Changes to adult learners' identities through learning numeracy

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Introduction

This paper reports findings from one of a series of research projects that has begun to emerge from the National Research and Development Centre for Adult Literacy and Numeracy (NRDC), which was established in 2002 [1]. The project is called 'Making numeracy teaching meaningful to adult learners', and it places learners at the heart of the research (Swain et al, 2005). One of the main research questions explored the ways in which numeracy has the potential to transform students' identities, and the main part of the paper reports the findings from this inquiry.

It has become increasingly recognised in the fields of sociology and education that issues of identity are an integral aspect of, and have a profound influence on, learning (Wenger, 1998). This is because people's beliefs about self operate to select, refine and organise their perceptions of the world around them and influence their construction of meaning. As far as mathematics is concerned, it is fundamental to learners' beliefs about themselves as learners and as potential mathematicians. Rogers (2003) argues that teaching comprises of a series of relationships between various identities, and as adults' identities affect their relationship to the teacher, and also how they learn, we need to find out who the learners are, and explore the ways learning changes them.

Background and methodology

The project began in December 2002 and was based in three colleges of Further Education in different areas in England. Fundamental to the project were three teacher-researchers (TRs) [2] who were based in each of the three colleges, and who were released to work on the project for approximately one day each week. Although the greater part of the fieldwork and analysis was carried out by myself, as the lead researcher, the TRs were also involved in the process of the fieldwork (including observing and interviewing some of their own students), analysis of the data and early dissemination of its emergent findings. They also gave an 'insiders' perspective of the college where they were the experts and the academics the strangers (see Lytle, 1997), and provided precious information on their college's ethos and managerial structure, specific background information on each student and comprehensive weekly session notes.

The project investigated 80 adult numeracy students who were working between Entry Level 1 to Level 2 (equivalent to the top three grades at General Certificate of Secondary Education [GCSE] normally taken by school students at the age of 16), although the majority were working at Entry Level 3, which corresponds to the standards expected of an average 11-year-old. The students were based in four classes, three of which were day classes and one an evening class. The average age of the students was 38 and the gender balance was 64% female and 36% male. While the

students were almost exclusively White British in Gloscat, they was more of a mixture (mainly between White British and Asian) in Slough, while nearly three-quarters of the students in Hackney were Black Afro-Caribbean (Table 1 below shows a more detailed profile of the student cohort.)

Table 1 goes about here

The two principal methods of data collection were semi-participant observation within the classroom and loosely structured interviews, but data were also collected through TR session notes, student diaries documenting feelings towards numeracy (including its teaching), and photographs taken with disposable cameras showing contexts involving numeracy. Despite this rich data, lack of space means that this paper only has room to present analysis of interview data, although some of the conclusions are also validated through the classroom observations. In total the research team interviewed 70 learners, with some being interviewed up to 3 times. Interviews were usually with individuals and lasted between 15 minutes to almost an hour (the

majority being about 40 minutes), and the interviewers saw their role as facilitators to establish a free flowing discussion in order to collect a wide range of opinions. They were semi-structured with a choice of routes, but researchers also used directed questions to check out evolving theories or based on observations of events that had occurred in class. Although some learners are also studying literacy and ICT, the questions were asked of learners during their numeracy classes and were specifically directed towards the teaching and learning of numeracy. During the analysis, I began to develop separate narratives for each of the learners that enabled me to look at the identity work that was going on within the interview.

Theories of identity

Identity is not viewed as an unalterable, innate and unitary quality that people possess; nor is identity seen as some core part of our personality that pre-exists us; nor is it something that people somehow acquire at some point at a certain age. The position taken in this paper is that identity is multiple and therefore identities are socially constructed, negotiated and performed; they are unstable and shifting; they are frequently contradictory; and different identities can be, and often are, adopted at different times in different social contexts. In other words, identity should be read 'as a verb rather than a noun, something that we do, and are done by, rather that something we are' (Mendick, 2005a:205).

Holland et al. (1998) write that identities do not just come into being without a great

deal of work from the person involved; they also emphasise people's biographical past, and they refer to identities always forming as 'history-in-person', which gives their identities a foundation and durability to improvise and develop. A key point also to make is that identities are unfinished and in process; as Hall (1992) says, identity belongs as much to the future as to the past for it is a matter of 'becoming' as much as 'being'.

Following this the study also draws on work by Bloomer and Hodkinson (2000) and Crossan et al. (2003) who have developed a metaphor of 'a learning career' which they use as an aspect of identity formation, and the development of dispositions to learning, mediated between institutional structures and everyday life. All the students in the study have individual trajectories, yet the study sees learning careers as being frequently complex, maybe multi-directional, and often vulnerable. Like Crossan et al., the study argues that, while learning and participation may be linked to changes in students' identities, this is likely to be contingent on local settings, and these may well be fragile and speculative; and they may not lead to any new, stable and coherent set of orientations to learning. Moreover, rather than seeing learning careers as being a linear progression which only goes forward, they can also go into reverse, and that this may happen more than once.

In order to understand more fully how people develop their dispositions towards learning in general, and mathematics in particular, the study also draws on Bourdieu's concepts of habitus (Bourdieu, 1979). Borudieu argues that as people's experiences

become more consolidated and reinforced, the habitus becomes more durable and internalised, and they habitualise the way they think and behave. It thus becomes a normalised part of their life and, progressively, an accepted and legitimised way of interacting with others. The habitus acts unconsciously to organise people's social experiences, and encourages them to think and behave in certain ways. In relation to this study, individuals, over time, may come to believe that they are no good at mathematics, and these feelings are subconsciously internalised and reinforced until they become their accepted way of being and are expressed through interactions with others. It is also likely that if nearly all their friends and family left school at 16 and went to work rather than pursue higher qualifications, this will shape their own experiences and set parameters for their own aspirations. However, this is not to say that individuals have no agency and that their lives are largely determined. Indeed, as we shall see below where the paper presents its findings, some adults do appear to change their attitudes and dispositions towards mathematics, although the design of the research makes it impossible to say how durable or fragile these are, or how long they are likely to last. We shall also see that some students begin to alter their aspirations as their sense of achievement and level of self-esteem grows.

In FE Colleges, adults also construct themselves as students. This is not to say that they abandon other identities – a mother is still a mother, but the identity of student may be foregrounded in a particular context such as the classroom. Indeed, according to Rogers (2003), a significant factor in what often determines the effectiveness of a teaching programme, is how the learner positions him/herself as 'student' in relation

to the subject matter and to the teacher, and the corresponding positioning of the teacher in relation to the learner and the subject matter.

Structure and agency

The students in the study are viewed as active, 'skilled and knowledgeable agents' (Giddens, 1984), capable of articulating their experiences and perceptions and acting with intent; they are not simply the passive subjects, or 'cultural dupes' of external structural forces. However, the study is also aware that people are still living within a context of wider structural relations such as social class, gender, ethnicity, nationality, sexuality, dis/ability and age, and are also influenced by cultural differences of family, school, peer group and media. Individuals, therefore, only act so far as their structural position and cultural influences allow them to. There are also structures which have the potential to act as constraints and create barriers to learning, and researchers came across many of these in the study. These include lack of power and deficiency of economic and socio-cultural resources such as money, educational qualifications, and personal networks, or in Bourdieuian terms, the students have low economic, social and cultural capital (Bourdieu, 1986). The adults in this study were provided with a different series of options and opportunities, and these have a profound influence on their dispositions to learning.

Findings and discussion

Almost three-quarters of the students in the study felt that they have changed as a person in some way through learning maths. The changes took different forms, but the most widely reported way was the increase in confidence which is the most commonly reported effect from similar relevant research (Schuller et al., 2002, Ward and Edwards, 2002). Indeed, it is one of the most fundamental and widespread dividends from learning, and has a series of wider benefits at both an individual and community level. This is likely to have a significant impact on learners' levels of attainment, their attitudes to learning, aspirations and their general social interactions.

Alison: [Learning] gives you confidence, because, you know, without confidence you don't do any good to yourself, you see. Because to come to college, it makes you feel so proud of yourself, because you know when you hear other people say things and you think - yes, I have this chance, to do something better. […] It's just like a power come to you.

There are also perceptions of greater independence and autonomy, and the development of cultural capital, which can be explained as the knowledge, skills and qualifications acquired as a consequence of organised learning (Bourdieu, 1986; Schuller et al., 2002).

One of the study's hypotheses is that other specific changes are likely to occur when

students learn mathematics/numeracy which they find meaningful; that is when it is more of a participatory process, rather than taught largely as a process of acquisition and mastery of procedural rules (Lawy et al., 2004). When it is taught for understanding using real-world contexts, and learners begin to see underlying patterns and relationships, they are become empowered and able to participate more fully in the world – to be included rather than excluded. This is shown by a piece of data from Jane, who was studying at Level 2.

Jane: You start looking for patterns everywhere. I didn't know patterns existed before. I mean patterns were something you do in art. And I was crap at that as well […] You know, we've got the elections at the moment, the GLA [4] the mayor, all that stuff, I used to just read the commentary and leave the maths to someone else. Now I say, How many people were in that constituency, what was the percentage of the turn out? Suddenly I'm using a different level of it, it just opens up a whole new world. It just makes you much more involved. Rather than relying on someone else to provide, to interpret the facts. So you might have an opinion, but you haven't taken any part in compiling the facts, so you're not in control of anything you're just a swallower of other people's facts. It makes you a victim

For other people, learning also gives them a sense of purpose, participation and belonging to a community As Wenger (1998) argues, a genuine learning community must incorporate individuals' pasts and futures in order to give them the chance to

fully participate and develop. Attending the classes on a regular weekly basis, and engaging in learning, enriches their lives and provides a setting where they can develop friendships in a secure environment. For Evan, the thought of the course stopping was obviously traumatic:

Jon: Yeah. OK. Since you've been back to the... you know, come back to learning really, in this institution, do you think you've developed at all as a person?

Evan: Yeah, I do.

Jon: In what way?

Evan: More confidence […] I call it a bonus.

Jon: Right.

Evan: An absolute bonus. Being in a college environment.

Jon: Yeah.

Evan: And I love it. I really, really, like it.

Jon: Yes. So it's really kind of, in a way, transformed your life.

Evan: It has, yes.

Jon: What would happen if there wasn't this opportunity to come and learn maths? What do you think you'd be doing? Say they didn't run these courses? [...] How would that affect you?

Evan: I would be really quite, well, devastated basically. It would take away all my connections with friends that I've made. It would make my life a lot more boring.

Although Evan was also referring to his literacy, as well as his numeracy class, for others it is the studying of numeracy/mathematics in particular that has changed their outlook and actual choice of career path. Perhaps in a more profound way, it can affect the way they think, view things and see themselves. These themes can be seen in another interview conducted with Jane:

Jane: Its made me see myself very differently, it's made me see my potential very differently, it's made me see my having a potential […] I've always just assumed that these are my limits and that's it, there's no … that's what those maths lessons have done; they've changed the whole ball game really of the rest of my life. And at the same time that I've completely changed my career, I've completely changed my view of myself in terms of what I can learn.

So, although people may be constrained by their habitus (Bourdieu, 1979), to varying degrees, it is also important to remember that identities are unfinished and in process (Holland et al., 1998), and can therefore change and develop. Although human agency may be fragile, particularly for those with little power, the students in this study were still able to make decisions that had the potential, at least, to be able to re-direct their lives.

Identity is fashioned through biography, and the self, as Rowan Williams wrote, is

what the past is doing now (cited in Pollard and Filer, 1996:306). However, this next extract illustrates that dispositions towards learning that people incorporate into their habitus and demonstrate in the school context are not necessarily enduring. People's orientations and perceptions are affected by their peer group and can change when they are with another group of people at a different time or in a different setting. Some also recognise that their lives can be divided up into different stages; they may mature emotionally at different rates and are not ready, or motivated to learn, at particular points in their lives. Wesley was studying numeracy to help him with a physical fitness course that he was hoping to enrol on, and his newly found habit of staying in and working on his maths is clearly influenced by this motivation.

Jon: Tell me about your life at school. What sort of pupil were you at school?

Wesley: Erm, a little bit disruptive I guess, not really very interested in the school work, more sort of interested in the social side of it rather than the education

Jon: So why was that particularly, do you think? Was there a reason for that?

Wesley: Some people are just ready to learn at different stages

Jon: Absolutely. So you just didn't think you were kind of ready for it/

Wesley: Just wasn't ready, mature enough

Jon: […] Since coming to the [numeracy] class do you think you're changing at all as a person? Maybe it's too early to say but/

Wesley: Well yeah because I'll stay in and work on my maths as opposed to going out so that's different

Jon: You have in a way changed because now you've got that attitude of working

Wesley: Yeah

Jon: What brought that about then? Why have you changed from the person you

       were at school to what you are now?

Wesley: […] I think I just basically changed what I thought was cool. Now

       what I think is cool, or what I'm impressed by is different to what I

       was impressed by when I was younger.

Identity exists through the constant work of negotiating the self, and as well as a past, identity formation also incorporates a future. It is an ongoing, life-long process and students must be given the chance to explore who they are, who they are not, and who they could be. They must be able to understand where they have come from and where they can go (Wenger, 1998: 272). This next quotation suggests that Danielle is aware that she is engaged in a process of renewing herself. She has now reached the stage where she is no longer satisfied with the frivolous, superficial, side of her life. The world of learning seems to have opened new horizons and she has identifications with the more academic/intellectual, which she equates with the real world; in some ways, she can be said to be entering a new frame of understanding, or what Holland et al. (1998) call a 'figured world'. She has four young children, and although a major part of her identity is still that of a mother, she also has aspirations to change into becoming someone beyond motherhood.

Danielle: Everyone needs something to change. They know they can't stay in the

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same situation, especially mums. You can't stay in the same situation until what, the children go to university or college, or when they finish when they're 16, you can't just be the mum at home, you have to do something for yourself.

Jon: […] So what's gone, what's happened now then to make you really keen on maths?

Danielle: What's happened now is that the classical side of who I am, such as the hairdressing or the cosmetic beauty, I could make a wig, you know, pedicuring, manicuring, those sort of things are like, as far as I'm concerned right now, they are like beautification, they're not in the real world, do you get me?

Jon: I do

Danielle: It's not real world stuff. Real world stuff to me is like academic, you know, you need your maths, you need your English, you need papers to prove you are educated nowadays and to be educated to converse with people, I find, is very important. I find women are just about, can add up nowadays, I find a lot of my friends are not thinking of talking intellectually, they just talk very slangly, they don't want to improve themselves. There's nothing wrong with just being a mum, I love being a mum but at the same time something for myself or self worth now.

For some adults, the identity of being a student was an important one, and as Rogers (2003) writes, how the adult positions him/herself in the teacher-student relationship

will have a fundamental effect on their learning. Although some people told us that they considered themselves to be just studying or just coming to classes, others said they were very proud to be called a student, that is someone who is fulfilling an apprenticeship role and who has the desire and capacity to learn. Part of identity formation comes from people telling each other who they are claiming to be:

Elizabeth: Would you describe yourself to other people as a student? You don't mind telling people that you are studying?

Alison: No, I feel very proud. Very proud. If somebody sees me with a bag and they go - what is that for? I say my books. And they look at me and say - you go to college? And I say - yes, what's wrong with that? And they say - oh you must be very clever.

For others, being a student gives them the chance of becoming a successful student. The resulting qualifications and certificates are a visible demonstration of their ability, and this can change the way they see themselves. Being a successful *numeracy* student also gives learners a particular kind of confidence which is linked to feelings of personal status, for many see mathematics as a signifier of intelligence (Mendick, 2005b). Several learners in the study felt that they were able to succeed in a difficult subject that they had previously failed in, and that they could gain access to, and enter, the 'mathematicians' club' (Swain et al 2005).

For symbolic interactionists (Blumer, 1969, Plummer, 1991), the image people have

of themselves is influenced by the reactions of individuals they come into contact with in their everyday lives. So, a person's self-image is a product of the way they think others see and think of them – in effect, I am what I think you think I am. Crucially, this may become incorporated into their habitus. We can see this in the exchange below with Clare and her friend Monica:

Clare: I had one really good moment with the Social. We have to have meetings

every now and again, with what we are doing, if we've found jobs,

or looking, and all this lot. And I said to her – I'm in college […]

and so she's gone to me - oh what are you doing now? And you

could see her thinking - you haven't bothered again. And I said - I

have passed some exams. And she goes - yeah? I said – I've

brought my certificates down. Would you like to have a look at

them? So I've laid them on the desk, I think there's about six of

them now. And her face dropped a mile. You could see her

thinking - oh, she has done something. You could see it. And after

that the whole conversation changed. As if to say - oh yeah, she is

doing something.

Jon: Just because you've got a piece of paper. You are exactly the same person.

Clare: Yeah, but it was the certificates that actually proved it and her whole

image and attitude changed towards me.

Monica: But then your attitude changes towards people as well, because as

you educate yourself, or do something that builds confidence, you

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now don't allow anybody to treat you with disrespect. I mean, beforehand, because you think you are not good enough you would let somebody talk down to you. Now I would say - excuse me, what do you mean by that? Rather than walk away and feel hurt by whatever they said. And I think that is the difference.

Clare: If somebody says we are stupid, or dumb, like our friends, I say - no we are not, we've got certificates to prove it.

In the next and final exchange, we can see how learning can cause friction in relationships as one partner's identity changes.

Jon: Last year when we were talking about this, you said that learning maths has made you feel more independent from your husband in a way

Rija: Yeah it has

Jon: Because you always had to ask him before?/

Rija: I did

Jon: And now you can do things on your own

Rija: He always thought he was better at, he was so good at maths but I find that I'm even better than him now

Jon: […] But now you're actually better than him really, more confident, does that cause friction?

Rija: If it was his way I wouldn't even be here today and I wouldn't be coming and he's not even no longer living at home, in our family home

Jon: Oh I see, but not over the maths learning?

Rija: It's not over maths itself, it's just with me becoming more and more

        independent because I'm learning more, I'm educating myself and I'm

        seeing there's a world out there

Jon: So is it about power and control and he hasn't got so much?

Rija: He's watched me over the last couple of years from being just a mother and a

        wife to becoming a woman, I could say. I was always a woman but I

        wouldn't notice probably and now I'm becoming much more

        independent and eventually want to go in to work. I don't want to be

        sitting at home forever just because he was working and I should stay

        that way and I should be at home, I want to be doing something with

        my life and I feel the only way I can do that, the best way, was to come

        back and get some education, get some qualifications and maths is a

        big part of that because I, actually, eventually, as much as I hate maths,

        want to go into banking or something and I just feel that's what my

        aim is and I'm going to try and get there. […]. I feel like I've really

        moved forward and I've just done something with my life and I can

        give myself credit for that actually. I feel that if I can do something,

        you know it makes me feel like a person, you don't feel alienated

        anymore. I felt like that. When I came back it was a big world for me

        when I got back out, it's like I'd been in prison maybe all these years, I

        don't know where I've been, but I got here, I've made friends, I've met

        new people, I actually enjoyed maths for the first time in my life last

year.

We can see that the balance of power relations between Rija and her husband is changing as a result of learning, and it has enabled her to at least begin to escape from his patriarchal dominance. She no longer has to go to her husband and ask help with problems involving mathematics, such as, for example, working out the family budget or paying a bill, and this has created tensions. She has changed from her more subordinated identity of being a wife (in this particular instance) to becoming a woman who feels she is more in charge of her own life. Although we can see Rija as a skilled and knowledgeable agent, able to act with intent, she is nevertheless acting within historically specific bounds of the unacknowledged conditions and unintended consequences of these acts (Giddens, 1982:222), and she is still constrained by structures of gender, class, (and possibly her ethnicity). Nevertheless, Rija's perception is that she is making some kind of progress, or at least that her life is changing for the better: she feels more independent, more autonomous and more in control, and considers herself able to make decisions and do things for herself. She has come to college to study numeracy (and also literacy and ICT) and she is making friends and connections. Her aspirations appear to have risen, and she has the chance to gain a qualification that may increase her options and opportunities, and possibly lead to getting a relatively well paid job in banking, although this is far from certain. She says that studying makes her feel like a person, a proper person like everyone else, the norm. In the past she has felt alienated, excluded and trapped, like she had been in prison but has now been liberated. Her feelings towards mathematics are

equivocal. Despite the fact that she says she hates maths, she ends up by saying that last year she actually enjoyed it, and later on in the interview she says this is because she has been able to understand it. Many of these changes in her life make her feel good about herself and give her a higher level of self-esteem.

I maintain that this extract exemplifies the positive benefits of learning that the research found time and time again.

Conclusions

Sockett writes that

> 'Education is, at least, the endeavour to get people to do things they could not previously do, to understand things they did not previously understand, and perhaps, to become the people they did not expect to become' (Sockett, 1988:195).

This statement expresses a basis premise that education has the potential to provide increased options and opportunities, and it can make a real difference to people's lives and bring about lasting change. Indeed, Wenger (1998) posits that education actually transforms identities. However, although people's identities and/or their identifications probably will change through education, the design of this study (non-longitudinal) means that it is unable to say that these changes or transformations will

have the same effect on every person, nor that these changes/transformations will be permanent or durable, nor that they will always be profound in the sense that they will cause a person to act and see the world in a different way. In regard to the project's own area of interest, learning numeracy, the research is unable to say whether it has any greater effect than learning other subjects or pastimes. It is also the case that the many of the people in the study see themselves as competent individuals without mathematics, and not all of them have come to regard mathematics as being relevant or necessary to their life project.

Having said this, the research took place in classes where the main focus was the teaching and learning of numeracy, and researchers can provide examples where the learning of numeracy is part of a learning career and has enabled individuals to have agency to change their personal or professional lives. Conversely, there are also cases where a lack of numeracy qualification has limited and/or prevented a person's ability to get on course or secure a particular job. The data also shows that, in some cases, students are viewing, and understanding, the world in a different way, and their identities - how they view themselves, who they think they are, and who they wish to become - have changed. This is what Barlett and Holland (2002) refer to a 'modifying habitus'. Although this paper draws on personal testimonies from interview data, these changes were also corroborated from the researchers' observations made in learners' practices and relations within the class over the research period. The paper also argues that when learners begin to understand and achieve in certain areas of mathematics they gain a particular (and possibly more enduring) confidence from

feelings of joining an elite club associated with a high status subject. If we ask what provides the engine for this change, the answer seems to be inextricably connected to the student's own motivation(s), although the sense of what they can do, ought to do, and want to be seen to be doing, is of course an integral part of their identity as learners. However, it is also important to remind ourselves that agency and scope for change always occur within surrounding structures, and that these can both enable and constrain action (Giddens, 1982).

* 5,324 words

Notes

[1] NRDC reports, including the report (Swain et al, 2005) on which this article is based, are available on the NRDC website and a database of sources, with annotations, http://www.nrdc.org.uk.

[2] The three teacher-researchers involved were: Elizabeth Baker, East Berkshire College, Slough; Deborah Holder, Gloucester College of Arts and Technology (Gloscat); Barbara Newmarch, The Community College, Shoreditch (Hackney), London. Diana Coben was the principal investigator of the original project.

[3] In the interest of confidentiality it is common practice in research reports to anonymise names of institutions and people. While all students have been given pseudonyms, the names of the colleges are real; this is because the contact details of

the three teacher-researchers are given at the front of the report which links them to the institutions. The study has been given permission by the Principals of the three colleges to use the actual names.

[4] GLA stands for 'Greater London Authority', an elected body headed by the Mayor of London

Key to transcripts

[text]   Background information;

[…]   extracts edited out of transcript for sake of clarity;

/   moment when interruption begins;

...   pause.

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Name of College [4]	Time of class	General Level that students are working at	Average number of students attending classes each week	Age range; average age of students	Gender balance	Majority ethnic mix
Gloscat	Day	Entry Level 1 & 2	5	18-52 38 years old	48% M 52% F	95% White British
Gloscat	Day	Level 1	10	17-65 43 years old	22% M 78% F	95% White British
Slough	Day	Entry Level 3 – Level 1	8	17-64 32 years old	20% M 80% F	45% White British; 20% Asian; 15% Black African
Hackney	Evening	Level 1 – Level 2	12	17-47 35 years old	38% M 62% F	72% Black Afro-Caribbean

Total sample: 80 students

Table 1: Characteristics of students at the three sites