrecognised by the school. Here the identification of FoK may be to enable the redistribution of such ‘capital’ by making visible and legitimate home resources and by providing the machinery to ‘scaffold’ the movement of such capital from the home into the educational field as a means to access ‘success’ and capital growth. According to Williams (2016), in such cases, identifying FoK does not necessarily challenge the process of capital exchange, but instead serves to strengthen its orthodoxy as ‘natural’ and open to all. As Zipin (2009) notes, the very act of identifying ‘everyday’ or ‘lifeworld’ knowledge to facilitate access to more powerful or ‘elite’ cultural artefacts entails the loss of its use value (productivity) and transforms such knowledge into objects with exchange value to be mobilized for capital growth in the educational market (he defines this as an ‘asset’ perspective).

When schools operate as high-stakes competitive markets, the use values of diverse people’s cultural assets are sadly diminished in relation to ‘gold standards’ of restricted exchange value. (p. 319)

However, poor communities also have resources which may not be valued as ‘capital’ and may even function to resist capital exchange within the educational field – for example, parents who question how they are positioned by schools in terms of capital ‘deficit’ and express confusion as to why schools do not teach the ‘life skills’ they practice ‘everyday’ as a function of ‘being poor’ (Howker, 2018). Both Bourdieu and Freire – were they alive today – might argue for the need to disrupt the ‘orthodoxy’ which occurs when FoK/FoI approaches are used to merely surface capital in the home/community (thereby strengthening the process of capital exchange). For Bourdieu and Wacquant (1992), it is the reflexive sociologist who, having made visible the processes of capital production/reproduction, might support practitioners/communities in identifying with a heterodoxa in a given field (i.e., an alternative frame which challenges orthodoxy and so threatens the ‘doxa’ in place). Similarly, Freire’s (1970) *Pedagogy of the Oppressed* suggests that emphasis should *not* be placed on resources ‘latent’ in the home/community practices which are useful to a formal curriculum of some sort but rather on how such resources can be brought to consciousness in order to ‘name’ (and challenge the limits of) the systems/relations/institutions which produce/reproduce oppression/inequality. Freire also outlines a process of conscientization where collective agency/solidarity and social movements are mobilized to fight struggles of injustice pertaining to

class, race, etc. Through the pedagogy of the oppressed students can “perceive the reality of oppression, not as a closed world from which there is no exit, but as a limiting situation which they can transform” (p. 85). Here the agents are students/community members/teachers/activists rather than the social scientist (as per Bourdieu), although special status is given to the ‘educator’ whose role is to draw out the learners’ view of reality and enable him/her to question it.

All of this suggests the need to situate FoK/FoI in relation to the objective relations of oppression, which under capitalism may be understood as relations of class position (dominated/dominating, working/leisured, disowned/owning class positions in Bourdieu). In identifying the types of knowledge embedded in homes/communities and the subjective experiences they engender (FoI), it is not sufficient to relate to ‘domains’ of activity (e.g., home/community etc.) in which they arise or even the social function that such activities serve (e.g., practical/institutional etc.). But rather we need to recognize how FoK/FoI function in relation to objective structures which (re)produce ‘capital’ (either through alignment or resistance) if we wish such an approach to challenge oppression/alienation of those from disadvantaged communities.

Dark/Existential FoK/FoI

In relation to the above critique, Zipin (2009) notes the difficulty of developing a curriculum based on the ‘use-value’ of FoK and anticipates the challenges and limitations presented by institutions whose function is to mechanize capital exchange (Bourdieu, 1986). In this sense, he critiques the tendency of researchers/teachers to gravitate to what he terms ‘light’ FoK or rather positive experiences and to omit what is seen as more difficult or challenging sides of living in disadvantaged or poor communities. As such, dark FoK are conceptualised as knowledge/resources/experiences which may be painful, challenging or difficult (e.g., bullying, poverty, incarceration, mental ill-health, exploitation, or other problems with social relations) and which Zipin (2009) argues are significant if we wish to fully recognize how poverty and class position permeate the ‘habitus’ of children. More recently, Poole and Huang (2018) have made a similar argument in relation to existing accounts of FoI (Esteban-Guitart & Moll, 2014) critiquing the heavy focus on the learner’s positive experiences, rather than capturing the whole range of human subjective experience. They suggest that difficult experiences or rather ‘existential FoI’ (identified through an ‘experience as struggle’ lens) are significant since they indicate a *perezhivanie*, that is emotional experiences which are/can be developmental in that they provoke the need to work through or reflect and subsequently overcome. Thus whereas Zipin (2009) sees dark funds/difficult experiences as offering a potential FoK approach which can counter the logic of capital exchange in teaching and learning (since ‘dark funds’ are not merely a matter of identifying ‘assets’ for capital exchange), Poole and Huang (2018) suggest such potential be located at the subjective level – with difficult or challenging experiences viewed as developmental in that they may bring about ‘human growth’:

Existential funds of identity are defined as positive and negative experiences that students develop and appropriate in order to define themselves and to help them grow as human beings. Existential funds of identity are presented as an additional category of funds of identity that are

designed to complement the typology consisting of geographical, social, cultural, institutional, and practical funds of identity as developed by Esteban-Guitart. (Poole & Huang, 2018, p. 126)

In the above quote we can see how Poole and Huang (2018) equate existential FoI to other categories proposed by Esteban-Guitart and Moll (2014) as if they are merely an alternative form of resource/experience which individuals encounter. However, our own work on *perezhivanie* has begun to look at how emotional experiences (difficult/challenging or otherwise), although experienced subjectively, may also be related to objective structural conditions whereby contradictions arise. For instance, in Black, Choudry, Pickard-Smith, Ryan, and Williams (2018) we present the case of 6-year-old Nico who experiences his classroom mathematics as ‘boring’ and in contradiction with his home/community activities where he is able to ‘see’ some embedded mathematics ‘in practice’. We have highlighted in this paper how this contradiction is experienced subjectively but also how it arises objectively in social structures, that is as a manifestation of the family habitus regarding school mathematics as ‘not for them’ which contradicts the embedded mathematics used by Nico, his family and his community in their everyday practice. Thus, we propose that dark/existential FoK need to be reconceptualised as manifestations of (and so refracted though subjective experiences of) objective relations of oppression under capitalism whereby ‘dark funds’ arise from the surfacing of class contradictions in learners’ experiences. In general, the habitus of the oppressed is not well aligned with the cultural capital needed to resource the acquisition of power in the various fields and in the field of power generally. However, just as we must imagine a world beyond such arbitrary power structures, we must imagine the potential of such experiences to resource developments of new understandings and consciousness of ways to live differently. In this simple formula we may reposition Vygotsky’s conception of *perezhivanie* in a critical class context, as the potential of experiences for development of newer and bolder class consciousness.

Implications for Critical Mathematics Education

Our critique of Poole and Huang’s (2018) conceptualisation therefore suggests that ‘dark’ experiences, if they are understood in the way we outline above, can give insight into how we might relate productively to them, and how they might be made to become developmental in a critical sense. This may entail finding ‘uses’ of mathematics in the home/community and in class struggles which can be mobilised to fight real issues of poverty or oppression in the way Freire (1970) envisaged. See, for example, Gutstein (2016) for a course designed with this explicit orientation. Examples where such an orientation integrates with actual struggles and campaigns are far rarer, however. Williams, Bertholt, Nardi, Jornet-Gil, and Vadeboncouer (2018) have more recently made the distinction between ‘critical’ and ‘domesticated’ forms of CH-AT in educational praxis: Our remarks in the previous paragraph suggest a critical perspective on *perezhivanie* to balance the more domesticated, personalized one attached to psychotherapy (i.e., that ‘development’ is a purely personal, therapeutic one rather than an emergence of class consciousness). The critical perspective may involve working with the experiential ‘resources’ that capital is not interested in, but that allows or encourages a different ‘knowledge/know-how’. Zipin, Sellar, and Hattam (2012) refer to such resources as ‘knowledge that has use’ as opposed to knowledge that ‘has market-exchange value’ thus:

knowledge that has uses for social life in those settings – not abstracted from living social use by a logic of accumulation of knowledge that, due to its scarcity, has ‘market-exchange value’ which can be parlayed by either individual ‘entrepreneurs of the self’ or networked collectives of ‘social capitalists’. (p. 181)

We should add to this ‘knowledge that has use’ in the struggles of the oppressed. Most obviously such ‘resources’ relate to how to ‘live poor’, but we also argue, following Freire, the need to recognize and legitimate practices and know how involved in sharing/mobilising solidarity with others who are oppressed and also how to engage in collective action, for example through social movements and community, union or party activity. One might also see how such resources can challenge the ‘limits’ Freire refers to in the education-industry, for example in asserting the need to overcome the disciplinary boundaries (in curriculum and pedagogy), spatial and temporal structures in educational institutions, and above all assessment and qualification structures (Williams et al., 2016).

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