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# Mathematics assessment, competition and professional capital

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*In this paper, I use interviews with two teachers, drawn from a small scale study of four schools, to illustrate the way in which mathematics assessment is used as a form of capital in teachers' wider professional lives and the effect that this is likely to have on teaching practices in mathematics. Assessment is high-stakes for English schools and outcomes are increasingly measured numerically in terms of annual 'pupil progress'. I use an analysis based on Bourdieu to illustrate how this affords competition between teachers for grades and potentially brings them into conflict with each other. I argue that the effect of this kind of professional capital is likely to be unhelpful in relation to what is known to be effective use of assessment in mathematics teaching.*

**Keywords:** Assessment, Bourdieu, professional capitals, competition.

## INTRODUCTION

The focus of this work is mathematics assessment from the perspective of teachers in English primary schools (5–11yrs) in relation to the significant part it plays in their teaching. This is set in the context of massive investment in mathematics education over the last 15 years, but with modest improvement and concern that English pupils are not keeping up with their international peers (e.g., Gove, 2013). Research (e.g., Boaler, 2005) is clear that one vital issue in effective learning of mathematics is that teachers, and pupils themselves, see the potential for learning as flexible and mutable; and that its opposite – perceiving it as objectified and immutable – leads to teaching practices which hold learners back. Pupils should be involved in understanding what they can and cannot yet do and involved in mathematics as a process of exploring interconnecting ideas. Despite this clarity, practices in English classrooms tend not to reflect it; a view of mathematical ability as a fixed characteristic

of individuals, setting by such ability and teaching that is negatively differentiated so that weaker pupils (and the highest achieving) are not challenged mathematically, all prevail (Boaler, Wiliam, & Brown, 2000; Marks, 2014). This paper explores some of the reasons for this contradiction by trying to understand teachers' mathematics assessment practices from the perspective of professional status as a whole. In doing so it makes use of Alexander's definition of pedagogy as 'the act of teaching together with its attendant discourse' (Alexander, 2004, p. 11). Crucially, from this perspective, teaching practices can only be understood in relation to the politics of daily life within which teachers act; research which decontextualizes teaching and learning in this way is unlikely to affect practice in any significant manner.

## THEORETICAL FRAMEWORK

Assessment judgments in the UK take place within a high-stakes environment of increasing competition at both school and individual level with quantified test outcomes being the key commodity for recognition of success and high status. Schools, and the individual teachers within them, are now judged on the basis of standardised numerical outcomes; ubiquitously referred to as 'data' by those who work with them. For anyone not associated with education in English schools it may be hard to appreciate just how much of a hold this assessment-driven culture has over the lives of those who work in them; to a large extent it dominates the way they think and talk about their work, with numerical assessment data being used as a proxy for the overall standard of education in a highly politicised landscape. The term 'progress' has been adopted by successive governments and policy makers to stand for the rise in pupils' attainment over time. Pupils' progress over stages of their educational life against subdivisions of National Curriculum levels has become the key measure by which schools

are judged during inspection (Office for Standards in Education, 2012a) and schools can only be graded as 'outstanding' if the progress from Key Stage 1 (KS1 – 7 years old) to Key Stage 2 (KS2 – 11 years old) fits the approved pattern, regardless of the perceived quality of teaching during an inspection<sup>1</sup>. This means that the quality of teaching is understood to be validly and reliably represented by the measured progress. In turn this means that teaching *tends to get constructed backwards*; if the progress is not as much as it should be then teaching cannot be good, regardless of what is seen on the ground. Furthermore, the UK Coalition government has recently introduced new arrangements for performance-related pay for individual teachers (Hodgson, 2012) in which successful teaching gauged at an individual level is defined as all pupils making a specific number of points of progress across a year, regardless of circumstances. Assessment is therefore naturally very much part of teachers' everyday mathematics discourse and so, on the assumption that human activity is object-orientated (Vygotsky, 1978), this discourse and acts of teaching and learning mathematics will be mutually constituting in pedagogy.

To try to understand this relationship between assessment and teaching I draw on Bourdieu's notions of *field*, *habitus* and *capitals*. As Colley (2013) notes, though imperfect by Bourdieu's own admission the idea of the *game* as a metaphor is important in understanding how field and habitus interact with each other. The field (here the work of school assessment) is 'a space of conflict and competition constructed only through the human doings of human people' (p. 10) so that it 'is not only a set of external conditions which themselves have been devised or imposed ... [but] is also the agentic and partly subjective *playing* of the game through our *habitus*'. Field and habitus are not therefore separable, and certainly not representative of structure and agency respectively. Rather, they are mutually constitutive of each other, each produced through the other: habitus developed through repeated activity in the field; field developed through the playing out of activity through habitus. Thus, the question here is how the changing nature of mathematics assessment as a high-stakes, politicised element of schooling affects the ways in which teach-

ers and pupils 'play out' schooling. In this respect, two other Bourdieusian ideas are relevant: *doxa* which refers to the dominant discourse of a field, separating what is thinkable from what is unthinkable; and *illusio*, a more conscious belief in the stakes (*enjeux*) of the game and the *belief that it is worth playing*.

## METHODOLOGY

The project forms part of a wider study based in Plymouth University, UK, looking at the socially-constructed nature of teaching (see, e.g., Kelly, Hohmann, Pratt, & Dorf, 2013). It involves extended semi-structured interviews with primary teachers in four different schools (12 teachers in total) aimed at exploring their use and understanding of mathematics assessment (though inevitably, as non-subject specialists teaching the primary curriculum, teachers spoke about assessment in general too). In this sense it is a case study, exploring assessment as an aspect of the field of teaching and learning in the four case schools. Both teachers and schools were chosen purposively, the latter with different characteristics that might reasonably affect the way in which assessment takes place, including: inspection gradings; different arrangements of governance; and different proximities to competing schools. Data from all the interviews were analysed using a constructed, grounded approach following Charmaz (2006) and themes were developed. These themes are incorporated into the account that follows, but using examples from just two interviews, Tony and Sasha, to illustrate the claims, accepting that in such a short paper only a partial account of these themes is possible. Both interviewees are classroom teachers at the same urban school of 550+ pupils and have been teaching for 9 and 6 years respectively. Tony trained via a one-year postgraduate course and teaches Year 3 (7–8 yrs); Sasha trained on a four-year Bachelors course and teaches Year 5 (9–10 yrs). The school has had successful inspection outcomes over the last 15 years, based on attainment that is above the national average, but was recently downgraded from 'outstanding' to 'good' on account of progress not being consistent across the whole school. Such consistency, judged through assessment, is therefore a focus for all staff.

## THE DISCOURSES OF SCHOOL ASSESSMENT

Despite the points about assessment used for institutional and professional monitoring made in the

<sup>1</sup> At the time of writing the UK government is consulting on the removal of this system and its replacement by one in which pupils are judged against 'age-related expectations'.

introduction above, England has a long tradition of child-centred, progressive education and, more recently, assessment for learning in which the ‘first principle of learning, is to start from where the learner is’ (Hogden & Wiliam, 2006, p. 1). The inalienable nature of this as it relates to assessment is nicely exemplified by Tony who, right at the start of his interview is asked what ‘role assessment plays in what you have to do to be a successful maths teacher’. He responds:

Tony: Ok. For me the only [hesitating and thinking] thing assessment’s for, obviously we’re measured against it and the children are measured against it, but to be a successful teacher, for me, the only reason is to see what you need to teach the children and teach to their ability ... um ... and find those gaps and fill them and bring them on. ... what you want to do is only assess for what you are planning, what you are teaching.

But asked whether this is representative of how assessment is used in the school as a whole he declares:

Tony: I think the trouble is that not everyone would agree with that. I think there would be some teachers who see assessment as a measure of progress, rather than assessment for learning. And I think all teachers would see those two things as part of assessment but where they put, where they see the emphasis might be slightly different.

In these two statements Tony describes the two contrasting discourses of assessment that were apparent in the data set, as well as the tension between old and new traditions. On the one hand assessment is formative, for teaching and learning; on the other it is a summative measure of progress. However, for both of these discourses there is also a question of who controls the information that assessment generates and therefore who makes use of it and what is expected from them. Children are certainly involved in this respect. Formative assessment is routinely used to set targets, usually in very systematic ways such that children know what they are meant to achieve next; and summative assessment outcomes are shared too so that my own son, for example, will routinely tell me that ‘I am a level 5b’.

The language is interesting here as children are objectified ‘as’ their perceived ability level. Objectifying children in relation to ‘their ability’ has a considerable literature critiquing it (see, e.g., Boaler, 2008; Boaler et al., 2000; Cooper & Dunne, 2000; Muijs & Dunne, 2010), and the increasing emphasis on accountability seems to drive the need to become auditable, which in turn drives objectification of pupils as numbers on an assessment scale. Thus, in interviews we hear Tony describing the moderation of assessment, saying that the teachers in his year group ‘looked at our level 4s’. Whilst this does not, of course, imply that teachers only see children in these terms, nor that there may not be benefits from doing so anyway, it does illustrate a creeping objectification of pupils in the discourse of schooling *as* their assessment level and runs counter to the research pointing to the value of a flexible view of learning potential. I argue that this is a necessary part of a system of high-stakes accountability since objectifying pupils as assessment levels enables them to be measured, and hence to create a narrative of ‘progress’ as also measurable. However, for this to be used to account for (and increasingly measure) teachers’ work a second aspect of the narrative is necessary, which is the imposition of personal responsibility for this measure on teachers themselves. If one is to link pay to progress one must not only have a reliable measure of progress but must also believe that this is the result of the teacher’s actions, so that these can be assessed and understood as the teacher-performance. So, for example, Sasha describes performance management meetings with the school’s senior management team as ‘a scary meeting’, but says,

Sasha: I’ve always quite looked forward to it. But again, I wonder if that’s because I’m a successful teacher – it feels very strange saying that. If I’m a successful teacher, and if maybe I wasn’t a successful teacher it would maybe be more worrying. And I know teachers in the past who’ve been hauled before heads or governors to kind of go ‘your children have not made appropriate progress this year, why not?’ ... the performance management cycle ensures that no-one’s rubbish at their job.

In this light, aspects of the discourse that is created around school assessment include:

- The belief in a version of success defined in narrow, data-led terms
- The belief that progress is predictable and controllable across time
- The creation of official expectations of such progress
- Making individual teachers responsible for learning outcomes through their teaching

I argue that this discourse constitutes a *doxa* because as teachers spoke of their experiences in interviews these descriptions of assessment practice were generally ‘granted [a] recognition that escapes questioning’ (Bourdieu & Wacquant, 1992, p. 98). We see the attributes of control and predictability described here exemplified by Tony as he describes the typical shape of the graph of mathematics data for his class.

Tony: Probably [the slope is] less gradual, very gradual, in the first term and then second term goes up a bit and then maybe curves over because you wouldn’t go any higher than your SATs in May because you can’t make any progress after that can you [laughs ironically]!

Note how the expectation on Tony and his own assessment practices constitute each other and control what is possible. Assessment does not just describe progress; it defines what is possible and what is not. Moreover, the *doxa* affords another shift, namely a move from assessment as a public good for the school, or more widely society as a whole, to also being a private good for the teacher. Teachers ‘own’ the data, in the sense that they both are made responsible for it and can make use of it as capital in their professional work. These are at work in the way Sasha describes mathematics assessment targets.

Sasha: So the school target is something that everyone in the whole school is working towards. So whether that is a set amount of progress in a particular aspect of maths or just developing something, you kind of think about just that one thing. ... The class [assessment target] is progress of the children in your particular class or set and so again, obvious-

ly your assessment links up. And with the new pay and conditions thing, if you don’t hit every one of your professional development targets you can’t progress up the pay threshold...

NP: Do you feel responsible for them [children’s SAT scores]?

Sasha: [immediately] Yes, really responsible, completely ... and some children you will be like, oh they were so close and then you feel a sense of disappointment for them and then you question whether or not you could have done more.

Moreover, this data is used and contested as capital by different parties.

Tony: I mean like government need to be looking like they are doing a good job governing. It gets onto heads [headteachers] and they need to be monitoring that progress and they would say ‘my school has made a lot of progress’. Deputies look at their key stage and say ‘my key stage has done really well this year’ [laughs]. And then teachers, ‘my progress it is, it is’ ... you’re responsible for that data, so you have ownership over that data, but I suppose the stupid thing is ... is the children who are at the centre of it are the ones who are almost most removed from the talk of targets and data and ... Yes, it’s ridiculous isn’t it.

Again, Tony illustrates how the *doxa* of assessment works in opposition to the stated policy of assessment for learning with pupils at its heart.

### **ASSESSMENT: TEACHING AND MERITOCRACY**

The culture of audit and accountability which promotes this *doxa* of assessment affords another idea; that teaching is meritocratic. The ‘best’ teachers are those whose children make the most progress, which, according to the *doxa*, can be reliably measured through assessment outcomes and attributed to individual teachers and their teaching. Thus, in describing herself as a successful teacher above, Sasha is not being immodest or arrogant. Rather, she is stating a fact since her outcomes are simply the right ones; though she seems aware of the possible social unac-

ceptability of saying so ('it feels very strange saying that'). Habitus, the way actors are disposed towards the pedagogy of assessment, and field, the way they position themselves and are positioned by others in the professional setting, combine to normalize the practice of measuring outcomes and using these in particular ways. These outcomes can be understood as *les enjeux* (Bourdieu & Wacquant, 1992), the stakes in the meritocratic game of promoting one's professional status. That teachers adopt this position is not an example of either being forced to do so by structure or choosing freely to do so agentially. Instead it represents teachers' *illusio*, their sense of being caught up in the game and *committed to it in a belief that it is worth their investment*. Where doxa is a non-conscious participation in the dominant discourses of a field, *illusio* is a more aware sense of 'simply acting sensibly' (Colley, 2013, p. 11) in relation to the stakes of the game. By acting this way teachers implicitly say to themselves that they will be able to achieve things of value, and this may even outweigh acts of symbolic violence that they experience as a result.

Teachers therefore express their *illusio* in the manner in which they commit to the apparently meritocratic business of teaching and assessment because they believe it brings rewards, but also because the doxa within which pedagogy takes place appears to provide no alternative. It is important to understand that these work together. Just as it is not the case that teachers are unconscious of their actions, so neither do they exercise fully-conscious choice. The notions of doxa and *illusio* therefore try to represent the 'dance' of awareness that the teachers can move in and out of and, consciously or non-consciously, the way their actions are affected. For Sasha her *illusio* seems fairly straightforward and aligned with the doxa.

Sasha: and [my assessment] is all monitored really closely [in meetings with managers] in terms of percentages and progress in terms of points and any children who are flagged up as having regressed or not making as much progress as we'd have hoped, they're then flagged up and we put things in place, interventions and what-not. And similarly we do it to challenge [pupils] as well. Who do we need to challenge more?

In this instance at least, Sasha seems satisfied that assessment is valid, can legitimately be used to make decisions about teaching and that such decisions lead directly to outcomes such that teachers' work can be judged on a meritocratic basis.

In his interview however, Tony suggests a more arbitrary and political side to assessment, for example:

Tony: our stress is we should be recording children [with the grade] they are because then the [next] teacher could teach them effectively, and you feel like you are letting the children down if you don't record them accurately, but you know the stress of the school where it needs to look like a perfect gradual line. And we know that Ofsted would want that ...

Tony: Um, I don't think it [assessment] necessarily has an impact on progress on children. I think it helps people communicate the progress that people think children are making, but ... stress is necessary to some extent to perform to an optimum level, isn't it. But too much stress might tip people over, which... some people I know feel that way. And if the situation is where [pupils] are not moving, that's where the stress is bad, isn't it, but if they are succeeding then those meetings [about pupil outcomes] are usually quite rewarding, so it's usually quite ... it's never negative if you are jumping through those hoops.

Tony shows his awareness of, and challenge to, the doxa in his slight cynicism and way he seems to be questioning the effect of assessment for teaching and learning, but his comments still express his sense of *illusio* regarding the validity and use of assessment grades. Nonetheless, contrary to Sasha's view of assessment as supportive of learning, Tony describes his teaching practice as distorted by assessment in having to 'jump through hoops' with little 'impact on progress'.

## ASSESSMENT: MERITOCRACY AND COMPETITION

Meritocracies, usually implicit in any neoliberal system, are essentially competitive. One rises up by

being successful in whatever terms the dominant group in the system creates through the doxa; but as the stakes get higher obstacles to progress take on a greater significance. In a system where one's performance is judged mainly by being able to demonstrate a certain number of points of progress annually on an assessment scale, anything which makes this harder will be seen as a challenge; and since progress for one teacher starts where it left off for the previous teacher, end of year assessment has become a major focus and an issue of potential stress and anxiety for teachers.

Sasha: ... if you are in a position where actually you need that [grade] then it's very stressful because you then go 'but it's one child and it's one point and if I do it [alter the score] I'll get that' and you kind of go 'but professionally I can't do it, but I really need it ...' it's that kind of whole, that real inner-turmoil about it.

Tony: At the start of the year you look at data and you think how do I make progress with this lot and at the end of year you are stressing, I can't send them up like this they've done quite well, I'll put them down [laughs, but serious]. Every moment's stressful when you look at progress because you ... I always found the stress of sending up children and how that would be perceived by [the next teacher] with the whole value-added thing, and I was always extremely careful that [it was] moderated *with* KS2. So sending up is incredibly stressful ...and my stress at this moment is how my results which are relatively good are going to be perceived by the next teacher in year 4.

Despite the competition that assessment generates, Sasha's *illusio* suggests a stronger sense of investment in the practice of assessment. Perhaps because she is so successful within it and, regardless of the 'inner turmoil' described above, she notes that:

Sasha: [The children] have no comprehension that you want to know how they've done and so you're stood over them [as they do tests] going 'yes, yes, yes, yes, nooo! Keep counting, keep counting' [laughs] and then you're like 'brilliant' or you're

filling in their [marking] grids going 'amaazing, look what they can do'. Very definite positives to it.

It seems that her *habitus* involves a strong commitment to these forms of high stakes assessment and despite her descriptions of stress she describes assessment as 'cathartic' because 'it confirms what I think about them' and 'it reassures you as a teacher'. This investment (*illusio*) requires a belief in the validity of the system of testing. For other teachers the *illusio* is just as strong, but is effected through other means, and where their pupils appear less successful the temptation to manage the system is clear. Indeed, more than just managing it, Tony claims that:

Tony: I'd use the word manipulation! [laughs]. It is manipulated ... for ... for because of all the pressures. It's never manipulated up, it's certainly manipulated down. I've never manipulated up at all and that's, you know, I'm sure of that.

The best teachers were described above as those who made the 'most progress', but this is not quite the case. A better description is those who create the impression of having achieved the 'right progress'. Tony's manipulation is actually a *decrease* in the scores obtained at the end of the year and Sasha also reports 'moving their level back' so as not to be treated with suspicion by colleagues. However, whilst this seems altruistic, two further factors are important to appreciate. Firstly, Tony notes the robustness of the moderating system, saying that 'I don't know actually anyone who would send them up higher than you think because of the pressure of it being um [moderated]'. Similarly, Sasha claims that 'there is a tendency to perceive that a generous marker is bad'. End of year assessment appears well policed. However, progress is measured between two ends, and if you cannot move as far forward as you would like then you can simply start making progress from further back by challenging the judgements of colleagues.

Tony: If you drop them [the previous teacher's transferred grades] four points [in your first assessment of the new year] then you are saying the other teacher's incompetent or a cheat and there is no other reason for doing that really. Some teachers, naturally ... this thing really

bugs me ... that some teachers don't trust other teachers and you see four points dip at the start of years. And they consistently do it.

Again, assessment is not simply the practice of recording mathematical achievement. It has the potential to distort teaching practices, requiring teachers to generate fictions to manage *their own* progress (not just that of pupils), and in doing so discover themselves in competition, even conflict, with each other.

### IMPLICATIONS OF THE ASSESSMENT DOXA

As was noted at the start of this piece, research is clear about what we know to be effective mathematics teaching and the role of assessment in this; above all encouraging learners to treat mathematics as a network of related ideas and learning as flexible and mutable. Yet we also know that in England this is far from the case in practice and despite years of professional training and countless millions of pounds spent trying, pupils' experiences of mathematics are largely the same as they have always been; on average, these fail to extend those who are moving on with it and leave a long tail of those who are not (Office for Standards in Education, 2012b). Standing back and examining assessment from the perspective of teachers' wider professional lives offers some insights into this conundrum.

Teachers clearly work within a strong doxa surrounding assessment in mathematics and the evidence from the teachers here suggests that this doxa promotes a belief in a particular *epistemological* position: that mathematical knowledge is individual, not socially distributed; that it is largely propositional; and that learning is the business of its acquisition. This position then implies several implications for teaching: that acquisition should be predictable; that teaching should control and monitor this acquisition; that this takes place smoothly over time; and that teachers are responsible and accountable for it. No wonder then that whilst on the one hand teachers attempt to use assessment formatively to consider the learning of every child, on the other this is overlaid by practices that are designed to do professional work for themselves, as well as for the pupils. Whilst teachers still undertake assessment for formative purposes, ultimately the system requires them to objectify pupils' progress and to manipulate this into the 'right shape'.

As we have seen, this is not a simple case of overinflating scores; it also involves downgrading them such that, potentially, 'the personal is used for the sake of the functional: students are included or excluded, valued or not, primarily on the basis of whether they contribute to the performance of the school' (Fielding & Moss, 2011, p. 52). Though this research has not observed these teachers' classroom practices directly it is not hard to speculate that, in general: teaching is likely to encourage pupils to see their mathematics learning as objectified and fixed rather than as constructed and mutable; and, rather than freeing children to explore the world of mathematics, teachers may well want to control mathematical thinking. Rather than simply being the business of evaluating pupils' mathematical achievements, assessment is a politicized process which alters classroom practice and through which *both* teachers and pupils are constructed as winners or losers.

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