

## **Improving the literacy and numeracy of young offenders**

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### **Introduction**

Young people in the criminal justice system tend to have lower than average attainment in literacy and numeracy, a finding consistently reported internationally (Andrews, 1995; Farrington, 1996; Hawkins et al, 2000; Rutter, Giller and Hagell, 1998). Recent surveys in the UK find that in the custodial setting, 51% of young offenders were below Level 1 in literacy and 52% in numeracy (ECOTEC 2001). For young offenders supervised in the community, 57% were below Level 1 in literacy and 63% in numeracy (Hurry, Brazier and Moriarty, 2005). Longitudinal studies have documented the negative pathways associated with weak basic skills. In particular, it makes it more difficult to find consistent employment and heightens the chances of becoming socially marginalized (Parsons and Bynner, 1999; Bynner, 2004). Such marginalization is likely to be a decisive factor in whether or not these young people desist from crime in adulthood. Sampson and Laub (1993) on the importance of social bonds wrote “the stronger the adult ties to work and family, the less crime and deviance among [former] delinquents”. On the basis of longitudinal data, Schoon (2003) emphasizes the importance of the transitional period around the age of 16 when important decisions about future careers are made.

This line of evidence suggests that improving the literacy and numeracy skills of young people in the criminal justice system will improve their chances of employment and reduce their chances of re-offending in adulthood. Indeed, based on this kind of information, education/training is identified as one of the promising approaches to reducing re-offending (Lipsey, 1995; McGuire, 1995; Sherman, et al, 1997). In the UK this has been rigorously translated into policy, with a requirement that ‘at least 90% of young offenders are in suitable full time education, training and employment’ (OLAS, 2004, p.7). There has always been an intention that young people are gainfully employed, but this is difficult to achieve. Also, the prioritisation of basic skills in the UK following the Moser Report (DfES, 1999) has influenced education and training within the youth justice system. There is a particular commitment to improving literacy and numeracy standards with an expectation that young people will improve by one skill level or more within six months (OLAS, 2004, p.7). Policy initiatives have been given teeth, with funding for education providers contingent on student learning gains. As the research discussed in this chapter began, the Youth Justice Board had just developed a new basic skills strategy, PLUS, specifically to address the literacy and numeracy, which included learning and enrichment materials for students and professional support for teachers (YJB, 2004).

Logical though all this is, some issues remain untested. The associations observed between educational attainment, qualifications and offending cannot be interpreted as cast-iron evidence that improving educational attainment will reduce offending, that is that low educational attainment is a cause of offending. There are a range of plausible alternative explanations for such an association. Most troublesome in this area is that a young person has underlying difficulties, either social or individual, which lead to doing badly at school, to offending and to being unemployed. Longitudinal studies are helpful here because they can show whether or not problems with educational attainment may predate psychological problems, offending and difficulties with employment. They can also control for 'confounding' variables, such as socio-economic status and parenting. However, where there is a complex web of relationships, it is difficult to predict the effect of intervention and those 'confounding' variables may have consequences for the type of intervention that might work. In the end, the only way to be sure is to try it out.

To pursue the implications of existing longitudinal data an experimental design is helpful in answering to key questions:

1. Can educational interventions improve the literacy and numeracy skills of young people in the criminal justice system?
2. Do improvements in literacy and numeracy lead to higher employment and lower rates of offending?

Here we address the first of these questions. Educational intervention studies targeting young offenders are rare and there is a shortage of evidence both, on the best methods of improving the literacy and numeracy of young people, previously hard to engage in mainstream education and, on the impact of such intervention on recidivism (Hayward, Stephenson and Blyth, 2004; Stephenson, 2007). Because of our focus on literacy and numeracy skills, and in line with UK initiatives described above, we seek to test the impact of either increasing discrete provision or improving the quality of that provision. The curriculum for the discrete provision of literacy and numeracy within this context is substantially defined by the Adult Literacy and Numeracy Core Curricula (DfES, 2001), and offers a fairly conventional coverage of skills. There is a debate about the desirability of such a discrete focus with young people who tend to have negative attitudes towards schooling. Alternative provision of vocational training or employment addresses a range of skills, but in terms of literacy and numeracy, learning is embedded within the tasks of the workplace. However, literacy and numeracy are almost invariably addressed implicitly and we hypothesise that such an implicit focus will produce smaller learning gains than a more explicit approach. There remains the threat to the effectiveness of discrete provision that it will be rejected by students, or that they will be turned off and fail to attend. It is therefore necessary not only to measure literacy and numeracy gains but to speak to students about their opinions on education and training and to observe classroom dynamics.

## **Methods**

### Research Design

An experimental design with pre- and post-test is a powerful way to assess the effectiveness of discrete basic skills provision on literacy and numeracy skills. However, there are a number of barriers to implementing such a design with young people within the criminal justice system. Random assignment to learning condition typically presents difficulties. In community settings, their histories of non-engagement with academic programs may make sustained teaching difficult to deliver. In custodial settings it is difficult to experimentally manipulate provision. All those under 18 receive a full-time, mandatory program of education and training, therefore comparisons would involve either, a) comparing quality of provision or, b) comparing under 18s with over 18s not in education or training. In both settings attrition is likely to be an issue due to high rates of drop-out and mobility.

The design adopted therefore needed to be flexible enough to enable a number of different types of comparison. The research was conducted in four sites, two in the community (each site comprising a number of projects) and two in custody. In each of the four research sites, samples were divided into 'treatment' and 'control' groups as follows:

- Community site, South Wales (Com SW - all offenders). Learners were divided by project into those projects offering vocational training but little or no discrete basic skills provision (n=6 projects – the control group) and those offering discrete basic skills as part of the education/training package (n=6 projects – the treatment group).
- Community site, London (Com L - disaffected youth, some offenders). All students were on a pre-employment scheme in one of two projects. The scheme included both vocational training and discrete basic skills classes. Students were divided into two groups; 1) pre- and 2) post- staff training in embedded basic skills provision. Group 1 was the control group, Group 2 the treatment group.
- Custodial site, North England (Cust NE) was divided into two groups, one receiving compulsory education (judged good by inspectors – the treatment group), the other, marginally older, receiving no education (the control group). Education in all custodial contexts in England has a substantial formal element covering literacy and numeracy and using the PLUS and the Adult Core Curricula.
- Custodial site, Central England (Cust CE). All students were in education or training. They were divided into two groups, those; 1) pre- and 2) post- basic skills staff training and re-organisation. Group 1, the pre-training group, were either offered education or vocational training and the education provision was judged in need of improvement by inspectors. Group 2, the post-training group all attended education (four participants worked on Industrial Cleaning full-time and were therefore re-assigned to Group 1). Group 1 was the control group, Group 2 the treatment group.

This identification of treatment and control groups offered four sets of comparison. Two of the comparisons were based on a quasi-experimental design with some provision offering more discrete basic skills provision and some less. Two of the comparisons were based on comparing provision before and after staff-training and re-organisation. Changes in provision aimed to increase the contextualization of discrete basic skills

provision and an explicit understanding of the embedding of basic skills within the vocational elements of the courses.

In addition to these four comparisons, two further sets of comparisons were possible: a comparison of students receiving discrete basic skills provision with those not receiving such provision; a comparison of students in custody attending educational provision deemed good by inspectors (Cust NE) with those attending provision deemed in need of improvement (Cust CE).

### Sample

The community sites were selected as being experienced and successful providers of post-16 education for young offenders or disaffected young people. The custodial sites were selected to offer a comparison of good education provision and provision in need of improvement.

Students attending the provision in these sites were approached to participate in the research if they satisfied two criteria: 1) they had literacy or numeracy scores of Level 1 or below, and; 2) they were scheduled to be in the provision for three months or more. Two hundred and seventy students satisfied the selection criteria and were assessed at the beginning of their course (community) or on entry to the YOI (custody). Of these 270, 147 (54%) were re-assessed, and only this re-assessed group are considered here. The attrition rate was substantially a consequence of young people leaving provision before follow-up. In the case of those in custody, this was normally due to problems in getting tests administered before release and was not due to the normal kind of 'drop-out' associated with disengaged students. In the community, attrition was a combination of difficulties in getting tests administered by project staff and students moving on. There was, however, no difference in the initial levels of literacy and numeracy between those followed up (mean literacy and numeracy levels = 2.7) and those not followed up (mean literacy and numeracy levels = 2.6).

Participants ranged in age from 16 to 19 years (mean age 17.4 years). All but three were male (the custodial sites were only for males). Seventy-one percent were White British, 13% were Black Caribbean and 8% Black other. All were convicted offenders except those in the Com L group of whom only 35% reported being convicted and were attending the provision because they had failed to find their niche in education and training.

### Data collection

Literacy and numeracy were assessed using the Basic Skills Agency (BSA) Initial Assessment (2002). At pre-test they were assessed on Version 1 of this assessment, at post-test on the parallel forms of Versions 2 or 3. Levels and raw scores were both coded. The levels map to the National Standards for Adult Literacy and Numeracy (QCA & DfES, 2000); Entry levels 1, 2 and 3, Level 1 and Level 2. Progression from one level to the next in a school context represents approximately two years progress. Level 1 is the

average attained at the end of primary schooling. For the purposes of analysis, these levels have been converted to a five point scale ranging from 1 (Entry level 1) to 4 (Level 1). Raw scores on the literacy assessment range from 0 to 72 and on the numeracy assessment from 0 to 50. Students were post-tested on average 20 weeks after initial assessment. The average time between assessments for the Com L control group was slightly longer at 26 weeks due to changes in the provider’s program length and assessment practices.

Students were interviewed on two occasions concerning a range of dimensions, including their experience of school, their attitudes towards education and training in their current provision and their future aspirations in terms of education, training and employment.

A range of education/training provision was observed over a period of at least 4 days at each research site.

Data was collected from all sites concerning students’ attendance overall and on discrete basic skills classes (this was defined as literacy and numeracy only, IT classes, social skills classes, etc. were not classified here as basic skills). For the community sites information was available on the amount of time individual students received discrete basic skills provision. In the custodial sites, information was only available for the amount of education provision overall, and in Cust NE, only at aggregate level. Approximately half the education classes were literacy and numeracy classes, the remainder being concerned with IT, art, social and life skills, drama, etc.

## Results

### Young people’s disposition to learn

Consistent with other research on offenders, many of these young people came to literacy and numeracy classes with a fairly negative history. Less than half had completed compulsory schooling, even fewer had gained any qualifications at school and over a third rated their enjoyment of school as ‘very bad’ or ‘awful’ (Table 1).

Table 1. Young people’s school history (N=149)

	Completed school	Stopped attending	Excluded	Custodial sentence
Compulsory schooling	44%	25%	27%	4%
	Achieved qualifications		No qualifications	
Qualifications at school	35%		65%	
	Great or very good	OK	Very bad or awful	
Enjoyment of school	14%	51%	35%	

However, they did (slightly) prefer education and training they had received during the research period, either in the community projects or in custody. Asked to represent their enjoyment of provision on a seven-point scale, where 1 was great and 7 was awful, their mean score for school was 4.5 (standard deviation (sd) = 1.9). Their mean score for current education/training was 3.8 (sd = 1.5), which was a slight but significant improvement on their enjoyment of school (Wilcoxon's  $Z = 2.651$ ,  $p < .01$ ). In many cases, current provision was mainly vocational or half and half, vocational and education and the vocational element was particularly popular. Twenty-six students in Cust CE, who were attending education classes for half the day and vocational training for the other half of the day, were asked to rate their enjoyment of education and vocational training separately. They significantly preferred vocational training to education with mean enjoyment scores of 2.1 (sd = 1.9) and 3.9 (sd = 1.7) respectively (Wilcoxon's  $Z = 2.812$ ,  $p < .01$ ).

This is consistent with young people's views on their future education. The majority didn't want to do academic courses for their own sake. When asked what courses they would like to do in the future they almost invariably mentioned vocational course such as plumbing, cooking, mechanics and bricklaying, though a small minority were interested in AS levels or art and crafts.

Those who were positive about attending future courses addressing literacy and numeracy (38%) thought that it might improve their skills and be useful in terms of getting a job.

*'It would be useful if it wasn't too easy. The YMCA was too easy, like infants school - ap ostrophies, spelling etc. I would enjoy it because it might help me get a job.'*  
(community)

Those who were negative (38%) commented on disliking such courses and being more focussed on getting work.

*'I wouldn't want to do it. I'd do it if I had to do it for a job, like to be a warehouse person. I don't like writing and I don't think it would be useful for the kind of job I want to do.'*  
(community)

*'I'm not very keen on the idea. I want to do a work related course like for building and decorating. Something practical.'* (custody)

*'I won't do courses because there is nothing wrong with my reading and writing. I'm not interested in further qualifications.'* (custody)

### Literacy and numeracy provision

In the community, both the London based projects and half of those in South Wales offered a mixture of vocational and a more academic focus. Students typically attended

vocational training, in training establishments or on the job, for four days a week and discrete literacy and numeracy for one day a week. In the remaining projects in South Wales, provision was almost exclusively vocational with minimal basic skills provision.

In custody, students also usually had a mixture of basic skills and either vocational courses or further educational options such as art, drama, social and life skills, IT, physical education or music. A minority of students were enrolled in vocational activities full-time.

In both contexts students entered and left classes on a 'roll on, roll off' basis and there were typically around six students attending class (though there were often eight on roll). Within basic skills classes, students were not only at different points in their work but also varied considerably in their competencies. There was often an attempt to group students by ability, but at best this could only be fairly crude, typically working with two groups, those at Entry Levels 1-3 and those at Levels 1-2. Much of the teaching was therefore individualised, with students working their way through worksheets or workbooks at the appropriate level. Some whole class teaching was observed but in the main, teachers or learning support assistants worked with students individually.

The content of the work was rather relentlessly focused on 'skills', very often, reflecting the levels of the students, covering material that they would have encountered in primary school (eg. prefixes and suffixes, basic fractions). Indeed, students complained that it was like being in primary school.

*'I am in prison, not in f\*\*\*ing primary school.'* (custody)

*'Are you f\*\*\*ing joking, giving me f\*\*\*ing tracing.'* (community)

The elements of worksheets which involved activities, such as discussion or data collection, tended to be omitted (particularly in custody). Whilst some students were observed to work diligently in these discrete basic skills sessions, a lot of restlessness, task avoidance, resentment and frustration was also apparent.

This was in contrast to behavior observed in other formal educational lessons, such as social skills, art and drama, where the same pupils were at worst quietly disengaged and at best involved in active participation, discussion and recording. Similarly, there was less disruption in workshops and at best clear engagement in completing required tasks. Classroom based vocational sessions lent themselves to contextualized tasks. For example, students enrolled on a Childcare NVQ were asked to plan the basic equipment for a nursery within a budget of £1,000. In these tasks students would have to make mathematical calculations, some of them fairly straightforward, but they were not associated with a demeaning request to do 'primary maths', but were seen as the sorts of skills required for future aspirations.

Implementing change

In the original research design it was planned to offer additional discrete basic skills provision in six of the twelve community-based projects in South Wales, which would have enabled comparisons to be made between students' progress before and after the introduction of the new and more intensive provision. However, this had to be abandoned, falling back on the naturally occurring contrasts in discrete basic skills provision in the twelve projects described above. The failure of the intervention is nonetheless very informative. Essentially, it failed because many students refused to accept a program requiring them to spend two days per week on discrete basic skills. They wanted to spend more time engaged in either vocational training or work. This is very consistent with young people's comments and our observations of their behavior in the different types of provision. An additional and unanticipated problem was that although these community projects had a very good record of keeping students attending regularly for an average of 14 weeks, students did not attend the same place for the whole of this time. Attendance tended to be punctuated with arguments with a particular provider, or a change of mind or the lack of availability of a desired option, leading to students changing to another course.

Based on this experience, our observations, and interviews with students, we worked with staff in the other community site (Com L) and the custodial site where provision was deemed in need of improvement (Cust CE), to increase the degree to which basic skills provision was contextualized and embedded. Substantial changes were observed, particularly in the custodial site where education provision was radically overhauled. Here the final result was a highly contextualized discrete basic skills program and basic skills embedded in the vocational training which formed half of most students' program. However, the process of change took much longer than anticipated, over 18 months in the Young Offenders Institution, and the 'treatment' groups of learners were assessed in the middle of the process of change. This seriously undermines the extent to which we can confidently say there was a difference in the basic skills provision in the treatment and control groups in these two comparisons. In the following section where we look at experimental effects on literacy and numeracy we are essentially only able to compare no little or no discrete provision with discrete provision (in both Com SW and Cust NE), and poor discrete provision with good discrete provision (Cust CE control with Cust NE treatment).

#### Experimental comparison between basic skills conditions

Students in the four treatment groups received fairly similar amounts of discrete basic skills provision, on average about one day per week (6.9 hours, Table 1). It was not possible to collect official registers for education attended by the learners at Cust NE. However, all respondents reported that they had attended education regularly. Education ran for 15 hours weekly, approximately half of which (7.5 hours) was devoted to basic skills and this is the figure estimated in Table 1, though it will be a slight overestimation as it does not take account of any absences due to illness, visitors, etc. As expected, the students in control projects in South Wales (Com SW) spent a very limited amount of their time on discrete basic skills. The Cust NE control group were not offered any



education and the Cust CE control group also received fewer hours of basic skills on average because nearly half (n=14) were enrolled on a full-time vocational course.

Table 1

Average number of hours of discrete basic skills received weekly.

Research condition		Hours of basic skills weekly	
		mean	(sd)
Com SW	Control (n=12)	1.25	(2.3)
	Treatment (n=13)	6.7	(7.0)
Com L	Control (n=14)	6.1	(5.3)
	Treatment (n=23)	6.2	(5.3)
Cust NE	Control (n=17)	0	(0)
	Treatment (n=23)	7.5	(0)
Cust ME	Control (n=29)	3.9	(3.8)
	Treatment (n=16)	7.0	(2.6)
Total		147	4.9 (4.6)

### Literacy

There was significant improvement between pre and post-test literacy levels overall, amounting to about a third of a level (roughly the expectation for 8 months in school) (Wilcoxon's  $Z=4.43$ ,  $p<.001$ ). However, inspection of Table 2 shows the gains made by the treatment groups to be only marginally better than those made by their controls, and in one case, slightly poorer. Effects were tested using a fixed entry regression, with post-test score as the dependent variable and controlling for pre-test level before looking at group differences. For literacy, in the four mini-experiments/quasi-experiments, in no case did the experimental group do significantly better than its control group. This was true even in the custodial site where those in education were compared with those with no access to education. In addition to these four within-site comparisons, differences between the two custodial sites were also explored. The students in the 'good' Cust NE group made 8.7 points progress in the BSA literacy assessment from pre to post test, as opposed to 4.9 points progress in the control group at Cust CE, (those students who had experienced a less adequate provision), but this did not reach statistical significance. Finally, comparisons were also made between those who had attended at least six hours of discrete basic skills provision weekly with those who had not received any such provision. The basic skills group made slightly greater progress and this was not statistically significant.

Table 2 Progress in literacy by experimental condition

Research condition	Literacy assessment			
	BSA level *		BSA score (max score 72)	
	Pre-test mean (sd)	Post-test mean (sd)	Pre-test mean (sd)	Post-test mean (sd)

Community Wales	Control (n=12)	2.6 (1.0)	2.8 (.9)	51.1 (13.4)	55.0 (13.4)
	Treatment (n=13)	2.85 (.7)	3.0 (.8)	54.4 (10.9)	58.4 (12.0)
Community London	Control (n=14)	2.6 (.9)	2.9 (.7)	51.8 (14.3)	54.4 (12.3)
	Treatment (n=23)	3.1 (.7)	3.1 (.8)	59.1 (8.9)	61.3 (8.6)
Custody Midtown	Control (n=29)	2.9 (.9)	3.2 (.8)	54.7 (12.1)	59.6 (11.3)
	Treatment (n=16)	2.6 (.9)	3.1 (.7)	52.3 (13.3)	57.3 (10.9)
Custody Langlands	Control (n=17)	2.4 (1.3)	2.8 (1.4)	53.2 (17.9)	59.5 (17.0)
	Treatment (n=23)	2.5 (1.2)	2.9 (1.1)	47.3 (21.7)	56 (17.0)
No discrete basic skills v minimum 6 hrs wkly	No ed (n=44)	2.7 (1.0)	3.0 (.9)	52.4 (15.8)	57.8 (12.0)
	6hrs plus (n=67)	2.7 (1.0)	3.1 (.9)	52.7 (16.2)	58.3 (14.1)
Total	147	2.7 (1.0)	3.0 (1.0)	53.4 (14.6)	58.1 (12.4)

\* Entry Level 1=1; EL 2=2; EL 3=3; L 1=4

### *Numeracy*

As for literacy, overall there were significant improvements in numeracy between pre- and post-test, amounting to about a quarter of a level (Wilcoxon's  $Z=3.45$ ,  $p<.001$ , Table 3). In one of the four mini-experiments/quasi-experiments the treatment group did significantly better than its control group. The Welsh community group receiving discrete basic skills made more progress in numeracy than the control group who were at work or receiving vocational training only ( $\beta=.25$ ,  $p<.05$ ). The effect size (Cohen's  $d$ , Cohen, 1988) of .47 is small, verging on medium sized according to Cohen's classificatory scheme. Similarly, in the other comparison where we could be reasonably confident that there were differences in basic skills provision between treatment and control groups (Cust NE), students attending numeracy classes made more progress than those who did not (.6 of a level as opposed to .1 of a level). This difference was not statistically significant, however, the treatment group did make statistically significant progress between pre- and post-test (Wilcoxon's  $Z=2.72$ ,  $p<.01$ ) whereas the control group made an insignificant amount of progress. Comparing Cust NE with the control group in Cust CE, there was no statistically significant difference but students in the less secure Cust CE provision made less and statistically non-significant progress over the time period (.1 of a level). There was no significant difference in the progress made by students receiving at least six hours weekly of discrete basic skills compared to those receiving none of this provision.

Table 3 Progress in numeracy by experimental condition

Research condition		Numeracy assessment				
		BSA level *		BSA score (max score 50)		
		Pre-test mean (sd)	Post-test mean (sd)	Pre-test mean (sd)	Post-test mean (sd)	
Community Wales	Control (n=11)	2.4 (1.0)	2.55 (.8)	32.4 (9.3)	33.4 (8.8)	
	Treatment (n=13)	2.6 (.7)	3.0 (6)	35.3 (7.6)	39.1 (6.2)	
Community London	Control (n=14)	2.4 (1.0)	2.7 (1.0)	32.4 (10.0)	35.3 (9.8)	
	Treatment (n=24)	2.7 (.7)	3.0 (.9)	36.2 (8.3)	38.9 (8.2)	
Custody Midtown	Control (n=28)	2.9 (.7)	3.0 (.8)	37.0 (8.7)	38.5 (7.8)	
	Treatment (n=14)	2.9 (.5)	2.8 (.6)	37.2 (7.1)	38.9 (5.9)	
Custody Langlands	Control (n=16)	2.9 (1.0)	3.0 (1.3)	36.9 (11.4)	38.4 (11.8)	
	Treatment (n=24)	2.2 (1.0)	2.8 (1.1)	30.7 (13.1)	35.3 (13.4)	
No discrete basic skills v minimum 6 hrs wkly	No ed (n=44)	2.7 (.9)	2.9 (1.0)	35.2 (10.2)	36.9 (10.0)	
	6hrs plus (n=67)	2.6 (.9)	2.8 (.9)	34.7 (10.5)	37.2 (10.1)	
Total		144	2.65 (.8)	2.9 (.9)	34.9 (9.8)	37.4 (9.4)

\* Entry Level 1=1; EL 2=2; EL 3=3; L 1=4

## Discussion

Young people of 16 to 18 are at a critical stage in their working lives, described by Bloomer and Hodkinson (2002) as the ‘most volatile stage in human growth and development’ (p151). For those caught up in the criminal justice system, there are real dangers that they will fail to gain the necessary literacy and numeracy skills and qualifications, with consequences both for themselves and society. Two thirds of the young people we interviewed had left school before school leaving age, without any qualifications. We know from the 1970 British Cohort Study that this augurs badly for their future employment (Parsons and Bynner, 1999). It would therefore seem of critical importance to try to encourage them to develop their basic skills.

The young people in our study, all in education or training, made significant gains in literacy and numeracy of on average a quarter or a third of a level over a period of five months. Students in full-time, mainstream education would be expected to make this

amount of progress in eight months. Our participants, with a history of disengagement from education and training might be expected to make less progress than the average teenager but they appear to have done rather well. It would seem that keeping them in education or training can offer them real benefits. This is in itself challenging as these young people are often out of education and employment. A recent study by the Youth Justice Board reported that at any given time only 35-45% of those in the youth justice system are in full-time education, training or employment (YJB, 2006).

Because improvements were observed in control and treatment groups this does raise doubts as to whether the overall improvements signify learning gains or some artefact of the research, such as familiarity with the test or depressed scores on entry to new provision or a selection effect due to sample attrition. Our conclusion is that the gains are probably real. As different versions of the test were used at pre and post test, familiarity with the test is an implausible explanation for improved scores. The punishing attrition, with a loss of 46% of the sample, admits the possibility that only the better learners were followed up, those with little interest in learning being lost to the study. However, there were no differences in the initial levels of literacy and numeracy between those followed up and those not followed up. Also, we know that particularly in the custodial sample, we frequently failed to re-assess students because of institutional factors, such as early release, or difficulty in accessing students' test results, rather than because of student drop-out. In previous research, using a similar sample and measures, we found similar sized learning gains in literacy and numeracy (Hurry, Brazier and Moriarty, 2005). Here, those who attended education and training provision for longer than 14 weeks made greater progress in literacy and numeracy than those who left earlier. If improvement was some artefact of re-assessment or attrition, these results are difficult to explain. If then, these learning gains are real, how good are they? On average, learners in the present study received an estimated 143 hours of education/training in the five months over which progress was measured. For literacy, Commings and colleagues (Commings and Soricane, 2005; Commings, Sum, and Uvin, 2000) suggests that 150 hours of education should lead to about one grade gain in literacy. A BSA level equates to about two grades, so, bearing in mind that the 143 hours was by no means devoted solely to literacy and numeracy, this seems a good result.

The purpose of the experiments was to explore the impact of more or better discrete basic skills provision. There were no significant differences in learning gains between treatment and control groups in literacy and only some in numeracy. The reasons for this need to be considered carefully. Firstly, there were problems with the implementation of the treatments. In the two comparisons where we worked with staff to maximise the impact of their basic skills provision, we measured the 'improved' group too early. The provision in the custodial site (Cust CE) changed quite radically over a period of one and a half years (Hurry et al, 2007) and this gives confidence that intervention is possible, but that there are no quick fixes. In the community site where we worked with staff to increase contextualizing and embedding of basic skills (Com L), the intervention only provided four days of staff training and a couple of support visits per trainer. From conversations with tutors it seems likely that whilst this enriched their teaching, in the absence of a systemic approach to change, involving their own management systems,

substantial changes in embedding did not happen.

We therefore need to rely on those comparisons between presence or absence of discrete basic skills provision (from sites Com W and Cust NE) and the more adequate provision of one custodial site (Cust NE) with the less adequate initial provision of the other (Cust CE). None of the comparisons find any significant difference in literacy gains between groups. Although those in the control groups received less discrete basic skills provision, they received more vocational training, which in itself probably produced improvements in students' basic skills. However, students in these treatment group did make slightly greater progress than their controls and sample sizes were small. Much statistical power and a highly reliable assessment instrument would be needed to detect statistically significant differences and we can have to conclude that the case here is still unproven. The story for numeracy seems to be a little different. Here those receiving discrete basic skills lessons on the whole made more progress than those receiving little or none, though in only one comparison did this reach statistical significance. This suggests that for numeracy, formal, decontextualized teaching may be important and we would be interested if this finding could be replicated. In primary school contexts it has been observed that educational factors (as opposed to home factors, etc.) are more important for mathematics than reading (Reynolds and Muijs, 1999). Our own evidence is not secure enough to make any strong statements but it does pose a question.

The implementation of the quasi-experimental design was problematic. However, it was also fruitful. In the process of trying to mount the sort of intervention suggested by the evidence from surveys and longitudinal studies a number of important things emerged. In particular, the reasons why some students lack qualifications and expertise in basic skills are associated with their attitudes towards learning and their future aspirations. These associations have implications for the kinds of education they will tolerate. Given the choice of whether or not to attend discrete basic skills provision (as in the community contexts), many will reject basic skills programs. This in turn undermines the viability of such programs. Where there is no choice, many will find alternative ways of avoiding engagement. For these reasons, the design of educational interventions needs to take account not only of what needs to be learnt but also in what ways this can be presented in a palatable form.

It also highlights the fact that randomised controlled trials, although scientifically rigorous, are not always possible to mount where participants are unenthusiastic about the 'treatment'. Alternative research methods must be adopted in these circumstances, qualitative studies, longitudinal studies and quasi-experimental designs. Natural comparisons offer a viable solution and we would argue that the scientific community should be more open to this methodology, whilst requiring large sample sizes and suitable information on participants' characteristics at baseline.

The present study has a number of limitations but findings suggest that educational intervention can improve the basic skills of young people within the criminal justice system, or disaffected with education. There is no real evidence to suggest that discrete basic skills provision offers an advantage over vocational training in terms of literacy

progress, but may be more effective in terms of numeracy progress and this needs to be followed up, perhaps making use of naturally occurring comparisons. The critical thing may be to ensure that young people are involved in some form of educational or vocational activity. There do remain unanswered questions concerning the effectiveness of discrete basic skills provision. The basic skills lessons observed were formal, decontextualized, worksheet and skills based. Students reported and were observed as being more engaged in more practical learning environments where they had greater opportunities for activity or interaction. The effectiveness of discrete basic skills provision which is contextualized to a greater degree and involves more active learning remains to be tested.

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