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for adult literacy and numeracy

Improving the literacy and numeracy of young people in custody and in the community

Research report

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Preface

This is the final report from the research project 'Improving the literacy and numeracy of young offenders and disaffected young people' carried out by the National Research and Development Centre for Adult Literacy and Numeracy (NRDC) from 2002–05. It presents findings from two strands of the project: classroom observations and experimental interventions. The former were carried out by Jane Hurry (Institute of Education), Rachel Emslie-Henry (Institute of Education), Kate Snapes (freelance), Anita Wilson (University of Lancaster) and Laura Brazier (Institute of Education). The latter were carried out by Jane Hurry, Laura Brazier and Anita Wilson.

Executive summary

Background and study aims

Young people in the youth justice system tend to have lower than average attainment in literacy and numeracy. This makes it more difficult for them to find consistent employment and heightens the chances of offending. As a result, education/training is identified as one of the promising approaches to reducing re-offending, and has been rigorously translated into policy in the UK, with a requirement that 'at least 90% of young offenders are in suitable full-time education, training and employment'. However, the young people themselves are often very reluctant students. There is a shortage of evidence as to the best methods of improving the literacy and numeracy of these young people.

The aims of this present study were to:

- observe the kind of provision on offer and how students responded to this provision
- test the impact of either increasing discrete literacy and numeracy provision or contextualising provision.

Research methods

The research was conducted at four sites, two in the community (each site comprising a number of projects) and two in custody. At each site, students were allocated to a 'treatment' or 'control' group, offering 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 contextualisation of discrete basic skills and improve links with vocational elements where appropriate. Overall, 147 students were assessed on entry to provision using the Basic Skills Agency (BSA) Initial Assessment and re-assessed 20 weeks later.

Students were interviewed about their experiences 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 four days at each research site.

Findings

- Less than half the participants 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'.

- Students were (slightly) more positive about post-16 education and training, particularly vocational training.
- Almost invariably young people reported wanting to do vocational courses in the future, rather than literacy and numeracy courses. Thirty-eight per cent were positive about attending literacy and numeracy courses in the future, 24 per cent were neutral and 38 per cent were negative. Those who were positive thought courses might improve their skills and be useful in terms of getting a job.
- Literacy and numeracy provision observed was predominantly decontextualised and involved individual work using worksheets. 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.
- Where literacy or numeracy were taught making use of meaningful contexts or games, students were much more engaged and spent longer periods working. It is difficult to disentangle the curriculum from teaching methods here as contextualised learning also tended to involve group discussions and participatory learning.
- Whilst it was easier for tutors to make links between students' vocational interests in the community, effective contextualised lessons were also observed in custody.
- Assessment and target setting were facilitated where front-end models of literacy and numeracy were being employed by providers in the community. This was because small teams worked with relatively small and stable groups of students (around 12 per group, with each student typically staying for a period of 12 weeks).
- Where tutors worked with larger groups, detailed assessment and target setting was difficult and led to the use of worksheet packs operating as schemes of work.
- Learning support assistants (LSAs) were very helpful in the context of students who lacked confidence and where there was an emphasis on individual learning rather than classroom instruction. They cut down the time students had to wait for support and encouraged students to keep on task.
- LSAs, particularly in numeracy, did not always have the subject expertise necessary to support students' learning and there would seem to be some scope for introducing standard learning programmes here.
- For some students, their lack of self-confidence was observed to be a real barrier to their learning. Tutors and LSAs were very sensitive to this and tried to give plenty of support and praise.
- Plans to offer additional discrete basic skills provision in the community had to be abandoned because many students refused to accept a programme requiring them to spend two days per week on discrete basic skills.
- As a result of intervention, a substantial increase in contextualising and embedding was observed, particularly in the custodial site; however, the process of change took 18 months, much longer than anticipated.
- There was significant improvement between pre- and post-test literacy (a third of a level) and numeracy levels (a quarter of a level) overall.

- Because changing provision took much longer than anticipated, comparisons are between: 1) no discrete provision versus one day a week discrete provision and; 2) poor discrete provision with good discrete provision. None of the comparisons found any significant difference in literacy gains between groups. Those receiving discrete numeracy on the whole made more progress than those receiving little or none, though in only one comparison did this reach statistical significance. Both discrete provision and vocational training probably produced improvements in students' basic skills.

Conclusions

Many of the young people we observed were not enthusiastic about taking courses in literacy and numeracy, being more focused on entering the world of work. An obvious solution to this lack of enthusiasm would therefore be to embed literacy and numeracy within vocational contexts. This was observed on occasions but there is room for more embedded provision. However, there is currently a need for some discrete basic skills provision, especially in custodial contexts where vocational facilities are limited or non-existent. It is likely that there will always be a need for some discrete provision. An alternative to embedding is to contextualise learning in ways which are meaningful to young people. Progress has been made in trying to ensure that these young people, at a critical stage of their lives, are not merely hanging around doing nothing. More work now needs to be done to align provision with young people's interests and aspirations. The next step is to give the students a much higher profile in the process of lesson planning and delivery.

Young people attending education or training do make useful gains in literacy and numeracy. It seems that discrete provision as it is currently organised (mainly decontextualised and worksheet-based) is neither more nor less effective than vocational training/employment for literacy but may be more effective for numeracy. The critical thing may be to ensure that young people are involved in some form of educational or vocational activity. However, particularly within the custodial context, there is currently insufficient vocational provision available and young people will attend education classes. The effectiveness of discrete basic skills provision which is contextualised to a greater degree and involves more active learning remains to be tested.

1. Introduction

1.1 The policy background

Young people in the youth 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 et al. 1998). Recent surveys in England and Wales have found that, in the custodial setting, 51 per cent of young people were below Level 1 in literacy and 52 per cent in numeracy (ECOTEC 2001). For young people supervised in the community, 57 per cent were below Level 1 in literacy and 63 per cent in numeracy (Hurry et al. 2005). Longitudinal studies have documented the negative pathways associated with weak literacy and numeracy skills, in particular, greater difficulty at finding consistent employment and heightened chances of becoming socially marginalised (Parsons and Bynner 1999, Bynner 2004). For young people in the youth justice system, such marginalisation is likely to be a decisive factor in whether or not they desist from crime in adulthood. As Sampson and Laub (1993) note: '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) emphasises 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 youth 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' at the end of their sentence (OLASS 2004, p.7). There is a particular commitment for young people in custody to improving literacy and numeracy standards, with a performance indicator that 80 per cent will improve by one skill level or more within six months (OLASS 2004, p.7)[1]. 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 (YJB) had just developed a new basic skills strategy, PLUS[2], specifically to address literacy and numeracy, which included learning and enrichment materials for students and professional support for tutors (YJB 2004). Also, the development of provision for Adult Basic Skills in England following the Moser Report (DfEE 1999) has influenced education and training within the youth justice system.

We pause here to look more closely the young people at whom these initiatives are directed. These are young people in the youth justice system (in England and Wales) who have been convicted of an offence or who are at risk of offending. They are supervised either in custody or in the community, and the latter group

[1] This applies for those serving Detention and Training Orders of 6 to 12 months or more, depending on the type of secure establishment they are held in.
[2] See www.yjb.gov.uk/en-gb/practitioners/EducationTrainingAndEmployment/PLUS/

includes both those who have been convicted and are attending Youth Offending Teams (YOTs), and socially-excluded young people who have offended or are at risk of doing so. For ease of reference and readability, these diverse groups will be referred to simply as 'young people'.

In custodial settings, young people are required to participate in full-time education, training or employment; those in secure children homes and secure Training Centres are expected to receive 30 hours per week and those held in Young Offender Institutions (YOIs) to receive 25 hours per week (YJB 2006).

In community settings, young people are expected to participate in full-time education, training or employment. The YJB has a performance indicator which requires 90 per cent of them to be in full-time provision by the end of their sentence. A range of education, training or employment provision is available in the community, including regular school or college and education and training programmes delivered through voluntary and community sector organisations.

Whilst available evidence, common sense and social justice provide a sound rationale for requiring young people in the criminal justice system to improve their education and training, the young people themselves are often very reluctant students. A recent study reported that, at any given time, only 35 to 45 per cent of those supervised in the community are in full-time education, training or employment (YJB 2006). Whether in custody or in the community, young people have proved a difficult group to engage in any form of education and training (Hurry et al. 2005) – but especially so with regard to academic subjects. Many have left school before the age of 16, and just as many drop out as are excluded, or have a strong history of truancy. Others may have been struggling at school, may have got in with a bad crowd, or may simply feel that school is 'boring' (Farrington 1996). There is a clear tension between educational policy initiatives and the attitudes towards learning of those at whom they are targeted. There is also a shortage of evidence concerning educational provision targeting young people in the youth justice system, both in terms of the best methods of improving their literacy and numeracy, and on the impact of such intervention on their learning and future employment (Hayward et al. 2004, Hurry et al. 2006, Stephenson 2007). Whilst those young people who improve literacy and numeracy fare better than their peers, the question is whether the education and training provision following current policy can effect such an improvement.

1.2 Aims of the research

Because of our focus on literacy and numeracy skills, and in line with UK initiatives described above, our research focused on young people's engagement with discrete literacy and numeracy provision in custody or in the community.

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 2001a, 2001b) 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. In these contexts literacy and numeracy are embedded within the tasks of the

workplace. However, literacy and numeracy are almost invariably addressed implicitly and we hypothesised that such an implicit focus would produce smaller learning gains than a more explicit approach. This is consistent with the UK policy initiatives targeting these young people. There remained the threat to the effectiveness of discrete provision, that it would be rejected by students, or that they would be turned off and fail to attend. It was 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. This represents a standard 'process product design' where both the process of intervention (in this case literacy and numeracy provision) and the product (in this case learning gains) are explored.

We set out, then, to explore two main questions:

- What kinds of literacy and numeracy provision are on offer for young people in custody and in the community, and how do the young people respond to these?
- Can discrete literacy and numeracy provision improve the skills of young people in the criminal justice system?

1.3 The sample

The research was conducted in four sites[3], two in the community (each site comprising a number of projects) and two in custody. The community sites were selected as being experienced and successful providers of post-16 education for young people who had offended or were at risk of offending. The custodial sites were selected to offer a comparison of good education provision and provision in need of improvement.

Young people 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 longer. Two hundred and seventy students satisfied the selection criteria and were assessed at the beginning of their course (in the community) or on entry to the YOI (in custody). Of these, 147 (54 per cent) were re-assessed and only this re-assessed group is considered here.[4]

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

[3] In the interests of maintaining security and privacy, the names of the sites, and of the young people and practitioners quoted, have been anonymised.

[4] 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. Comparing those followed up with those not followed up on information collected at the first measurement point, on the whole the two groups were fairly similar – see Appendix 1 for a detailed comparison. However, those not followed up were significantly more likely to have left school before statutory school-leaving age and were less likely to have gained qualifications at school (though this did not quite reach statistical significance).

The four sites were as follows:

Community sites

Community group, South Wales (Com SW – all offenders)
'Include' is a national organisation of long standing, whose core intention is to reintroduce young people into education, training or employment through a six-month intensive programme. Twelve projects dedicated to post-16 young offenders participated in the current research. Students received an attendance allowance and expenses and were expected to attend for six months. Initially they worked with the Include project manager to identify key skill deficits and areas of interest and then followed an individually-designed programme with local education and training providers such as Rathbone and Nacro and/or with employers. Provision typically included: one day a week at Include premises, engaged in one-to-one and group work plus activities aimed at personal and social development; attendance at college, studying literacy, numeracy and IT; vocational training; and work experience.

Community site, London (Com L – disaffected youth, some offenders)
Nacro is also an experienced provider, offering Entry to Employment (e2e) programmes at a range of sites across England as part of its remit of reducing crime through tackling social exclusion and reintegrating those who offend. Two London sites participated in the current research. The e2e scheme is a pre-employment scheme for 16 to 18+ year olds, rolled out by the government in 2003. Students receive an allowance and expenses to undertake learning in three interdependent core areas: basic and key skills, vocational development, and personal and social development.

When students first come to Nacro, usually via referral from Connexions, they have a six-week introduction period, including assessment and a two-week workshop taster in subjects including business administration, carpentry, motor mechanics and photography. By the end of this period the training organiser will have developed an individual programme for each young person, typically a vocational course with additional literacy and numeracy provision where necessary. Nacro students were enrolled on the e2e scheme for up to one year until September 2004, when the e2e contract was changed to run for a maximum of 22 weeks only.

Custody sites

Custodial site, North England (Cust NE)
This YOI was selected as an example of good provision. In a report in 2002 by HM Inspectorate of Prisons, 75 per cent of lessons offered were judged good or 'better': 'Particularly good work was seen in key skills and cooking but good work was observed across education, training and induction. Lessons were well planned and organised; tutors used a range of teaching strategies effectively and engaged most students well in constructive activity. Behaviour was well managed.'

It had been awarded Beacon status and had been used as a pilot for the PLUS programme. It offers the full curriculum including Key Skills in Maths and English, Basic Skills, Art, Craft, Social and Life Skills, Catering, Cookery and IT. There are

also courses on parent-craft, food hygiene, healthy living, personal development and generic preparation for work. The department employs both full- and part-time staff.

Custodial site, Central England (Cust CE)
The second YOI was identified by the HM Inspectorate of Prisons as having less than adequate literacy and numeracy, but being committed to improvement. Its 2003 inspection report stated: 'Overall, 63 per cent of teaching and learning was judged to be good or better; there was good development of practical and expressive skills through stimulating teaching and good support from staff in physical education, education and vocational training; [however] literacy and numeracy classes, that took place in unsuitable accommodation, with unplanned class membership and changing circumstances, were unsatisfactory, with little learning and very poor behaviour.'

At the beginning of our research in March 2003, young men at this site had a choice of attending either education or vocational training on a full-time basis. The latter option included workshops on bikes, bricks, carpentry, industrial cleaning, catering and gardening, and there was also a physical education option. Those on vocational training were typically working towards National Vocational Qualification (NVQ) Level 1. There were fewer qualifications to be achieved in education, with the exception of computer-based qualifications.

Starting in the autumn of 2003 there was a major restructuring of educational provision, brought about by a new management team and supported by the educational interventions of the research team for this project. Students' programmes were rearranged to include half a day in education and half a day in vocational training.

1.4 How the research was carried out

Two separate, concurrently-run studies were carried out to address each of our research questions.

The observational study

The aim of this study was to observe the kind of provision on offer for young people in custody and in the community, and to observe how students responded to this provision. At each research site, a range of education/training provision was observed over a period of at least four days, with a principal focus on the teaching of literacy and numeracy. The observations were conducted from March 2003 to December 2004. The method of observation was qualitative, with observers making full field notes. However, there was a framework for observation which always included recording:

- the number of students
- the number of tutors/teaching assistants
- teaching/learning activities
- student engagement
- management of students and the environment
- resources and facilities

- differentiation of student levels.

After the sessions, the observer spoke to the tutor to gather information about planning and differentiation, including the use of Individual Learning Plans (ILPs), schemes of work, lesson plans and worksheets. Through these observations and discussions, we were able to build a detailed picture of what type of learning environment had been created by a variety of different educational providers.

The experimental study

This study was designed to assess the impact of:

- a greater amount of time spent in discrete literacy and numeracy provision
- increased contextualisation of discrete literacy and numeracy provision with improved links to vocational elements where appropriate.

At each site, samples were divided into 'control' and 'treatment' groups, according to either: 1) amount of discrete literacy and numeracy provision available to students (Com SW and Cust NE), or 2) whether tutors had received training in contextualising and embedding literacy and numeracy provision (Com L and Cust CE). This identification of treatment and control groups offered four sets of comparison within sites. The first two of the comparisons were based on a quasi-experimental design with some provision offering more discrete basic skills provision and some less. The second two were based on comparing provision before and after intervention/reorganisation and staff training.[5] Further comparisons were made between all students receiving at least six hours a week of discrete literacy and numeracy provision with those receiving no such provision, and between students in custody attending educational provision deemed good by inspectors (Cust NE) with those attending provision deemed in need of improvement (Cust CE).[6]

Students were assessed on their literacy and numeracy levels at the beginning of their course and on average four and half months later.

Data collection

The young people's literacy and numeracy skills levels were assessed using the BSA Initial Assessment (BSA 2002).[7] They were interviewed on two occasions

[5] A detailed description of each control/treatment group is given in Appendix 2.

[6] An experimental design with pre- and post-tests would have been a more powerful way of assessing the effectiveness of discrete provision on literacy and numeracy skills. However, a number of factors made it unfeasible to implement such a design with young people within the criminal justice system. Random assignment to learning condition typically presents difficulties. All those under 18 receive a full-time, mandatory programme of education and training, therefore comparisons involve either (a) comparing quality/type of provision or (b) comparing under-18s with over-18s not in education or training. The difficulties experienced in applying an experimental design are discussed further in Chapter 3.

[7] 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 and DfES 2000): Entry 1, 2 and 3; Level 1 and 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 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 programme length and assessment practices.

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.

Data were collected from all sites concerning students' attendance overall and on discrete literacy and numeracy classes. 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 and other subjects.

2. Young people in the classroom: the observation study

2.1 Attitudes towards learning

Consistent with other research on offenders, many of these young people came to literacy and numeracy classes with a fairly negative educational history. Less than half had completed compulsory schooling, even fewer had gained any qualifications at school (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%

Asked to represent their enjoyment of provision on a seven-point scale, where 1 was 'great' and 7 was 'awful', over a third rated their enjoyment of school as 'very bad' or 'awful' and their mean score was 4.5 (standard deviation [sd] = 1.9). However, they did (slightly) prefer the education and training they had received during the research period, either in the community projects or in custody. 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).[8] In many cases, current provision was mainly vocational or half vocational and half education. 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, were asked to rate their enjoyment of each component 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).

These results were consistent with young people's own educational goals. When asked which courses they would like to pursue in the future, they almost invariably mentioned vocational courses such as plumbing, cooking, mechanics or bricklaying. Only a small minority were interested in academic courses such as AS levels or courses in art and crafts.

[8] Throughout the report, where quantitative data is analysed, the appropriate statistical tests are used to test whether group differences (e.g. enjoyment of school versus enjoyment of post-school education and training) are statistically significant. In this case a Wilcoxon's comparison of the means was the appropriate test. Significant differences are unlikely to be due to mere chance variation and we can safely infer that differences mean something.

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

> 'I would enjoy it because it might help me get a job.' (community)

Those who were negative (38 per cent) commented on disliking such courses and being more focused 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)

2.2 Delivery and focus of provision

Basic skills

Studying literacy has two key aspects: the substance and the skill. By substance we mean what you get out of being literate: reading a novel, a play or a poem which moves you; reading about travel in China or who said what about weapons of mass destruction or about how to change a tyre. It enables us to communicate ideas, instructions, anger, despair, joy. These are the powerful reasons why being literate is so enriching. There is a body of literature on literacy as a socially situated practice, to which we cannot do justice, which develops these ideas much further (e.g. Hamilton et al. 2000). The skills involve being able to: decode written texts; follow the thread of a story or an argument; spell; write legibly; and structure a piece of writing effectively. Without skill, there is no access to substance. Without substance, skill becomes largely mental gymnastics.

In numeracy, the case is slightly different. There is a lack of agreement on what constitutes 'numeracy' (Coben 2003), but it tends to be associated with functional mathematics – 'mathematics at a level necessary to function at work and in society in general' (DfEE1999). In England, adult numeracy is practically defined as 'a relatively limited set of low-level uncontextualised mathematical skills, systematised in the Standards for Adult Literacy and Numeracy (QCA 2000) and operationalised in the Adult Numeracy Core Curriculum (BSA 2001)' (Coben 2003, p.13). As with literacy, there is an issue of the relationship between the skill and the context in which it will be applied. In numeracy, there is reasonable consensus that making links between the student's informal knowledge and contexts and formal mathematical systems is important (Coben 2003; Hoyles et al. 2002). People are better at making mathematical calculations in familiar or meaningful contexts (e.g. Nunes et al. 1993). The obvious relevance of maths in familiar contexts is also likely to be motivating (Roberts et al. 2005).

Most discrete basic skills teaching observed focused on skills, reflecting the way learning objectives were specified in the Adult Core Curriculum.

Literacy

Prior to intervention, literacy sessions in the custodial sites were heavily structured by worksheets which focused on skills: spelling, punctuation and so on. In Cust CE schemes of work consisted of a list of worksheets. Each of three sessions observed in one morning consisted of the same set of worksheets. Every student in every group (ranging from Entry 1 to Level 2) was given the same set to complete. There was no direct whole group or small group teaching. There were no practical activities and no opportunities for collaborative learning. Around half the students in each class did little or no work. This was consistent with their Inspection Report which commented that 'in literacy and numeracy classes especially, behaviour was very poor with a lot of swearing, disruption and various items being thrown'.

In Cust NE well-planned lessons were observed and the classroom environment was more thoughtfully prepared, consistent with their Inspection Report. However, the same emphasis on skills was apparent. Posters on the wall dealt with adjectives and adverbs, doubling consonants, days of the week and months of the year. Lessons observed throughout one morning dealt with prefixes and suffixes. The tutor did all the right things: clear planning, lesson objectives on the board and discussed with the class, whole class introduction to the topic followed by students working individually and receiving feedback. The work appeared to be of an appropriate level for this Entry 1–3 group. In the first session, the class of eight learners attended well to the tutor's presentation and began working quite diligently on their worksheets but 20 minutes into the lesson some of the boys started to flag. Ben called out 'every time we come in here we do this shit work. We are in prison, not in f***ing primary school'. There were 50 more minutes of this lesson to run but the content throughout was on skills (e.g. '*began*, needs no helping word, *begun* needs a helping word. Complete the following sentences. Lessons_____promptly at nine o'clock'). Whilst one boy in the class persevered throughout, for the other students the lesson was punctuated with trips to the toilet, the nurse, the library, with doodling and with outbursts of 'I'm not doing it miss', 'we've done these two sheets already' and 'I can't be arsed'. The second class presented a similar picture. The Inspection Report referred to an 'insufficient sense of purpose or urgency' in too many classes and this was consistent with our observations.

Following intervention in Cust CE, the curriculum was dramatically restructured to increase the contextualisation of basic skills. Classes on Travel and Tourism, World Studies, Science and Business Studies were all observed (all associated with their own accreditation). The appearance of the classrooms changed radically. In the Travel and Tourism classroom, there were travel agent and tourist information areas and there was a range of material on the walls, e.g. local, national and international maps, flags, lakes and mountains; words used in leisure and tourism; posters made by some of the students: 'mind the gate please', and 'don't drop lit spliffs'. Literacy activities now were surrounded by a meaningful context. Students in Leisure and Tourism, working on holidays and food in France, were asked to write about wine, cheese, croissants, or to respond to questions as if they were from customer services. Students in Science classes

listened to a video about China and answered a set of questions on a worksheet or worked on individual laptops with 'Crocodile Chemistry', a computer package which allowed them to carry out virtual experiments, dragging and dropping chemicals into containers, to be heated up with Bunsen burners to create explosions. A tremendous amount of effort had been put into transforming the education provision. Improvement was observed in students' engagement but other factors could still intrude. One boy, Dan, had had a fight on his way to education and this still preoccupied him and caused disruption to those around him. The video about China lasted for 50 minutes, trying students' attention span. In the session on French holidays and food, a student grumbled 'Why do you keep asking me about France?*'*. The difficulties for tutors of offering a curriculum which is meaningful for students with very different cultural perspectives cannot be underestimated. A letter written in one student's folder perhaps illustrates the cultural divide:

The gap between tutors' interests and these young students was often considerable. Even in the restructured curriculum, it was the students who had to bend their interests to those of their tutors.

89 Evil Rd 99 Madness Rd

….. …….

….. …….

Wha Gwarn Blood?

What you been unda? Whats London sayin cause tru say I was thinking bout cumin down to see what da gals r sayin down there an da shops an clubs. So what you sayin? You gona let ya nigga cum cotch at ya crib for a few days? Mek sure you write bk or phone me yea.

Peace out ma nigga

Hypes!

Discrete literacy and numeracy in the community was taught as part of a wider vocational training programme. Some programmes were employing a 'front-end delivery model' (Cranmer et al. 2004) where students were principally classroom based for the first 12 weeks of their programme before going out on placements, others integrated basic skills sessions within vocational courses. The focus on skills (as opposed to substance) still predominated but there was at times the possibility for connection with a world outside the skill-based worksheet.

In two of the six providers observed, the basic skills provision offered entirely individual programmes of work. Students could take time out from their vocational course to compose their own CVs and so on or work towards the qualifications

they needed. This involved working on an individually selected range of worksheets, practice tests etc., which had as their objective the demonstration of skills at the relevant level. In the main this presented a similar picture to the sessions observed in custody in terms of the content, though there was also the opportunity for students to work on material directly related to their future plans (e.g. the development of their CVs as they applied for placements). The atmosphere in these sessions, however, was much calmer, with students getting on with work or occasionally chatting to pals in the class. In these contexts tutors worked with up to 80 students over the course of a week. Compared with the custodial settings, students here had greater flexibility of movement. The positive side of this was that it probably improved the atmosphere in the class. On the negative side, some students rarely attended a full session.

The other programmes, using a front-end delivery model, worked with small stable groups. Examples of skill-based tasks observed were writing an advertisement for a mobile phone (which involved a visit to a mobile phone shop), looking at applications for job vacancies to find missing information and an exercise in communication. The topics were of relevance to the students and the levels of disruption were much less than observed in custodial settings. The more stimulating the materials, the greater the student involvement observed. In a Nacro site, the lesson was on text genres and reading for different purposes. The tutor had brought along a variety of texts, including copies of a BBC Skillswise magazine (not photocopies), from which the students shared the reading of different articles. The session generated lots of discussion about different types of text and their purposes. At a Rathbone provider in the Com SW site, some female students who were working towards an NVQ Level 1 Childcare qualification were observed in the Key Skills Room. Both the rooms on this floor had a range of material on the walls, both skills-related (times tables and the alphabet), but also substantive (maps, cards, pictures, informational posters relating to childcare). A literacy activity observed involved a debate on the pros and cons of abortion, relevant to the Childcare qualification but also allowing the tutor to cover areas required by the Literacy Core Curriculum (e.g. under the Speaking and Listening objectives: Engage in Discussion). Here there was purposeful and enthusiastic discussion.

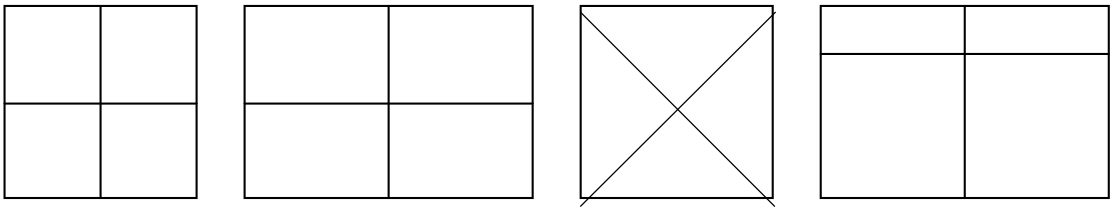
Numeracy

In the custodial sites, again the classroom displays were of skills-based materials: times tables, prime numbers, simple fractions, displaying data, etc. Prior to intervention, schemes of work for numeracy were essentially packs of worksheets covering the skills required for accreditation at the relevant level. In a context where students went in and out of classes on a roll on roll off basis, where there was a wide range of abilities within each class and where students might be taught by more than one tutor in any one week, these arrangements were functional.

The worksheets attempted to place maths problems in real-life contexts. For example, a booklet on fractions used the context of a fundraising event for a community centre. The front cover suggested discussion about the context and about what number skills would be important for running the stall. But such discussions were never observed as part of numeracy lessons. Inside were a range of problems relating to fractions such as the one illustrated in Figure 1.

Figure 1: Entry level 2 numeracy problem

Put a √ by the pizzas which are divided into quarters and a X if they are not.



Shade a quarter of each pizza.

There are number of issues illustrated by this fairly typical example of worksheets used in both custody and community. In terms of the interest value, it is unlikely that mass produced worksheets can reliably offer contexts that are motivating to students, as their interests are very diverse. Fundraising will be interesting to some but not others, as will other worksheet topics observed, such as 'working in a garage' and 'allotments, gardens and garden centres'. For individual problems, the context was frequently almost invisible. Figure 1 illustrates something very like standard decontextualised problems on fractions to be found in primary school maths workbooks and bears little resemblance to pizzas. To really contextualise learning, some form of interaction between tutor and student around captivating contexts is necessary, something quite rarely observed.

As seen in literacy classes, at least half the students were very reluctant students. One morning in Cust NE started with 15 minutes whole class instruction for eight students. One was immediately rude to the tutor and was excluded from class. A second complained 'I've done the test. I shouldn't have to do education'.

> Tutor: 'You won't get a certificate.'
> Student: 'I don't want a certificate.'

A couple of other boys chatted or stared into space. The other four students worked well for 20 minutes but then joined the chatting, doodling and staring out the window. Generally, in all the classes observed, the volume of work completed was usually fairly limited.
In Cust CE, students came into class, collected their folders and worked on their individual worksheets throughout the lesson. Here, teaching was always at the individual level, structured by the worksheets and this did raise issues about learning. For example, in one numeracy class, a student was working on a problem relating to proportion:

> To make 10 biscuits, you need 40 grams of flour and 20 grams of butter.
> How much flour and butter do you need to make 20 biscuits?
> To make 5 biscuits?
> To make 15 biscuits?
> To make 4 biscuits?

The student could work out the required quantities for 20 biscuits and 5 biscuits by doubling and halving. He could work out quantities for 15 biscuits with a little encouragement, but the calculation for 4 biscuits required more than intuitive understanding. It needed method. It is difficult to teach this method in the context of the worksheets. The Learning Support Assistant (LSA) did try to help him but

she wasn't quite sure herself. Ratio is quite a difficult concept to grasp and it was clear from our analysis of students' induction assessments that two-thirds had difficulties with a range of problems like this one. It is in this context that group teaching is helpful. Having to extemporise in these one-to-one situations will normally mean that at best the student is shown a procedure for calculating the correct answer, allowing little opportunity for addressing conceptual understanding. At worst the student is shown the wrong answer. From our observations, this was a particular issue for numeracy, where LSAs were confused about some of the problems themselves.

In Cust CE, following restructuring/intervention, a World Studies lesson was observed (attracting its own AQA unit accreditation), which illustrated the constructive possibilities of contextualising numeracy. The walls were covered in maps and large framed presentations of students' work on cars, Europe, Africa and Australia, in sharp contrast to the quite barren environment pre-restructuring. The focus of the session was on constructing a pie chart based on demographic statistics of the USA, and the tutor, explaining the lesson, told students that this would complete their studies of America. The tutor introduced the activity with an example of a pie chart of where students came from in the UK (a topic which is of great interest in custody – we were always closely questioned about where we lived). The students struggled to add ¼ and ¼ but the tutor patiently continued to show them techniques on the board, asking them to reconsider the work they had done on adding fractions. The tutor went through the calculations needed, showing different ways to work things out. On the whole, students were very engaged, calling out answers and working together to create a pie chart based on the information on the board. Another popular maths activity was observed when students had a break in a comfortable seating area and the tutor brought out Division Dominoes.

In the community sites, as in custody, individual work on worksheets mapped to the Adult Core Curriculum was the standard format. Coben's (2003) description of 'low-level uncontextualised mathematical skills' applied. However, although there was lots of chatting, walking off for a 'fag break' and so on, students did seem to find this work quite soothing, work got done if not in huge volumes. Only two observed sessions departed from this format, in all the rest, any teaching was one-to-one in the context of the worksheets.

One tutor-led session about and weight and measure started with a discussion about why it is a useful topic to study: knowing the size of shirt to buy a brother, for cooking and so on. The students directed all their attention to the tutor and the discussion, regularly chipping in with their own examples. Next, students worked in groups through a list of questions involving practical tasks with measuring jugs and liquid, tape measures and a plastic torso with a bow tie called Healthy Hector. Students worked well for 15 minutes and then the tutor compared the answers between the groups, which provided a range of teaching opportunities including conceptual understanding: the use of metric and imperial systems (one group used inches, the other centimetres), understanding anomalies and checking that weighing scales are at zero. Levels of student engagement were unusually high in this session and students were enjoying themselves.

The other was observed in the group studying for their Childcare NVQ. Students were given a hypothetical budget of £1000, various catalogues and access to the internet. Their task was to purchase what they thought they might need to fully

equip a nursery within the budget. In addition to their budget, they were to cut out pictures of their purchases and create a montage. This work would also contribute to their NVQ in Childcare.

Finally, in one observation we saw students playing a maths game, Math Magic: The Ultimate Math Challenge, involving adding, subtracting, multiplication and division. They were completely immersed in what they were doing and all the talk was focused on the game. This went on for about 20 minutes, at least as good an attention span as for any formal activities.

The context of basic skills

The predominant focus was on functional skills in the literacy and numeracy teaching observed. This is not necessarily a bad thing in principle, indeed the thrust of the Tomlinson 14–19 report (2004) and the Skills White Paper (DfES 2005) all underline the importance of functional skills. However, if the material is not of intrinsic interest, students often switch off. In custody, in literacy and numeracy classes at least half the class did very little, getting increasingly bored and frustrated. The atmosphere in the community was better. It is difficult to be confident about why this was the case. Students had greater freedom of movement in the community. If they felt negative about learning basic skills they just didn't turn up. This was certainly an option in some of the centres where the main requirement was to attend the vocational course. The students tended to have fewer problems than those in custody and could be expected to be less disruptive. Community contexts also provided more contextualised learning. In both the community and custody, where learning was contexualised (either in the subject matter or in games), students were
more engaged.

One question we asked ourselves was whether the custodial setting was so difficult that fairly disrupted learning was inevitable. Even after major restructuring in Cust CE, a number of lessons were observed where a good proportion of students spent little time learning. However, the lesson on pie charts, the Crocodile Chemistry and Division Dominos were more engrossing. Also, students were observed both in Cust CE and in Cust NE in other formal education classes and what we saw there was an extraordinary transformation in the atmosphere and in student participation. In Cust CE, the drama tutor had planned a session based on the reality TV programme *I'm a celebrity, get me out of here* called 'I'm a good boy, get me out of here'. Following a video, the students discussed TV and films that deal with crime with one of the learners writing these down on the flip chart: *Crimewatch*, *Crimefighters*, *Dumb and Dumber*, *Rail Cops*, *Guns and Crime*. There was a discussion about the different genres, the nature of reality TV, the content of the different programmes, and what they liked best and why. This led to a discussion about how they behaved differently in different contexts, about how atmosphere influenced their behaviour and so on. The students were completely engaged in the activity, not a swear word to be heard. It would seem that these young men could sit still, participate and be thoughtful and enthusiastic. This echoed the inspection report which spoke of 'good development of… expressive skills through stimulating teaching'. In Cust NE, a lesson on the Social and Life Skill syllabus, 'Challenging prejudice and discrimination' was observed (twice). The lesson about stereotypes was fairly structured, relating to drug use, gender, age, ethnicity and disability. After some

discussion about stereotypes, the students were asked to draw a picture of someone who takes drugs (a topic close to their hearts). Then they discussed their drawings and the tutor pointed out that they had drawn addicts. She then drew a picture of herself on the whiteboard and commented that anyone could take drugs – she took alcohol, coffee, she might smoke or take Prozac. The boys were really enjoying this class. There was laughing and joking but they completed a written task, identifying the positive and negative features of a number of stereotypes. They worked consistently for an hour. It would seem that formal education can function in custody and that it really may be about getting the content right.

If the content is not intrinsically interesting, what other aspects of basic skills courses might motivate? Major incentives related to future plans and job aspirations.

Assessment, differentiation and target setting

In custody it was more difficult to make connections with students' future plans, or even on occasions to ensure that work was at an appropriate level. Before restructuring, students in Cust CE did not even routinely work towards qualifications in literacy and numeracy. Juvenile offenders are typically in custody for relatively short periods of two or three months and it is challenging to structure schemes of work leading to qualifications during this period. However, the unit qualifications introduced in Cust CE could be completed in eight weeks and level qualifications for literacy and numeracy were also achievable. Qualifications have an additional 'currency' in custody as they contribute to early release. Tutors at Cust NE used the lure of gaining qualifications to encourage students to work. One aspiring bricklayer was flagging in a numeracy class.

> *Tutor*: 'Don't you need your certificate?'
> *Student*: 'Yeah, I need it to get into college. I didn't get anything from school.'
> *Tutor*: 'Well you just have to finish this section and you can do your test.'

This worked when tutors knew their students, but not so well when students had several tutors for the same subject, or supply cover.

A very common grumble from students both in custody and the community was that the work was 'too easy'. To some extent, this was probably a reflection of the apparently 'basic' nature of the skills being covered.

> 'The YMCA was too easy, like infants school – apostrophies, spelling etc.' (student in custody).

Unfortunately many of the students had gaps in their knowledge which meant that studying things like apostrophies were not 'too easy'. However, particularly in custody, the fact that students had to go to education and that tutors did not always know what to expect or have much control over new arrivals meant that work being set was not at the right level. Programmes for those who had already been following a GCSE curriculum did not take account of the more advanced skills they had in some areas. In one class in Cust CE, a student refused to do the work in his folder saying it was too easy (Entry level 3). After about 15 minutes, the researcher observing the session gave the student a GCSE maths

investigation which he worked on effectively and with enthusiasm, confirming his ability to tackle Level 2 work.

In the community the match between student and work level was observed to be less of a problem. Tutors tended to know their relatively small groups of students well and have the opportunity to assess and track progress, an advantage of front-end delivery. Where tutors dealt with larger numbers of students who were simultaneously attending vocational courses, students in part used the basic skills class to complete tasks that they brought to the class (CVs, job searches, etc.) and this meant a good match with targets that they bought into. Otherwise they were working towards a specific qualification. Lack of precise targets and schemes of work in these contexts could lead to time being wasted. For example, one student's target was, 'To improve spelling'. The lack of specificity of this target was reflected in the fact that he was working his way through the whole of a spelling pack. Diagnostic assessment would have enabled the tutor to write targets that were both SMART (Specific, Measurable, Achievable, Realistic and Time-related) and appropriate to the students' needs.

The community courses, that always had some link with vocational training or employment, enabled students to make links between basic skills and employment. For example, in Com SW, Aaron was working towards his Entry level 3 in Literacy. He talked about his work placement at a nursery, which he loved, about how he would like to read to the children and about his dyslexia which was holding him back. More detailed, diagnostic assessment linked to students' own targets were also observed. The tutor, Joan, carried out one-to-one target-setting sessions with all learners. Joan asked Kathleen about her goal to work in a school. Joan then asked about the qualifications Kathleen would need and they decided on a Level 1 NVQ in Childcare. In Basic Skills, Kathleen was at Entry level 2 in both Literacy and Numeracy (too low for the NVQ) and Joan told her that she should be able to move up a level during her thirteen weeks of Pre-Vocational Training. Joan also suggests that if Kathleen returned for an additional period of 13 weeks she should be able to achieve the NVQ qualification. Joan then went through the Diagnostic Assessment Kathleen had completed, which showed the specific areas that needed attention. For those areas a goal was written down so that both Joan and Kathleen were clear about what needed to be accomplished. All these goals had associated worksheets, which were put into the Kathleen's folders for her individual work.

Where links were made between work and students' own goals, this was observed to be motivating.

Learning Support Assistants and one-to-one support

Where students were working on individual worksheets they were likely to need teaching help from time to time and learning support assistants (LSAs) were very helpful here. Many students were not confident about working on their own and spent large amounts of time not working unless they had the one-on-one attention of a tutor or LSA. This pattern was observed on numerous occasions, where tutor or an LSA could enable a student to solve some difficulty that was holding them up, or to cajole them to complete work. The increased number of LSAs in custodial settings, made available through national funding during the

course of the research, was observed to increase opportunities for one-to-one support, something which students commented on positively at interviews.

However, LSAs are not tutors. They were observed to keep a watching brief on students, coming to assist those who needed help but they tended not to be proactive and this sometimes meant that they were not fully occupied. Especially in custody, it was not infrequent to observe classes of four or less students and two adults (a tutor and an LSA). Given the lack of whole group instruction there would seem to be scope for more structured one-to-one work. This would have training implications. Some issues in numeracy have already been discussed. In literacy too, a knowledge of the learning process would have been helpful. In one class in Cust CE, one student whose English was very limited had problems with irregular spellings. He was completing a worksheet and asked for a number of spellings. Each time, the LSA spelt out the word for him: 'plough', 'field' and 'climbing'. It would have been preferable to develop the student's phonic analysis by getting him to hear sounds in words and spell what he could himself, or to identify particular difficulties he had (long vowels, -ing endings, etc.). Alternatively, writing the words down would have helped him with visual strategies. Rather than a set of apparently random worksheets, the use of a structured scheme, such as Phonological Awareness Training or Toe-to-Toe, in conjunction with the LSA's help would perhaps have been more effective.

Lack of confidence – a barrier to learning

For some students, a lack of confidence became a real barrier to learning. In Com SW, two students were trying to complete their Entry level 3 end test. The tutor asked them to consider what would persuade someone to buy a mobile phone. She wrote some selling points on the whiteboard: colour, make, model, features, bargain, radio, games; most of which she thought of herself. Kieran was quite content to cut out pictures of phones, stick them on paper and colour around them but when the tutor asked him to write something on his advertisement he groaned, 'I can't spell nothing, I can't read what I need to spell'. She suggested he write 'small grey flip-phone'. A disagreement ensued concerning whether 'small grey flip-phone' is a phrase. Kieran said it was just words and that he wanted to write them one underneath the other. This dispute was not resolved and Kieran wrote nothing at all. The tutor then asked the students to put their names and addresses on the adverts (one of the required skills for the end test). Kieran argued that he didn't want 'people coming round to his house'. The tutor explained that it was not a real advert, which of course he knew all along, but he still refused. It was hard not to interpret Kieran's complete avoidance of putting pen to paper as a manifestation of a deeply engrained lack of confidence. This kind of behaviour was observed in both custody and community.

Tutors and LSAs understood the importance of supporting their students' self-confidence very well. In every context they were liberal with their praise and were careful to avoid soliciting work from students that would lead to failure.

3. Interventions and outcomes: the experimental study

3.1 Implementing change

Having presented the varying forms and quality of provision observed in each site, and how this changed qualitatively in Cust CE following intervention, we move on to findings from our experimental study. The question addressed here was: are achievement levels enhanced by either increasing the time spent on discrete literacy and numeracy provision, or by increasing its contextualisation and links to vocational elements?

As described in Section 1.4, we aimed to test the impact of interventions through comparisons between treatment and control groups at each site. In the case of Com SW, we had originally planned a research design in which additional discrete literacy and numeracy provision would be offered in six of the twelve community-based projects. This would have enabled comparisons to be made between students' progress before and after the introduction of the new and more intensive provision. The intervention was mounted, staff were hired and trained, and students were recruited. However, this had to be abandoned, falling back on the naturally-occurring contrasts in existing provision as described previously. This failure is nonetheless very informative. Essentially, the intervention failed because many students refused to accept a programme requiring them to spend two days per week on discrete literacy and numeracy; they preferred to spend the time engaged in either vocational training or work. This is very consistent with young people's comments and our observations of their behaviour as previously noted. 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. Arguments with a particular provider, a change of mind, or the unavailability of a desired option, all led students to change course. The same pattern was observed with our intervention provision.

Based on this experience and on 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) in order to increase the degree to which literacy and numeracy provision was contextualised and embedded in other training. We ran several training days for basic skills and vocational tutors, covering diagnostic assessment, lesson planning, contextualising materials and embedding basic skills in vocational training. In Com L we also provided some individual support to tutors but this level of intervention did not make a marked difference to provision. Training provided by external agencies and not owned and followed up by provision managers did not appear to be effective. We also observed this for other training offered at the research sites. In Cust CE we worked with a new education team who were also keen to contextualise and embed basic skills. As described in Chapter 2, this led to substantial change. Here the final result was a highly contextualised, discrete literacy and numeracy programme, and literacy and numeracy embedded in the

vocational training which formed half of most students' programmes. However, the process of change took much longer than anticipated – over 18 months in Cust CE – and the 'treatment' groups of students 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 between the literacy and numeracy provision in the treatment and control groups in these two comparisons of less contextualisation versus more. In the following section where we look at experimental effects on literacy and numeracy, we are essentially only able to compare:

- little or no discrete provision with discrete provision (in both Com SW and Cust NE and over all the sites)
- poor discrete provision with good (Cust CE control with Cust NE treatment).

3.2 Experimental comparison between literacy and numeracy conditions

Table 2 shows the average (mean) number of hours students spent in discrete literacy and numeracy provision in a week.[9] Students in the four treatment groups across the sites received fairly similar amounts, on average about one day per week (6.9 hours). As expected, the students in control projects in Com SW spent a very limited amount of their time on discrete literacy and numeracy. The Cust NE control group were not offered any education and the Cust CE control group also received fewer hours of literacy and numeracy on average because nearly half (number, n=14) were enrolled on a full-time vocational course.

Table 2: Average number of hours of discrete literacy and numeracy received weekly

Research condition		Hours of literacy and numeracy weekly	
		Mean	(standard dev.)
Com SW	Control (n=12)	1.25 hrs	(2.3)
	Treatment (n=13)	6.7 hrs	(7.0)
Com L	Control (n=14)	6.1 hrs	(5.3)
	Treatment (n=23)	6.2 hrs	(5.3)
Cust NE[10]	Control (n=17)	0 hrs	(0)
	Treatment (n=23)	7.5 hrs	(0)
Cust CE	Control (n=29)	3.9 hrs	(3.8)
	Treatment (n=16)	7.0 hrs	(2.6)
Total	147	4.9 hrs	(4.6)

n = number

Impact on literacy

Table 3 shows the average levels and raw scores on the BSA assessment at two time points approximately 20 weeks apart (the time elapsing between 'pre-test'

[9] A separate column, giving standard deviations, shows the level of variation between students, which was quite large. That is, some students within each group received a lot more provision than the mean, others a lot less.
[10] At Cust NE it was not possible to collect official registers for education attended by the students. 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 literacy and numeracy; this is the figure estimated in Table 3, though it is a slight overestimation as it does not take account of any absences due to illness, visitors, etc.

and 'post-test'). A score of 1 equates to Entry 1, 2 to Entry 2, 3 to Entry 3 and 4 to Level 1. There was significant improvement between pre- and post-test literacy levels overall, amounting to about a third of a level – roughly the expectation for eight months in school (Wilcoxon's $Z=4.43$, $p<.001$). However, the gains made by the treatment groups appear to be only marginally better than those made by their controls, and in one case, slightly poorer. In Com L, the control group improved by about a third of a level (2.6 to 2.9), similar to the overall picture, the treatment group did not improve their levels on average (3.1 to 3.1), perhaps because of their relatively high starting point.[11] For literacy, in the four research sites, in no case did the treatment 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 (where provision was judged less adequate), but this did not reach statistical significance.

Finally, comparisons were also made between those who had attended at least six hours of discrete literacy and numeracy provision weekly with those who had not received any such provision. The former group made slightly greater progress, but again, this was not statistically significant.

[11] Effects were tested using a fixed-entry multiple regression, with post-test score as the dependent variable and controlling for pre-test level before looking at group differences.

Table 3: 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)
Com SW	Control (n=12)	2.6 (1.0)	2.8 (0.9)	51.1 (13.4)	55.0 (13.4)
	Treatment (n=13)	2.85 (0.7)	3.0 (0.8)	54.4 (10.9)	58.4 (12.0)
Com L	Control (n=14)	2.6 (0.9)	2.9 (0.7)	51.8 (14.3)	54.4 (12.3)
	Treatment (n=23)	3.1 (0.7)	3.1 (0.8)	59.1 (8.9)	61.3 (8.6)
Cust NE	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)
Cust CE	Control (n=29)	2.9 (0.9)	3.2 (0.8)	54.7 (12.1)	59.6 (11.3)
	Treatment (n=16)	2.6 (0.9)	3.1 (0.7)	52.3 (13.3)	57.3 (10.9)
No discrete basic skills v minimum 6 hrs wkly	No ed (n=44)	2.7 (1.0)	3.0 (0.9)	52.4 (15.8)	57.8 (12.0)
	6hrs plus (n=67)	2.7 (1.0)	3.1 (0.9)	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 1=1; Entry 2=2; Entry 3=3; Level 1=4.
n = number

Impact on numeracy

Table 4 repeats Table 3, but for numeracy. As with literacy, overall there were significant improvements in numeracy between pre- and post-test, this time amounting to about a quarter of a level (Wilcoxon's $Z=3.45$, $p<.001$; Table 4). In one of the four mini-experiments/quasi-experiments the treatment group did significantly better than its control group. The Com SW group receiving discrete basic skills made more progress in numeracy than the control group who were at work or receiving vocational training only ($\beta=.25$, $p<.05$)[12]. The effect size (Cohen's d, Cohen 1988) of 0.47 is small, verging on medium-sized, according to Cohen's classificatory scheme. This level of effect is very respectable for this kind of intervention and well worth having. Similarly, in the other comparison where we could be reasonably confident that there were differences in amount of literacy and numeracy provision between treatment and control groups (Cust NE), students attending numeracy classes made more progress than those who did not (0.6 of a level as opposed to 0.1 of a level). While this difference was not statistically significant, 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.

[12] Statistical significance (i.e. whether differences between groups were likely to have occurred by chance or to signify a 'real' difference) was again established using multiple regression. The figure quoted is the appropriate statistic for this analysis, significant at the 5 per cent level.

Comparing Cust NE with the control group in Cust CE, there was no statistically significant difference, but students in the less adequate Cust CE provision made less and statistically non-significant progress over the time period (0.1 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 4: 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)
Com SW	Control (n=11)	2.4 (1.0)	2.55 (0.8)	32.4 (9.3)	33.4 (8.8)
	Treatment (n=13)	2.6 (0.7)	3.0 (6)	35.3 (7.6)	39.1 (6.2)
Com L	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)
Cust NE	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)
Cust CE	Control (n=28)	2.9 (0.7)	3.0 (0.8)	37.0 (8.7)	38.5 (7.8)
	Treatment (n=14)	2.9 (0.5)	2.8 (0.6)	37.2 (7.1)	38.9 (5.9)
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 1=1; Entry 2=2; Entry 3=3; Level 1=4.
n = number

3.3 Discussion

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 just under 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 have been expected to make less progress than the average teenager – but they have in fact done rather well. It would seem that keeping young people in education or training can offer them real benefits.

Because improvements were observed in control and treatment groups, this does raise doubts as to whether the overall improvements signify learning gains or some artifact of the research, such as familiarity with the test, 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. In previous research, using a similar community sample and measures, we found similar-sized learning gains in literacy and numeracy (Hurry et al. 2005). In this previous study, 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, these results would be difficult to explain.

There is a concern that, for young people in custody, baseline assessment soon after arrival may underestimate their literacy and numeracy skills. The danger is that they may become upset and that this would depress their test performance. However, the young people in community made similar gains and in community contexts the concern about depressed scores is less plausible.

The punishing attrition, with a loss of 46 per cent of the sample, admits the possibility that only the better students were followed up, while those with little interest in learning were lost to the study. We know that particularly in the custodial sample, we frequently failed to re-assess students because of institutional factors – early release, or difficulty in accessing students' test results, for example – rather than student drop-out. Although few differences were identified between those followed up and those not, those not followed up were significantly more likely to have left education before school-leaving age, and less likely to have gained qualifications (though this was not quite statistically significant), and this does allow for the possibility that this group had particular problems with attending educational provision.

It is perhaps to be expected that those young people who failed to settle in provision also failed to make any progress in literacy and numeracy. For those who did attend provision, it was encouraging to see that progress is possible, but how good was this progress? On average, students in the present study received an estimated 143 hours of education/training in the five months over which progress was measured. For literacy, Comings and colleagues (Comings and Soricane 2005, Comings et al. 2000) suggest 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 – the results we saw seemed good.

What of the impact of increasing the amount or improving the contextualisation/ quality of discrete literacy and numeracy provision? We found 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 literacy and numeracy provision, we measured the 'improved' group too early. The provision in Cust CE changed quite radically over a period of one and a half years and this gives confidence that effective intervention is possible but that there are no quick fixes. This interpretation is backed up by the post-intervention classroom observations described in Chapter 2, which indicated a general increase in engagement levels but also some residual issues or 'teething' problems arising from change. In the community site where we worked with staff to increase contextualising 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 threw up 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 young people's literacy and numeracy skills. The story for numeracy seems to be a little different. Here, those receiving discrete numeracy 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 decontextualised teaching may be important. 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 or other factors) 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 the question and is worth following up with further exploration.

The implementation of the quasi-experimental design was problematic, but 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. Of greatest note to policy and practice is this: young people who lack qualifications and/or expertise in literacy and numeracy will often tolerate some forms of education better than others, and the degree of tolerance has to do with how strongly they associate literacy and numeracy with their future aspirations. Given the choice of whether or not to attend discrete literacy and numeracy provision (as in the community contexts), many will reject these discrete sessions. This in turn undermines the viability of such programmes. 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, acknowledging that learning is something you do, not something you have done to you.

In terms of research practice, the failed intervention highlighted 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, and these could include 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.

4. Conclusions and recommendations

4.1 What works?

The young people in our study, with below average levels of literacy and numeracy and a history of educational disengagement, made significant gains that compared well with progress made by young people in mainstream education. On the basis of our findings, therefore, we support policy initiatives to increase the time young people in the youth justice system spend on education and training. This is in itself challenging as these young people are often out of education and employment and many are very reluctant to learn.

Getting the curriculum content right is crucial to engaging these students. To this end, the heavy emphasis on decontextualised functional skills, more often than not, appeared counterproductive. When translated into reality, 'functional skills' – the underlying philosophy of the Adult Core Curriculum – frequently resulted in exercises reminiscent of primary school which young people found both boring and humiliating. Since having poor literacy and numeracy skills in adolescence is frequently a continuity of early difficulties with reading and maths (Bynner and Parsons, 1997, Farrington 1996), we would also argue that any reminder of earlier educational failure is bound to reinforce negative associations with learning.

By contrast, relating learning to young people's future vocational goals was seen to be an effective motivator. As noted in Section 2.1, young people significantly preferred vocational training to academic courses, and whether or not they chose to pursue the latter was largely determined by how relevant these were to their employment-related aims. Young people in the community were in general more actively engaged in learning than those in custody, and one reason for this may be that tutors could make connections between literacy and numeracy and work placements. This is consistent with the positive effects of 'embeddedness' on student achievement, attitudes and retention (Casey et al. 2006). Note that Casey and her colleagues were not defining embeddedness to exclude discrete literacy and numeracy provision, but rather that this provision should be 'an integral part' of vocational study or co-ordinated with vocational study. Based on our own findings here, we too would recommend the same. However, there are some problems with implementing these principles in custodial and community contexts. Firstly, especially with front-end delivery models, students in the community are presented with the literacy and numeracy elements of their course before they start vocational training and work placements. Some of the students we observed and spoke to were not at all clear about their future goals. Secondly, in custody, making practical, tangible connections with future employment was difficult due to a shortage of vocational places, or in the case of one of the YOIs, no vocational training at all.

Given these constraints, a more feasible but similar approach to embedding is contextualising. By this we mean the presentation of literacy and numeracy skills within contexts that are meaningful to young people, whether through games and activities, or through topical issues such as drug use, rap or other aspects of

youth culture. Contextualising provides opportunities to work on basic elements of language and mathematics without the connotation of primary school and enables the application of functional skills to real-life problem solving. As the case studies of Cust CE before and after intervention showed, young people were on the whole observed to be more engaged in contextualised lessons than in those which relied on generic worksheets.

What makes a successful contextualised lesson is complex and not something that we can necessarily unpick in the context of the current research. We note, however, that the contextualised lessons observed employed a variety of different pedagogies in comparison to the decontextualised ones. They were more likely to include whole class teaching, class discussion and practical activities. Exactly which elements of these lessons contributed to their success was not entirely clear; but perhaps the more important lesson is that, in the process of contextualising learning, a different – and more engaging – kind of lesson is produced.

This is not to suggest that discrete provision should be discarded completely. The manager responsible for reshaping the curriculum at Cust CE, who enthusiastically developed a contextualised and embedded curriculum both in education and in vocational courses, nonetheless wished to retain dedicated literacy and numeracy sessions. Her argument was that these were necessary in order to systematically cover a curriculum, to advance students' literacy and numeracy levels and to provide opportunities for targeted practice on these skills where needed.

Drawing together findings from both strands of our research, we offer the following recommendations for developing practice, policy and research.

4.2 Recommendations for policy and practice

- Contextualising learning works, and contexts must be meaningful and interesting to young people. Rather than relying on generic worksheets and individual work, employ different materials and pedagogies including the PLUS programme 'enrichment' materials, whole class teaching, group interaction and practical activities. This has implications for the ways in which the Adult Core Curriculum and associated targets are being interpreted by providers of literacy and numeracy education. The Adult Core Curriculum is structured according to the skills addressed. Assessment reflects this structure. Policymakers need to be careful that this useful resource can be implemented in a way which does not ignore the interests and aspirations of young people.
- LSAs provide valuable support for students, especially when one-to-one attention on individual work is required. However, from what we observed, they were not being used to full potential and could be given more training and a more structured role.
- For provision to develop effectively along any of the lines above, there needs to be co-ordination between educational and vocational tutors, teaching assistants and other related staff. This is easiest to manage where providers offer front-end literacy and numeracy provision to small numbers of students enrolled on vocational courses. Where provision is more integrated (e.g.

throughout a vocational course or taught across departments), as was the case in the YOIs, regular staff meetings are important. For example, at Cust CE, the educational team implemented a weekly meeting to discuss schemes of work and ILPs. This enabled the progress of each student to be followed closely and there were also opportunities for collaborative planning and reflection.

4.3 Recommendations for further research

- The observation techniques used in the study have provided a good overview of provision. A useful next step would be to use more structured observation techniques to measure precisely which curricula and teaching methods are associated with more time spent productively. This offers an alternative to pre- and post-testing learning gains in terms of quantifying learning, which would be useful given the difficulties of conducting rigorous studies of learning progress in custodial and community settings.
- We found no real evidence to suggest that discrete provision offers an advantage over vocational training in terms of literacy progress. With numeracy progress, however, we did see a slight increase in effectiveness. This is worth following up, perhaps making use of naturally occurring comparisons.
- Finally, closer attention should be paid to the impact of contextualised learning. The lessons observed in this study were formal, decontextualised, worksheet- and skills-based. Meanwhile the effectiveness of discrete literacy and numeracy provision which is contextualised to a greater degree and involves more active learning remains to be tested.

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Appendix 1

Comparing young people followed up/not followed up at first measurement point

	Not followed up (n = 123)	**Followed up (n = 147)**
Ever been in care	14%	16%
Left school before 16	76%	58%*
Suspended/excluded from school ever	84%	83%
Qualifications at school	25%	35%
Mainstream school	84%	79%
Enjoyment of school 1 = great, 7 = awful	Mean = 4.7	Mean = 4.5
Enjoyment of current education/training 1 = great, 7 = awful	Mean = 3.6	Mean = 3.8
Literacy level	Mean = 2.6	Mean = 2.7
Numeracy level	Mean = 2.6	Mean = 2.7

* $p < .01$

Appendix 2

Treatment and control groups in the experimental study

In each of the four research sites, samples were divided into 'treatment' and 'control' groups as follows:

1. *Community site, South Wales (Com SW – all offenders)*
   Students were divided by project into those projects offering vocational training but little or no discrete literacy and numeracy provision (n=6 projects – the control group) and those offering discrete literacy and numeracy as part of the education/training package (n=6 projects – the treatment group).
2. *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 literacy and numeracy 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.
3. *Custodial site, North England (Cust NE)*
   The sample 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.
4. *Custodial site, Central England (Cust CE)*
   All students were in education or training. They were divided into two groups: (1) pre- and (2) post- literacy/numeracy staff training and re-organisation. Students in Group 1 were either offered education or vocational training; the education provision was judged in need of improvement by inspectors. Those in Group 2 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.