

PARTICIPATION AND PERFORMANCE: KEYS TO CONFIDENT LEARNING IN MATHEMATICS?

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I offer an exploration of both what is often named 'identity' and of what it means to be confident in learning maths. I discuss the theoretical model offered by 'subjectivity' and discuss how this can give a better analytical frame. Through an analysis of teacher guidance material together with extracts from interviews with pre-service student teachers I explore the discursive practices of teachers and learners and the effect of this teaching. I discuss how shaking up constructs of 'confidence' and 'competence' and that of a 'good learner' highlights the key of being willing and able to participate in classrooms in particular validated ways.

This paper explores theorisations of what is often named 'identity' and what it might mean to be confident in learning. The use of some models of self image and individuality in examining the experience of learners and teachers of mathematics leads to limited understandings. (Henriques et al 1984). I have concern for the effect of these restricted understandings on the relationships that learners in many contexts develop with mathematics. I will discuss the notion of 'subjectivity' and explore what new understandings this can generate in this area and how it can offer for a better analytical frame for considering the effects of the practices of learners and teaches of mathematics.

This exploration works with data that is a mix of textual commentary and vignettes from my teaching and research experience in mathematics education. In a sense I use 'what is to hand' and hold these in juxtaposition, to jar or resonate. This approach is intended to evoke connections that might be concealed by more traditional modes. This form of presentation is termed bricolage in art and literature (Levi-Strauss, 1966), and refers to the process of adapting old and new texts, images, ideas or narratives to produce whole new meanings. It offers the possibility of challenging habitual ways of understanding. My use of this is intended to shake up familiar constructs of what it means to be a 'good' or 'confident' learner of mathematics.

CONFIDENT LEARNERS OF MATHS

I have chosen to explore in particular how ideas of confidence are inscribed in teachers' and learners' images of themselves and each other in mathematics education. The term 'confident' repeated occurs added to descriptors of learners of mathematics. As an attribute, confidence brings with it reference to social practices and in relation to *identity* this brings into question the relationship between individual subjects and the social domain implicit in the experience of learning mathematics. All theoretical frames promote and hide aspects of the field under examination. I have found productive theorisations that do not separate the social and the individual and do not place these as complementary (Cotton and Hardy, 2004).

My previous work has also highlighted the problematic process through which learners are inscribed within a discourse of confidence and how the learners' use of language, responses, bodily gestures, positionings are all involved in this inscription (Hardy 2004).

SUBJECTIVITY

(This formation of subjectivity) allows self awareness... but understands that subjects are dynamic and multiple always positioned in relation to particular discourse and practice and produced by these. (Henriques et al. 1984 p. 3)

Some theories of the individual include reference to a variety of selves and multiple identities. However these multiplicities may be portrayed seen as contributing to a resulting coherent and rational individual, reducing the social to the intersubjective. This locates responsibility for contradictions or discontinuities with particular individuals, constituting these as failings and disorders of the individual.

However the formation of subjectivity outlined by Henriques (1984 p. 204) produces a subject existing as a set of multiple and contradictory positionings. This challenges us to consider how such fragments hold together in the subjective experience of continuity in identity. My discussion is centred on this challenge. Whilst people are not seen as mechanically positioned in discourses, the framing of subjectivity can contribute to an account of the apparent predictability of people's actions, as they repeatedly position themselves within particular discourses. It can also offer some explication of the possibilities for change and also individuals' resistances to change

..psychoanalysis gives space to our fundamental irrationality: the extent to which will or agency is constantly subverted to desire, and the extent to which we behave and experience ourselves in ways which are often contradictory...(but) development of individuals and their implications are neither entirely predictable nor reproducible, nor are they controlled from within. (Henriques et al.1984 pp. 205-206.)

I will also use this formation of subjectivity to identify ways in which learners, teachers and researchers are driven to project an imaged coherent identity. This drive described as 'trying to complete the picture of yourself' (Jones, Brown, 1999).

MY BRICOLAGE

These extracts have been selected from data and reflections from my recent research projects. Clearly these were 'to hand'. The first is an analysis of guidance material (DfEE/SEU, 1999) to explore the discursive practices of teachers and children in exemplar lessons (Hardy, 2004). In the second I worked with pre-service students who were studying a 'Learning to Learn Maths' module and interviewed them on their recent experiences of learning mathematics. I have also referred to the research of others with which I make connections. Given below is a sample of the fragments /data that contributed to this analysis. My analysis is based on 3 questions emerging from the discussion of subjectivity: What discourses and practices are in play? What

images of learners themselves and of others are portrayed? In what ways do these images cohere and contradict?

<p>Confident learners..</p>  <p>They respond better to being questioned. They are able to answer the questions and can be clear when they do it. They explain really confidently too. It makes them come across as a bit superior They are the ones who volunteer the answers. They answer frequently, quickly and clearly. They'll try for answers even if they are not sure if it's right. They have determination when attempting questions, have another go if they get it wrong</p>	<p>Questions and Answers</p> <p>Questions are from others. The questions you are asked are peculiar to the maths classroom When learners ask questions it's for clarification. You reveal your need for help if you ask questions You need to know who you are in conversation with.</p> <p>Those who are confident enough to ask are not those that have the problems If I'm not confident then I won't ask for the help I desperately need.</p>
<p>A Recurring theme in Jo Boaler's research (1997) is girls' reluctance to use the term confidence in their descriptions of themselves in relation to maths learning. They talked of their discomfort in maths classes, of not having enough time to understand, that learning maths was hard work, of being uncertain about their likely test results. This includes comments on the discourse used by those who are seen as good at maths. These girls may sound unconfident as they don't use 'its easy' or portray their work as 'no effort required'.</p> <p><i>We go though the topics very quickly, without having enough time on one. A lot of the people in the class are naturally very clever, and it is embarrassing to get something wrong in front of them.</i> Tania, set 1</p> <p>Yet when prompted these girls are very clear that they are as good at the subject as the boys.</p>	
<p>Too much praise</p> <p>Many women of the preservice students interviewed refer to positive feedback and praise having an important effect on learning. In (some) classrooms girls receive less attention in comparison to boys. Boys demand more interaction and will receive feedback from teachers. Praise is often used as a management strategy (this may often be undue praise). Does this give boys more opportunity to develop confidence in the ease of 'getting it right'? (Research Journal Entry)</p>	<p>Pre-service primary maths students said of themselves that they were confident in maths & will have a go when...</p> <p>I know the subject very well; I know I'm right; When I'm 99% sure If I have some basic understanding I've done something similar Someone else got it wrong first No-one else will see the consequences I've got time to try things out; If I can have a go on my own; if no one is watching if I get it wrong; If the group will laugh with me not at me</p>
<p><i>I'll speak out ...</i></p> <p>I'll voice my ideas if I'm sure I'm right.</p> <ul style="list-style-type: none"> ● I'm confident at having a go at an area of maths if I know the topic really well. ● I'll have a go in a group if there is time to work alone and reflect on the problem. That way I have time to correct any mistake that I might make 	

A teacher's comment: The first part of the lesson we start with a mental warm up to try to get children's confidence up, that they know the answer encourage them to have a go at the answer, even if it's wrong it doesn't matter."
A few children don't put their hands up. They try to hide but that's the idea, there is no hiding place. You encourage them all as long as you give them quality feedback even if they get it wrong they are not scared to give an answer. NNP/HMP 1988 Video transcript

<p>...</p> <p>They're having a go, they're risking things and you don't gain anything unless you have a few risks.</p> <p>(Teacher comment from NNP/HMP 1998)</p>	 <p>Confidence: con- completeness, fidere- to trust</p> <ul style="list-style-type: none"> • noun 1. the belief that one can have faith in or rely on someone or something. 2. self-assurance arising from an appreciation of one's abilities. 3. the telling of private matters or secrets with mutual trust. (Oxford Dictionary) • noun 2. the quality or state of being certain (Merriam-Webster 2003 online dictionary) <p>Confidence trick noun. an act of cheating someone by gaining their trust. (Oxford Dictionary)</p>
<p>Classroom scene: a 'times table' challenge. The audience of children and teacher survey a child sitting on a chair alone at the front of the classroom. The teacher asks the other children to support him 'be thinking the answers for him'. 'Give him a big clap, It wasn't easy in front of all these people, good boy!' NNP 1998</p>	

WHAT IS GENERATED

Through holding up of these fragments in relation to each other points two recurring themes emerge in relation to this discussion. These are FAST, PACEY AND NO SWEAT and RISKING GETTING IT WRONG.

The learners' experiences highlight that contributing to a classroom or whole group session is to open yourself up to be judged by peers and by teachers. The discourse practice works to produce valid contributions that are fast and slick, that appear to be made with ease. They advise you to only contribute when you are sure and you understand. You will find that there no time to work on ideas, to clarify and evaluate. There is some contradiction here between the student teachers' description of the conditions where they feel confident to contribute, and their descriptions of the acts of their peers and of children to whom they attribute confidence. An important question for my research is how this contradiction arises. Only one student said that it was possible to be confident and not want to contribute.

Further to this I return to 'subjectivity' to consider how and why these students erase this contradiction from their descriptions.

We have not only illustrated the motivational dynamics through which individuals are positioned in discourses, but also opened the possibility that those processes which position us are also those which produce the desires for which we strive". (Henriques et al., 1984 p.205)

In the remainder of my discussion I address how the performative element is able to hold sway in learners' descriptions and give an attempt to illustrate what forms of desires may be produced. It would be equally valid to consider this from within teachers' descriptions and practices. I intend to do that elsewhere.

PARTICIPATION AND PERFORMANCE: THE KEYS?

In this final discussion I indicate new understandings have been created for me and questions generated for further engagement. My examination of the attribution of confidence is a tactic that reveals apparent differences between the inside and outside for both the watching attributer and the experiences of the actor. Feeling confident inside but not performing fluently with the normalising language of the classroom would result in this confidence and associated ability remaining unacknowledged. However using theoretical frames drawing on the workings of the discursive practice and its effects on the subjects/subjectivities (learners, teachers, mathematics as a subject, confident learners) reveals better the instability and contradiction of notions like learners' abilities and confidence.

Here lies a possible confidence trick. When learners inscribe themselves in the particular forms of participation (that is, the performances they perceive as contributing to the construction of a learner as confident) they put their trust in the teacher's assertion that participating and trying is what matters. But there is no guarantee that this process will work out for them, that they will *become* confident. The descriptions of confident learners in my data include those who know how to start a problem, extend their work and who can say why something works. These are more difficult characteristics to replicate. It may be that retaining a limited view of maths as about right or wrong answers permits students to sustain a more complete picture of themselves as learners in relation to maths as a subject. It's easier to trust the maths if it's only requires you to get the right answers.

Similarly in the classroom videos it can be seen that those who are praised and become 'good at maths' are those who rush to put up their hands in response to a question or task. *'Hold up your cards to show me a multiple of 5 bigger than 60'. They stretch their hands as high as they can (Ask ME!)*. What may be perceived is that the correct answer doesn't seem to be the issue. It is how keen you are to respond, and take the risk of getting it wrong.

As a learner I may try to replicate this, to do and to be what the teacher wants. What school mathematics desires. But this is an unpredictable business. I could be asked for my answer and find there is no praise, I've made too much noise with my chair and I am told off for being disruptive. Or my past performances may haunt me, 'Have you looked at someone else? Don't look at someone else's, doing your own checking'. Where my eagerness works,

I may yet find that I haven't understood the question, my answer produces puzzle, the praise is hollow. 'Well done for trying out an answer, but check more carefully next time before putting your hand up' Or I get scared at the last second and hold my cards to the back so they are up but my answer is not visible.

These possible examples can be used to consider whose interests a focus on performative aspects fulfils. It may offer something that learners can at strive to do. For others it may strengthen their self image that they have never been any good at maths. This will allow them to sit back and keep quiet. For others this focus will be an alienating one. In Jo Boaler's work (1997) the learners' desire for understanding, for time to work things out, to enjoy challenges will go unfulfilled. These desires and these learners are marginalised - achieving well enough but really not acting or participating in the right way, so they are not confident learners of maths.

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