

# Developing maths-identities of overseas trained teachers from developing countries: two voices

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## Abstract

This paper reports on teacher-students' developing mathematics-teacher identities as they participated in a mathematics education module which they took as an option as part of their BEd in-service degree. Multiple qualitative methods have been used to gather data on the 14 teacher-students' mathematical development, attitudes and reflections on their professional practice over the course of the year. In this paper, in-depth accounts of two of the students' - (one Caribbean and one African) - developing identities as mathematics teachers are presented using socio-cultural, discursive and defended-subject theoretical frameworks for the analysis. The paper exemplifies discourses producing maths teacher identities while simultaneously defending against interrogation of mathematical and pedagogical practices.

*Keywords:* teacher education; undergraduate mathematics education; social identity

## **Introduction**

This research concerns the developing maths-identities of teachers of mathematics who have mostly come from Caribbean or African countries to work in London and who were enrolled on a mathematics education module as part of their undergraduate BEd course. A shortage of teachers in London, has prompted the practice of teachers being recruited from abroad to fill vacancies, often in challenging schools, [1, 2]. As some of these recruits were trained to certificate rather than degree level they have to study part-time after arriving in the UK: firstly, to get a bachelors degree, and then to gain Qualified Teacher Status (QTS), QTS being necessary for their continued right to UK residency (Teachernet 2007, webref). These 'teacher students' already had some teaching qualifications, usually from their home country, and, as part of the entry requirements, were expected to have had some teaching experience. The range of teaching experience was 15 years to home country teaching practice placement only; some, but not all, were currently teaching in local schools.

This report is based on data from the "School Teachers Reconceptualising Mathematics" research project. This project was sponsored by the English National Centre for Excellence in Teaching Mathematics (NCETM) in order to investigate how this mathematics education module that the teachers were enrolled on impacted on their conception of mathematics as a school subject they were involved in teaching. The mathematics education module has been available for two years. Last academic year (2005-06) there were some notable comments on the students reflective reviews for example:

"I realise that maths is not a set of problems with a definite answer but a way of looking at problems and arriving at satisfactory solutions";

"my active involvement has enabled me to transfer to my classroom the atmosphere I was exposed to that fostered collaboration and interaction with materials and ideas".

This research was set up initially to find out what the maths education module was offering that enabled this espoused change of attitude on both their view of mathematics and of their teaching approaches. However,

after starting the research it was apparent that this was rather a simplistic question, as the analysis presented below confirms. In this paper, the analysis of the qualitative data gathered has used a multiple-lens approach based on theoretical frameworks loosely corresponding to: socio-cultural theory, discourse analysis and a psychoanalytic conception of the defended subject. These were the frameworks, or 'lenses', which were used in a seminar series <sup>[1]</sup> on maths-identities which I was involved with during the data-gathering year 2006-07.

This paper is organised as follows: a perspective on the background of the study is given, followed by some methodological remarks and a brief introduction to the 'lenses' used to interpret data. Then interpretative pen portraits of Grace and of Charles are presented followed by a discussion and themes from other data prior to concluding.

## **Background**

The 'black subject' [3] is at the centre of this research, despite its being ostensibly about overseas trained teachers, and I am not in a position, either by culture, experience or study, to have a special insight into these specific issues of cultural identity. To address this, I have found Stuart Hall's essay 'Cultural Identity and Diaspora' (Hall, *op.cit.*) helpful. He writes there about 'identity' as a production that is "constituted within, not outside, representation" (p222) so how the teacher-students, who are the subjects of the research, see themselves as well as how they are seen, constitute their ever-evolving identities. Hall's notion of 'cultural identity' – with reference to African Caribbean cultural identities particularly - is not "a sort of collective 'one true self' ... underlying all other superficial differences", even though, he observes, this notion did "play a critical role in all the post-colonial struggles". His sense of 'cultural identity' is "a matter of 'becoming' as well as of 'being' ... subject to the 'play' of history, culture and power. ... identities are the names we give to the different ways we are positioned by, and position ourselves within, the different narratives of the past." (ibid. 223-225) And these teacher-students have many stories, of 'love of maths', of being a teacher, of being needed here in London, that are creating and fabricating their maths teacher identities.

Hall writes that "there is always a politics of identity, a politics of position" as cultural identities are made "within the discourses of history and culture" (p226). The subjects of this research are in the centre of a big tussle to do with teacher supply, recruitment, the 'problem of inner city youngsters' (read 'Black youngsters') as well as the depletion of teachers from their home countries. In Jamaica, Britain's teacher shortage has brought a "wholesale teacher recruitment by commercial agencies" (BBC, 2002, webref). Identity issues figure here as Jamaican teachers are attracted to Britain because of historical-colonial traces like school uniform, structures of public examinations and, of course, English as the language of instruction. Another political dimension is the fairly recent tightening of regulations for overseas teachers which demands that these teacher-students must gain QTS within four years of arriving in the UK. In practice, this does not give much time to upgrade qualifications, to settle into a new environment as well as to gain QTS. (Teachernet 2007, webref). The NASUWT-commissioned report [1] found that employing headteachers assumed that teachers who shared an African Caribbean heritage with pupils would "find it easy to manage African Caribbean pupils, which was not the case" (p38). They also reported on the difficulties such teachers had in adjusting to supply teaching and the humiliation they felt when told that they were 'unqualified' despite, in many cases, being considered first-rate in their home country and having even as much as 15 years teaching experience.

Hall discusses the 'presences': of the African, the European and the American New World on the Caribbean identity "[To the] Africa, which is a necessary part of the Caribbean imaginary, we can't literally go home again ... 'Europe' belongs irrevocably to the 'play' of power, to the lines of force and consent, to the role of the *dominant* in Caribbean culture." (p232) and the American presence "stands for the endless ways in which Caribbean people have been destined to 'migrate'; it is the signifier of migration itself - of travelling,

voyaging and returning as fate, as destiny; of the Antillean as the prototype of the modern or post-modern New World nomad, continually moving between centre and periphery.” (p234) In terms of this project, this image of voyaging as destiny is apparent from study by Miller, Mulveney and Ochs, [2] of the Commonwealth teachers’ protocol. They remark that as “the global teaching profession is in a scramble to find teachers ... rich countries, .. including the UK, continue to recruit teachers from poorer, less-developed countries ...[and] some teachers in developing countries have voluntarily and forcibly migrated to industrialised countries” (*op. cit.* : 154). They report that over the period January 2001 to July 2004, 20,610 ‘teacher’ work permits were issued by the UK and high recruitment over this period came from South Africa (6722), Australia (4484), New Zealand (2515), Jamaica (1671) and Canada (1591). (These figures need to be read with caution as there are non-work permit routes available too.) Jamaican representatives raised the matter of their ‘brain drain to the UK’ at the Commonwealth heads of government meeting in 2002 (subsequently The Commonwealth Teacher Recruitment Protocol was agreed in late 2004 that includes further monitoring but no legal authority). Yet as long ago as 1960 Elsa Walters [4] wrote “the demand for trained teachers in the West Indies is as old as the struggle to establish a popular system of education . Hall’s words link the various journeys of teachers to and from the West Indies: “Diaspora identities are those which are constantly producing and reproducing themselves anew, through transformation and difference.” (Hall, *op. Cit.* p235).

### ***Methodology***

During the academic year just past (2006-07), I was course leader for the mathematics education module in question and taught about half of the 20 scheduled classes which were distributed over the academic year, the other classes being taught by colleagues. The teacher-students were introduced to the research at the beginning of the academic year and only methods of collecting data that were considered beneficial to their development on the course were used. For example, towards the end of the course, each of the teacher-student was invited to come for an interview, it was emphasised that this was voluntary, but hopefully would be helpful, not only for the research project of which they were aware, but also for them to write their assignment on their developing reflective practice as they would have the audio-recording of their spoken narrative.

The data-sets that were collected throughout the year included: initial questionnaire on expectations, biographical data and short attitude survey, mathematical tasks with ‘affective’ personal response notes; presentations to the teacher-student class on three ways to teach a topic; short essays reflecting on their professional development and the role of the course, and the individual interviews (for which all of the students did volunteer).

### ***Lenses, data and interpretations***

Each of the ‘shortcut’ terms ‘sociocultural’, ‘discourse’ and ‘defended-subject/psychoanalytic’ are markers for significant intellectual movements from the twentieth century that are still developing. These theories give rise to ways of seeing the world generally, identity specifically and can be applied to maths-identities in mathematics education in particular. Indicative source concepts related to these lenses and relevant to this paper are, respectively, theories of social learning through practices in communities [5], analysis of discourse [6] and theories of the defended subject [7]. As indicated above, my approach to analysing the qualitative data sets has been influenced by my participation in the maths-identities seminar series and my skills in using the analytic tools based on the seminar-series’s three chosen theoretical viewpoints on mathematics and identity have been developed during this year.

I present data in the form of pen portraits of two of the teacher-students called here Grace and Charles. These stories of Grace’s and Charles’s respective developing maths-teacher identities are constructed from their

interviews, their short papers on their reflective practice and other recorded data such as quick response surveys in class. These two have been chosen as their data represents a good range of the issues: Grace is from Jamaica and has been in the UK 2 Years. She is certificate trained for primary school, though had not had a permanent post before she came to the UK. Since arrival in England, she has done a little teaching assistant work in primary schools in London and a little supply teaching in secondary schools. She has the least teaching experience of all the teacher-students. Charles is from Ghana and has been in the UK 4 years. He taught secondary mathematics and science in Ghana from 1988 to 2003 thus giving him 15 years professional experience before he arrived in London which was the most experience of all the teacher-students. Since coming to England he has not been able to secure a teaching post at a school but does teach maths and science as a private tutor.

## Grace

“all discourse is ‘placed’, and the heart has its reasons”

Stuart Hall, *ibid.*, p223

What is Grace like? Cheerful, absent more than most (she missed 4 out of 20 sessions), still in her twenties so younger than most of the class. Her teacherly qualities (of communication skills and interest in others’ perceptions and reasoning) more visible to me than her mathematical ones (of choosing to do mathematics and being accurate/aligned in her mathematical skills and reasoning); she is more confident socially than mathematically. From quick-response data, adjectives she uses about herself are ‘excited’ and ‘pleased’ and that ‘understanding’ maths is important and she wants to improve her understanding.

To get something of a picture of Grace’s developing maths-teacher identity, firstly I present extracts from her interview (a section from the hand-out) and interpret the initial chunk of her interview (which is on maths) with reference to each of the lenses in turn. Then I offer further interpretation (on teaching and on maths teaching) without explicitly mentioning ‘lenses’ unless appropriate.

Starting at the beginning of her interview, after being asked what maths was like for her at school, Grace replies:

G It’s a long time. At secondary school I had to do maths twice. The first time I took it I didn’t pass because I really thought I couldn’t do maths but then I got a different teacher and then I passed. From then I have a love for maths. --> 3 lines --

I *You said you have a love for maths?*

G I still have a love for maths.

I *What do you really like?*

G I don’t know, I think there is something special about doing maths and applying it. And I think most of this is practical and you don’t have to do a lot of reading in the one sense. Yes there’s theory and everything but there’s a practical side to it. I think some subjects, like you get involved; it becomes a part of you like you’re doing it and you’re finding out, whether it’s equations or just doing simple maths or where you have to use reasoning, it’s like you’re getting involved. So it’s this feeling of accomplishment that it gives me.

The focus in this part of the interview was on maths. What sense of Grace’s developing maths-identity come through from this short piece?

Using a ‘socio-cultural’ lens, what comes through to me is her sense of maths being part of the social and material world. At school, passing or not passing, is very much the way of things and people help people to get through. Doing maths is an active enterprise that gives personal satisfaction, does not require so much reading and has social purpose.

From my narrative/language ‘discourse perspective’ Grace tells her story, positioning her attitude as more enduring than her results and presents her notion of embodiment. She moves from the position of ‘couldn’t do

maths' almost as if through the agency of another person. Her use of 'practical' validates maths as an enterprise, yet her 'I don't know' signals lack of desire to be pressed. Her exemplification of aspects of mathematics (e.g. 'equations') indicate what she feels comfortable with. Her spontaneous use of 'love' is remarkable, about which more below.

My understanding of 'defended subject/emotion' draws to my attention Grace's need to put emotion right up front. By using the word 'love', a pinnacle of words, it feels like her worth (as a maths person) cannot be challenged as her feelings for mathematics are intense and positive. Her ostensive positivity thus can be construed as defensive. She also avoids, defends herself against, possible difficulties of 'reading'-based subjects. Her use of 'special' reinforces the position of mathematics, which is then internalised, embodied, made hers through the personalisation of positive feeling and satisfaction. Being hers, she aims to defend herself against the possibilities of future 'not passing'.

Other aspects of Grace's developing maths teacher identity include her beliefs about learning (described in the currently popular 'Visual-Auditory-Kinesthetic' terms), her awareness of listening to learners to aide teaching, her delight in being challenged (e.g. that a 'fraction' can be construed as a number not just as a part of a whole). Yet for Grace, becoming a teacher seems to have happened as a result of a serendipitous experience and comes across as a great shift in her self conception. When asked about what had drawn her to teaching she says:

Wow! At first I never thought I would go into teaching. Ever. Ever. Ever. And then I started doing some voluntary work in a primary school teaching reading. And then I had a love for it because when I realised that I was working with kids and how much they've improved I felt like I've got a lot to contribute to the teaching. That's when my love started developing, that's when I did a lot for teaching, it's just like an inspiring moment I would say.

I was not able to tell whether teaching was too high status to have been on her adolescent career agenda or too staid a profession. Nevertheless, Grace's potential-teacher identity is changed by experience in a classroom and by her perception of the progress of the children she has worked with. The social and emotional context of the classroom has re-positioned her and generated her desire to get qualified. She can see herself in the society of the classroom; it is worthwhile. Interestingly, it seems that Grace feels that love justifies as well as drives her plans. Is it her sense of self that comes from what she loves? This emotion-driven theme is continued, with Grace, despite being 'tired' and having had warnings about 'behaviour', is set on teaching in a secondary school

that's where my heart really is ... I like the maths or science at that level. That's the level I like. And the difference is that you're a maths teacher or science teacher where you're not teaching all these different subjects, like art.

However, her next few sentences on only recently understanding the formula for the area of a triangle as well as other evidence (e.g., "I always thought probability was just one in two chance of doing something. It's like basically yes or no, when you did that probability [now I have a] different perspective on probability.") indicate that she is not (speaking with a teacher trainer's hat on) at 'that [secondary maths] level'. Her confidence is buoyant, her pleasure in her progress towards her espoused goal of understanding admirable, but her mathematical training is not yet enough for 'the level' she says she likes; (why does she say she 'likes' secondary maths?) And this mis-match between her language of interest and her enthusiasm and her available mathematical knowledge, skills and understanding is not within her awareness, for if it were she would surely defend her self against being seen as so unknowledgeable? From the perspective of the English secondary maths teacher training community, Grace's identity as a secondary maths teacher is not yet viable; will she find this out and continue her studies or will a school-teaching opportunity come first?

**Charles**

"getting to the professional touch now"

Charles, from his March 2007 interview.

Charles is modest, helpful and had 100% attendance. Charles seemed to me, at least at the beginning of the course, more confident with his mathematics than he was socially. He had taken A levels in maths and chemistry and a three-year maths (teaching) diploma in Ghana. Over the year, other students got to know that his reserved manner did not mean that he was not always willing to help and he was pleased when fellow students turned to him. From quick-response data, adjectives he uses about himself are ‘excited’, ‘interested’ and ‘pleased’ and that as an important principle for teaching mathematics he wants “to assist students/pupils develop knowledge in solving problems”.

Starting with analysing the first part of his interview, I’ll analyse Charles’s responses from the three perspectives and then draw some other points together concerning his mathematics teacher identity.

I tell me a little bit about what maths was like at school for you when you were a child?

C Yes I had an interest in mathematics. Initially the teacher who started with me was very good and I developed an interest in the subject. So I decided to carry it forward. Basically that’s where my interest lies. And I’ve progressed and found it very well.

I *When you talked about your first teacher, how old were you at that stage?*

C I was 15 years. It’s in the secondary.

I *Yes. So your teacher was (interrupted)*

C Very knowledgeable, yes, very good.

I *So before you were 15 can you remember what it was like, maths?*

C I was doing very well. In fact in all the subjects I was doing well. Mathematics especially I was doing very well. But my interest actually when I decided that I would carry it forward is when I got the teacher and he did very well.

I *Can you tell me about the teacher?*

C I can’t remember his name. Actually he was one of the US Peace Corps who came to the school, she (inaudible)

I *Say that again?*

C A Chinese lady. (sounds like: Shi-e Wu)...taught us the mathematics very, very well and I developed an interest in it. But she told us that mathematics is the basis for all academic work and if you want to study it very well to the highest level then you will need to do very well in mathematics. As you move ahead you come across mathematics in every aspect of your learning. And I took that even further, I also experienced it if you have the mathematics as the basics you can do almost everything at the highest level.

Reading this transcript was quite salutary. I didn’t think of Charles as being other than fluent in English, but this text suggests to me that I did not always pick up on when there had been a linguistic misunderstanding. In terms of his maths-identity, the three perspectives again illuminate different facets:

Starting with a socio-cultural lens, what I pick up on here is Charles’s recognition of the importance of the skill of his remembered teacher. His image of her, is of a ‘Chinese lady’ who came via the US peace corps, suggests this ‘sent’ teacher had a certain international status. From the text, he has a memory of her view of mathematics as both foundational and door opening which he seems to have adopted.

Looking at his narrative and the language, Charles uses the term ‘very well’ repeatedly to refer both to the teacher’s skill and his success. He also uses the term ‘interest’ several times in the interview. The story Charles seems to be telling is that he has chosen mathematics, having ‘decided to carry it forward’ - maths as important baggage for his life-journey – having been oriented to the importance of mathematics by the Peace Corps teacher and that his ‘interest’ and as he’d done ‘very well’ suggest that maths chose him too. In this extract, he positions himself as having ‘progressed’ and thus it is a suitable, if not natural, that he continues with mathematics.

From the defended subject and emotion-orientated point of view, his defence seems to be solidly constructed around the twin virtues of achieving 'very well' and having 'interest'. And with these virtues established, his maths-identity should be undeniable! I am surprised that does he gets the gender of the teacher confused (but I cannot be sure that I have misheard); is this gender slip to do with identification with himself and the subject or just a linguistic slip?

Other aspects of Charles's developing maths teacher identity include his newly taken-on notions of mathematics teaching, his pride in being a student at London University (and his identifying of me as his current teacher), and his "one problem" of not being able to get a classroom teacher's job in London, despite his experience in Ghana.

Like Grace, teaching was not Charles's first choice; he was going to do engineering, following his father. However, the "unfortunate" incident of the theft of school fees (see handout), thwarted his engineering ambitions and he used his less-good-than-required-for-engineering qualifications to get on a three year teaching diploma. And he "decided to stay...[as] teaching is also a very good profession". Charles's tone is almost apologetic and his story of the theft does not occur until half way through the interview. It seems that Charles's maths teacher identity is quite at risk at present - he cannot get a classroom post in London and he has to return to study after many years a professional, so this admission that he did not originally intend to teach is quite uncomfortable. Nevertheless, when asked specifically about mathematics, Charles's reply is completely about his "being with students" and how he "did his best" for them which made them "happy". Even when pushed, Charles does not talk about mathematics, even as Grace had done, though, when asked about effects of the course, he does mention a geometric puzzle that I had presented to the class on the previous week. He gives this as an exemplar of his new views on mathematics teaching which he sums up by saying "[maths teaching is] more than just delivery but trying to give something special to the students". This is what he calls "the professional touch" and he relates it to my practice of offering task-based learning; he says: "I love to come to your class ... [I get] a lot of ideas". He also insists on saying at the end of the interview that he "always dreamt...of getting a qualification from here" [University of London].

The picture so far is that Charles, a dignified, middle-aged professional man is returning to study at an institution he respects. He is rather defensive about his professional journey, and while he is "very happy" to be doing some private tutoring, he would rather be a classroom teacher. With Grace, she is seeking out a potential identity as a maths teacher, but Charles has a maths teacher identity already: so he must defend this aspect of self. Now Grace is naïve enough to expose her lack of mathematical knowledge, what about Charles and mathematics? Information from other data sources show that, relative to the English QTS, Charles has both a lack of mathematical and of pedagogical skill. For example, he writes confidently, but incorrectly, about the area-comparison puzzle, and in his presentation of three ways to teach a topic (his choice was long multiplication) to his peers and teachers, he confuses his methods of multiplication' and 'stands and delivers' rather than offering tasks for the 'students'. His maths-teacher identity is tenuous.

### ***Discussion***

Grace and Charles were students of mine on the mathematics education module, so my investment in them, and theirs in me, will surely impact on my reading of their maths-identities. I found myself surprised when Grace went on about her 'love for maths', as I had seen her in class as someone who seemed to avoid mathematical talk and other activity and whose 'mathematical performances' (class presentation, problem solving done in class, written mathematics) were not rich, deep or accurate. So what is Grace doing when she expounds with such enthusiasm? Is she trying to create an identity through talking herself up or is trying to impress her maths-teacher identity on me? Charles has a life history that includes identification with teaching mathematics yet his practices did not change sufficiently within the period of the course to come within my conception of a potential mathematics teacher. In his interview Charles was aligning himself with the

practices I had been offering, but either had not developed the skills to make them his own or did not actually desire to adopt them; (as I don't think Charles was other than a very straightforward person, a lack of desire to adopt these practices would have to be operating at a subconscious level, as well they might).

Themes or issues from analysing the data from the whole class of teacher-students also relate to the identities as teacher of mathematics. So, there was general talk and writing about shifting from didactic teaching to presenting mathematics in different ways. However, at their presentations, which was, to be sure, only half way through the course, only three out of the 14 gave task-based ways of teaching a topic. The notion of 'Assessment for learning' has been introduced on more than one of their BEd courses and this was mentioned by the majority as being influential on their practice. The teacher-students as a class were quick to pick up on and use language that expressed their feelings about mathematics learning. Quick written responses after mathematical tasks had been worked on were rich with expressions of feeling: elation, surprise, fear and depression. They also, like the teachers Bibby [8] worked with, expressed shame, e.g. "what if I was the only one who couldn't do it". Another theme was professionalism as mathematics teachers and settling in to working in London/English schools where the issues of pupil behaviour were ever-present.

### **Concluding**

This research shows some of the some tensions overseas trained teachers experience and the ways they adapt by adopting positive discourses that defend their mathematics teacher identities. Specifically, they have a need to position themselves as mathematics teachers because they have found, or think they might be able to find, employment in teaching mathematics, yet their relationship with mathematics is fragile as their mathematical knowledge base and mathematics-related pedagogical skills are limited; Their experience of mathematics pedagogy comes from their home country and is not the same as that expected in London schools; to protect their fragility, a defensive positivity is espoused.

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<sup>[1]</sup> I am referring to the UK Economic and Social Science Research Council (ESRC)-funded seminar series: Mathematical Relationships Identities and Participation.