



National Research and Development Centre
for adult literacy and numeracy

Research report



**“You wouldn't expect a maths teacher
to teach plastering...”**

Embedding literacy, language and numeracy
in post-16 vocational programmes – the
impact on learning and achievement

Helen Casey, Olga Cara, Jan Eldred, Sue Grief, Rachel Hodge,
Roz Ivanič, Tom Jupp, Desiree Lopez and Bethia McNeil
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Executive Summary

This research project explored the impact of embedded approaches to literacy, language and numeracy (LLN) on 79 vocational programmes. The courses were based in 15 further education colleges and one large training provider located in five regions of England.

The 1,916 learners who took part in the research were preparing for national vocational qualifications at Levels 1 or 2 in one of five areas of learning:

- Health and Social Care
- Hair and Beauty Therapy
- Construction
- Business
- Engineering

The sample was selected to ensure a balance of the five vocational areas, the two levels of courses, and those with and without embedded approaches. A four-point scale was developed to differentiate courses in which LLN was not embedded, through to those that were fully embedded or integrated.

Higher retention and course success rates on embedded courses

Learners on the embedded courses had better staying-on rates than those on non-embedded courses, and more positive attitudes to the value of LLN study. On the embedded courses retention was 16 per cent higher.

The embedded courses also had higher success rates than the non-embedded courses. When these data are analysed by vocational level, the increase in success rates associated with embedding is particularly strong for vocational Level 2 courses, with a 26 per cent difference between fully embedded and non-embedded courses.

Increased learner achievement in literacy/ESOL qualifications

For learners on the fully-embedded courses, 93 per cent of those with an identified literacy need achieved a literacy/ESOL qualification, compared to only 50 per cent for those on non-embedded courses. On the fully embedded courses, 43 per cent more learners achieved literacy qualifications.

Increased learner achievement in numeracy qualifications

For learners on the fully-embedded courses, 93 per cent of those with an identified numeracy need achieved a numeracy/maths qualification, compared to 70 per cent for those on non-embedded courses. On the fully embedded courses, 23 per cent more learners achieved numeracy qualifications.

Staffing

Where a single teacher was asked to take dual responsibility for teaching vocational skills and LLN, the probability of learners succeeding with literacy and numeracy qualifications was lower.

Adult LLN are complex areas to teach. Managers should not assume that the benefits of embedding can be achieved by simply adding LLN to the vocational teacher's responsibilities. Any assumptions that adult LLN are easy to teach should be avoided. This research shows that learners benefit from being taught by teams of staff, each with their own different areas of expertise, working closely together.

Features of embedded programmes

The research team did not use fixed models of embedding; they judged courses on a range of features of embedding. Four main groups of features emerged:

- Teamwork between LLN teachers and vocational teachers
- Staff understandings, values and beliefs
- Aspects of teaching and learning that connect LLN to vocational content
- Policies and organisational features at institutional level

Fully embedded courses all showed features from each of these groups. However, within these broad groups, individual courses achieved the same effects in very different ways. For example, successful collaborative teamwork was achieved through a variety of methods. On some courses, teachers taught alongside one another, on others staff found other ways to link up and create an integrated experience for their shared learners.

1 Background, aims and organisation of the research

1.1 Introduction

This research project examined the effects on learner success of embedding the teaching of LLN in Level 1 and Level 2 vocational programmes. The project also sought to identify the key characteristics of successful embedded LLN provision.

The research examined the relationships between embedded LLN provision and:

- the retention of learners on programmes
- the achievement of vocational qualifications and qualifications in LLN
- learner attitudes.

1.2 Context and background

The practice of integrating or embedding LLN into vocational study is not new, but has recently been given a renewed focus as part of the DfES *Skills for Life* strategy.¹

Many learners are motivated to learn a set of vocational skills to access employment, but much less motivated to improve their LLN. They are often not keen to return to studying English or maths, which they may well associate with negative memories from school. Many vocational qualifications also require learners to take and pass examinations in English and maths. Learners need to develop the LLN required for the workplace and the job, for the vocational study and assessment, and also for additional LLN assessments.

Learners who do not have English as their first language, who may be more motivated to develop their language skills, are also motivated to find employment. For those with vocational skills from their country of origin, the embedding or integration of language learning within another subject area can offer an efficient route to learning the vocationally relevant language, while updating or learning new vocational skills.

Many practitioners believe that the most effective way of providing learners with effective LLN learning opportunities is to embed or integrate the LLN teaching and learning within vocational or recreational study and practice. But this practice has not been systematically developed or supported.

This study focuses on learners in vocational courses. It does not attempt to compare more general discrete LLN provision with embedded provision. Learners who choose to attend discrete LLN classes have made a decision to improve those skills. This study concerns itself with the progress of learners whose primary motivation is vocational, and who may or may not acknowledge their LLN learning needs.

¹ DfES Skills for Life strategy, www.dfes.gov.uk/readwriteplus/Skills_for_Life_policy_documents

1.3 Definitions

'Embedded' has become a widely used term in relation to LLN but there is often uncertainty about what this means in practice. The various uses of the term always share the concept of bringing together the vocational or subject teaching with LLN teaching. This project uses a broad definition of the term, which allows for different organisational and structural features to be used to achieve the same end – an integrated holistic experience for learners.

The project developed a scale from non-embedded to fully embedded, through a complex process that is described in detail in section 2. This scale is described primarily from the learner's perspective. At its simplest, for learners on a non-embedded course, any connection between their vocational study and their LLN learning would be made only by the learners themselves. They may, for example, take a mathematical problem from their vocational study to a numeracy or maths teacher, but the learner would be the one making the connection.

A fully embedded or integrated course may or may not include structural features that have often been associated with embedding, such as two teachers timetabled to teach together, or one teacher teaching more than one subject area. In some cases embedding was being achieved through separate LLN sessions within an integrated whole. Building on Roberts' assertion (Roberts et al 2005) that there is 'no one way of embedding successfully' the research team started from the assumption that a simple definition was not possible.

Earlier work (Eldred 2005), had described different models of delivery, or ways of organising embedded provision, but had not fully captured the complexity of ways of achieving integration. One of the findings of the research reported here is that structural features alone are unlikely to be sufficient to secure the benefits of embedding shown in this study; crucial attitudinal features were also present in the embedded courses.

The research team concluded that embeddedness requires a range of features and processes and has to be described from the perspective of both learners and teachers. This report explores the key characteristics and processes of embedding and how they work together effectively, as well as the organisational support needed for them.

1.4 The aims of the research

The project aimed:

- to produce robust, quantifiable and qualitative evidence about embedded LLN provision and separate LLN provision from a large-scale sample of learners on a range of Level 1 and 2 vocational programmes
- to examine whether embedded LLN provision is associated with more positive learner attitudes, and better retention and achievement in both LLN and vocational qualifications than non-embedded LLN provision
- to examine and describe the key characteristics of effective embedded LLN within vocational courses and the organisational arrangements that support them.

These aims can be summarised in the following research question:

What is the relationship between provision in which literacy, numeracy and ESOL are

embedded in a variety of ways, and learners' retention on courses, achievement of qualifications, and attitudes?

The research set out to address this question through an examination of courses with embedded LLN provision and courses where the LLN work was separate from the vocational provision.

1.5 The research sample

The sites

Organisations volunteered to take part in the study on the basis of their having an active interest in embedded LLN provision. Introductory meetings were held to explain the project and to set out what would be required of them. Twenty-one organisations, 18 colleges and three work-based training providers, were visited by the research team during February and March 2005. Project team members met with a senior member of staff to obtain information about the delivery of LLN for learners on vocational courses at Levels 1 and 2 and to identify a balanced set of courses to be included in the study.

At this stage it became clear that, due to flexible enrolment, it would be difficult to obtain statistical data from work-based learning providers within the timescale of the project that would be comparable with that obtained from FE colleges. A decision was made to restrict the study to FE colleges with the exception of one large training provider.

A final sample of 16 organisations was selected to take part in the study. Appendix 1 summarises the background information obtained for each organisation drawn from Ofsted inspection reports and from the Index for Multiple Deprivations that provides a numerical indicator of the social and economic characteristics of the area in which the organisation is based. The colleges are based in nine local Learning and Skills Council areas, in five regions of England.

1.6 The vocational courses

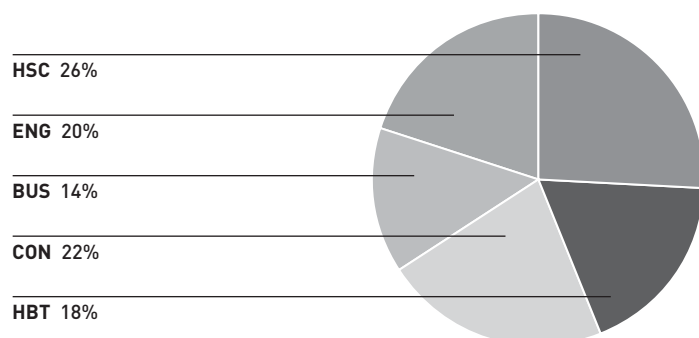
The 16 organisations provided a sample of 79 courses. These courses were selected to ensure that the sample covered:

- Five curriculum areas:
 - Health and Social Care (HSC)
 - Construction (CON)
 - Business Studies (BUS)
 - Engineering (ENG)
 - Hair and Beauty Therapy (HBT).
- Level 1 and Level 2 courses to enable the study to examine the impact of embedding for learners at different levels.
- Both separate and embedded provision of LLN to provide a range of practice to compare in relation to embedding.

Of the 79 courses included in the study, 43 were working towards a vocational qualification at Level 1 and 36 at Level 2, though the numbers of learners at Levels 1 and 2 were more balanced, with 52 per cent at Level 1 and 48 per cent at Level 2.

The distribution of courses across the five vocational areas is illustrated in Figure 1.1.

Figure 1.1: Distribution across vocational areas



The number of learners on each course varied from 6 to 108. In some cases data were collected on several groups taking the same course.

The learners

Data were collected on 1,916 learners for the academic year 2004–05. Socio-demographic data on the learners were obtained from the Individual Learner Record (ILR) assembled by each college for the Learning and Skills Council (LSC). ILR datasets were provided by the colleges and the data were checked using 2004–5 data from the LSC. Summary information on the background data on the learners participating in the study is presented below.

Table 1.1 Learners' characteristics

		percentage	Number ²
Gender	Male	45.6	874
	Female	54.4	1,042
Age	16–17	31.5	597
	18–20	47.2	894
	21–25	8.3	157
	26–35	7.5	142
	36–45	4.2	80
	over 45	1.3	25
	Ethnicity	White British	62.3
Asian or Asian British		8.5	158
Black or Black British		17.9	333
Chinese		0.2	4
Mixed		2.9	54
White Other		5.5	102
White Irish		0.9	17
Other		1.7	32
Disability	Yes	7.8	129
	No	92.2	1,527
Additional Learning Support	Yes	18.4	300
	No	81.6	1,328
Vocational qualification Level	Level 1	52.2	1,000
	Level 2	47.8	916

Information on learners' initial assessments in literacy and numeracy was collected, for a total of 809 learners for numeracy and 886 for literacy/ESOL. These initial assessment data were

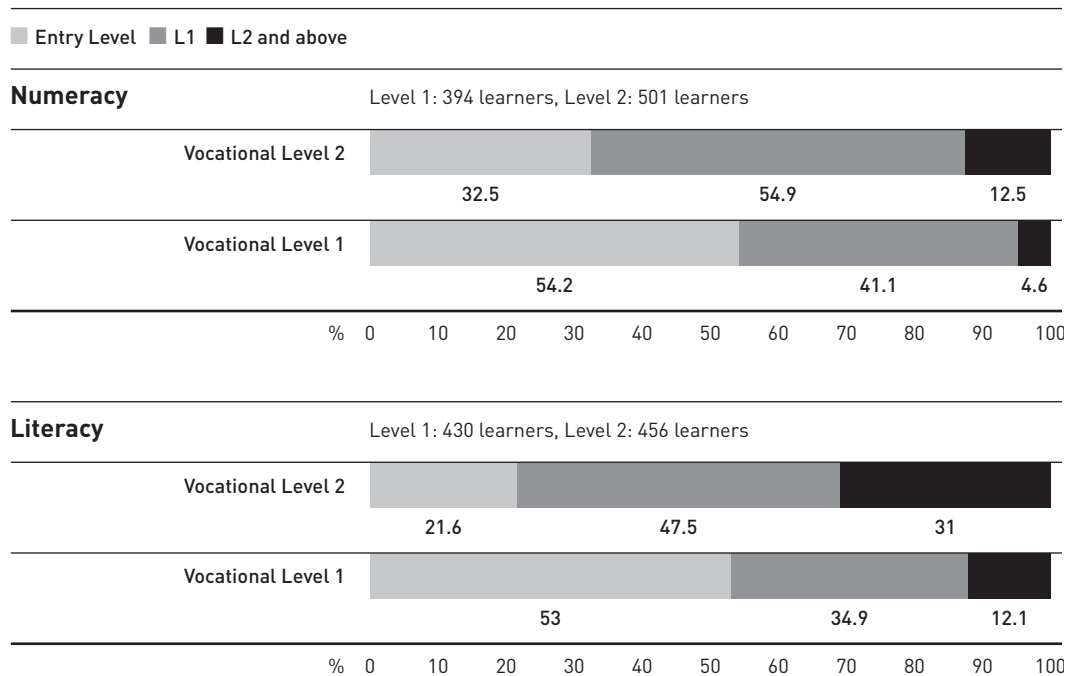
² Figures reported in the table do not include missing values.

provided by the colleges. Different assessment tools were used but all were referenced to the National Standards for Adult Literacy and Numeracy.³

As Figure 1.2 below shows, for learners on vocational Level 1 courses, over 50 per cent were at Entry Level in literacy and numeracy when they started their programmes. For learners on vocational Level 2 courses, 21 per cent were starting from Entry Level in literacy and 32 per cent in numeracy.

These data demonstrate clearly the ‘spiky profiles’ of learners with different skills at varying levels. The learners represented here went on to achieve vocational qualifications at Levels 1 and 2, alongside literacy and numeracy achievements at lower levels.

Figure 1.2 **Learners’ initial assessments in literacy and numeracy**



1.7 Terminology

The LLN learning undertaken by learners in this study was described in various ways in the institutions in the sample. For some it was known as ‘key skills’, for others ‘essential skills’ or ‘basic skills’. For the purposes of this report all forms of literacy/language/ESOL/English/communications learning are referred to as ‘literacy’. Similarly, maths/numeracy/application of number are referred to as ‘numeracy’.

This report uses ‘teachers’ as a general term to refer to those who may be described as teachers/trainers/tutors lecturers in the different contexts in which they work. For ease of reference the report refers to ‘LLN and vocational’ teachers. This should not be taken to imply that the ‘LLN teacher’ is one person. The teaching of adult literacy and, numeracy and ESOL are distinct areas of expertise, usually found in separate individual teachers.

³ DfES The National Standards for Adult Literacy and Numeracy, www.dfes.gov.uk/curriculum_literacy/intro/ns/

2 Research methodology

2.1 The use of mixed methods

The study set out to explore relationships between the provision of LLN in vocational programmes and learners' achievement, retention and attitudes to LLN. The primary focus of the study is quantitative but qualitative data is central to the methodology. Most importantly, analysis of qualitative data enabled the team to identify the features of embedded LLN against which the courses in the sample could be measured. This, in turn, provided the basis on which the degree to which LLN was embedded in vocational programmes could be quantified. It also made it possible to use quantitative methods to test the hypothesis that embedding has a positive association with learners' retention, achievement and attitudes to LLN. The qualitative data were also useful in checking, interpreting and, in some cases, querying the findings from the quantitative analysis. Additionally, this data provided valuable illustrations of the ways in which embedding of LLN works in practice in a range of contexts.

2.2 Quantitative data

Quantitative data were gathered in two phases. Initial data on all learners in the sample were collected in May 2005. Achievement data were then collected from October 2005.

The following data were collected for every learner:

- Age or date of birth
- Gender
- Ethnic group
- Disability
- Whether or not in receipt of Additional Learning Support
- The results of any initial assessment in literacy, numeracy and/or language undertaken prior to the learner starting the course.
- Achievement of vocational qualification (qualification and level)
- Achievement of any LLN qualification (qualification, subject and level)
- Completion

This information was collected from sample colleges directly and then cross-checked with data received directly from the national LSC.

A questionnaire was also administered in order to register learners' attitudes towards their vocational course and LLN provision. A copy of the learner questionnaire can be found on the NRDC website www.nrdc.org.uk

2.3 Qualitative data

The research team conducted:

- in-depth semi-structured interviews
- focus groups
- class observations
- document analysis

Data were gathered from:

- LLN teachers
- Key skills teachers
- Vocational teachers
- Learners
- Programme managers
- Curriculum managers
- Department managers

The bulk of the qualitative data was collected between May and July 2005 and further data were followed up in September and October. In some instances, researchers spoke to the full teaching team and in other instances, only to the vocational teacher or only to the numeracy, literacy or language/ESOL teachers. Additionally, programme managers, curriculum managers and department managers were interviewed. Where possible, researchers also conducted learner interviews, learner focus groups and class observations.

The qualitative data included information on structures, policies and practices at institutional, departmental and course level. Data were also collected to explore learners' and teachers' values, attitudes and opinions on the role of LLN in vocational courses and vocational identities.

2.4 Analysis of the data

The features of embedded LLN

After reviewing the initial qualitative data the research team devised a set of 30 questions in order to code aspects of the qualitative data. These questions related to the features of embedded LLN, observed by the researchers, which the team hypothesised were important to effective embedding (Appendix 2). The questions were applied to the data set for each course in the sample and responses given in a numeric form. Three questions required yes/no answers. The answers to the remaining 27 questions indicated the degree to which a particular feature was true of the observed practice on a scale of 0 = not at all to 4 = completely.

The resulting codes provided the data on embedding in a quantitative form against which data on individual learner retention, achievement and attitude could be set for analysis.

The emerging patterns were shared with colleagues from the research sites at a practitioner seminar to discuss and test the emerging analysis.

A measure of the degree of embeddedness of LLN

A four-point scale for the overall degree of embeddedness of courses was devised characterised by the way in which learners experience the provision of LLN on their course:

- 4 Fully embedded or integrated** Learners experience their LLN development as an integral part of their vocational studies.
- 3 Mostly embedded** Learners mostly experience LLN development as part of their vocational studies, but some aspects of their LLN development and vocational studies remain uncoordinated.
- 2 Partly embedded** Learners experience their LLN development and vocational studies as integrated to some degree / only in some aspects.
- 1 Non-embedded** Learners experience their LLN development and vocational studies as entirely, or almost entirely, separate.

On the basis of the responses to the 30 questions, the research team allocated each course to one point on this overall scale. An exercise was then conducted to compare and moderate these decisions. The resulting scale of embeddedness was used to explore the relationships between the degree of embeddedness of courses and learner retention, achievement and attitude.

The degree of embeddedness of the LLN provision awarded to each course, as a result of the process described above, was compared with a calculation based on the scores awarded to each course on the initial 30 questions. This triangulation illustrated good agreement overall but suggested that the distinction between 'mostly embedded' and 'fully embedded' was less significant than the others.

Learner attitude

The learner questionnaires were analysed and potential relationships between the responses to some questions and the degree of embedding of the courses the learners attended were explored.

Statistical analysis

The relationships between a range of variables and three learner outcomes, retention, success in vocational qualifications and achievement of LLN qualifications, were investigated. These variables included learner and college characteristics, the level of the course and the curriculum area.

We asked the following questions in our analysis:

1. Is there a relationship between two variables? (For example, the degree of embeddedness of a course and the vocational achievement of a learner).
2. How strong is the relationship?
3. Can any particular patterns be identified in the relationship?

In particular, we investigated the relationship between the three learner outcomes; retention, achievement of LLN qualifications and achievement of the vocational qualification, and the degree of 'embeddedness' of the course, using the four-point scale described earlier. This analysis included:

- all learners on the course
- those learners assessed as below Level 2 in literacy, language and/or numeracy at initial assessment.

For retention and achievement, the analysis was undertaken on the basis of the individual learner but for success rates it was necessary to treat the whole course as the unit of analysis.

Literacy and ESOL were grouped together for the purposes of this analysis. On the majority of vocational programmes learners undertook key or basic skills qualifications in communication or literacy. The sample did include courses that used ESOL qualifications but these provided insufficient data for separate analysis.

The different features of embedding were also investigated. Using the 30 features of embedding, those that had the strongest association with success rates for vocational qualifications and with learners' achievement in literacy and numeracy qualifications were identified. A factor analysis was also used to identify clusters and to explore whether any statistical relationships existed between the factors themselves.

It is important to stress that the results of this kind of analysis have limitations. Association does not equal causation. A study of this kind cannot establish direct causal connections between forms of provision and outcomes but it can support hypotheses that are valuable in their own right and as potential topics for future in-depth investigation.

Illustrative data

The researchers drew on their data from interviews and observations to create narrative reports for each course they had researched, illustrating the 30 features and the degrees of 'embeddedness' and providing examples and quotations. These reports included a summary of the practitioners' own recommendations for the development of successful embedding in their own institutions.

Examples were also sought for practice that illustrated the features of embedded practice that associated most closely with success rates for vocational qualifications and with learners' achievement in literacy and numeracy qualifications. These examples were drawn from the narrative reports for courses where these features were significant in the analysis.

The narrative reports were also used to draw together case studies of courses in which some or all of these features worked together to support the effective embedding of LLN within the vocational subject. On the basis of this analysis some general points relating to embedding were identified. In writing these case studies some of the barriers to successful embedding were also explored.

A fuller discussion of the methodology and examples of all the instruments used in the collection of data can be found in the appendix to the report on the NRDC website www.nrdc.org.uk

3 How embedding affects achievement, retention and success rates in vocational qualifications

3.1 Introduction

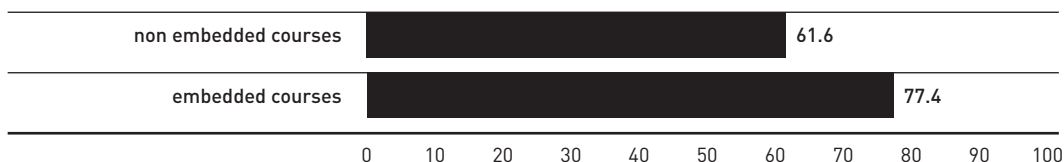
This section reports the results of the statistical analysis that sought to identify relationships between the degree of 'embeddedness' of LLN within vocational courses and the retention of learners, success rates in vocational qualifications and learners' achievement, in literacy and numeracy.

3.2 Retention of learners on courses

Using figures for all learners in the sample there was a significant positive association between whether learners completed their courses and the degree of embeddedness of LLN. This suggests that learners were less likely to drop out if LLN was embedded. Figure 3.1 illustrates the difference in retention between the courses in which the LLN provision was non-embedded on the one hand and courses in which there was some degree of embedding of LLN on the other, including those that were partly, mostly and fully embedded.

Figure 3.1 **The percentage of learners completing courses**

For all learners in the sample

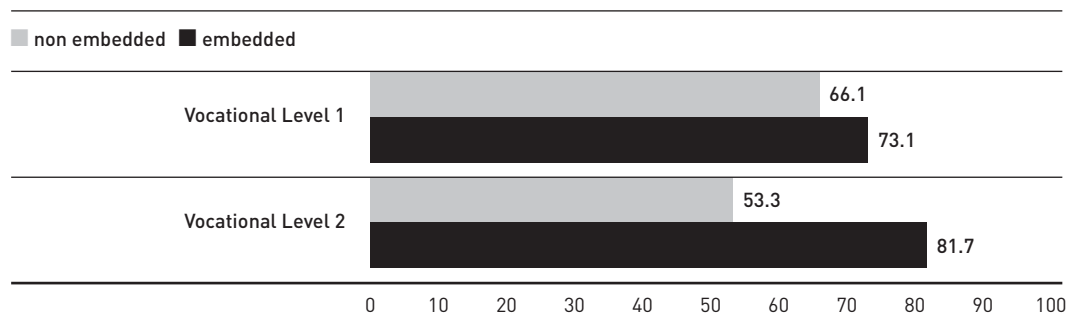


When the retention data were further analysed by the level of vocational course (Figure 3.2) the increase in retention was seen to be more marked for courses at vocational Level 2. At this level there was an increase of over 26 per cent between classes with separate LLN provision and those in which LLN was embedded. For vocational courses at L1 the increase was not statistically significant.

It is important to remember that the degree of embedding of LLN is likely to be just one of a wide range of factors that impact on the retention of learners. However, our interview data support the findings from the analysis in suggesting that, for vocational Level 2 learners, making an explicit link between LLN learning and the vocational subject can help to overcome the stigma associated with LLN classes. It can also increase the likelihood that learners benefit from this in terms of coping with their vocational course.

At Level 1 it is possible that other factors outweighed any positive effects of embedding LLN. These vocational Level 1 learners may have been more ready to accept their literacy and numeracy learning needs, even where no links were made between LLN and vocational content.

Figure 3.2 The percentage of learners completing vocational courses at Levels 1 and 2
For all learners in the sample



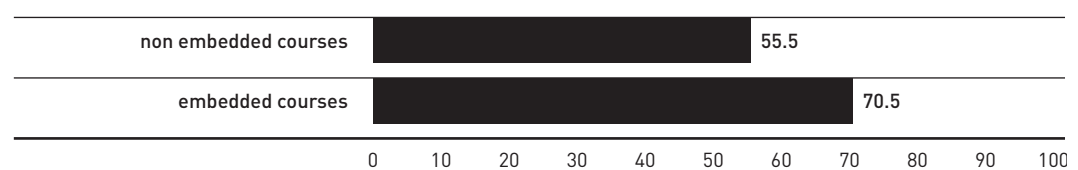
When analysed by vocational subject, the relationship between retention and embeddedness varied considerably between the different areas. Embedding appeared to have the most significant impact on retention in courses in engineering. However, the numbers of courses within each vocational area were too low for the findings to be statistically significant at this level of detail.

3.3 Vocational success rates and embedded LLN

The success rate of a course is the number of learners achieving a vocational qualification as a percentage of those who started the course.

The mean success rates on vocational courses were analysed to discover whether there was a relationship between these and the degree of embeddedness of the courses. The results show a statistically significant relationship between success rates and the degree of embedding of LLN (Figure 3.3).

Figure 3.3 The mean vocational success rate for courses



The percentage of learners achieving their vocational qualification, as a percentage of those completing the courses, in our sample, was very high. The higher success rates for courses on which LLN teaching was embedded were therefore a result of the increase in retention described above.

3.4 Comparison between the sample and national benchmarking data

A comparison between the success, retention and achievement rates for the courses in the sample and national benchmarking data is shown in Table 3.1. It should be noted that it was necessary to use 03/04 data for this comparison as 04/05 data were not available at the time of the analysis.

The success rates for courses in the sample for this study are generally higher than the national average and reference to Figure 3.3 shows that only the non-embedded courses in the sample had success rates below the national average. In conjunction with the information drawn from Ofsted reports, this suggests that good teaching practice is likely to play a part in explaining the association between embedding and high success rates, or perhaps that good teachers are drawn towards embedded approaches.

The national average success rate in 2003-04 was 57 per cent; the average success rate on non-embedded courses in our sample was 55.5 per cent, but the average success rates on embedded courses in our sample was 70.5 per cent.

Table 3.1

		Courses in the sample			National benchmarking data 03/04		
		Success rate %	Retention rate %	Achievement rate %	Success rate %	Retention rate %	Achievement rate %
Vocational area	HSC	71	80	90	56	-	-
	HBT	66	75	91	61	-	-
	ENG	65	74	93	53	-	-
	BUS	64	79	89	57	-	-
	CON	68	73	94	47	-	-
Vocational qualification level	Level 1	66	74	93	59	75	79
	Level 2	70	79	90	56	72	78
	ALL	67	76	91	57	74	78

Achievement rates show the percentage of learners passing qualifications. Retention rates show the percentage of learners staying on to completion of their courses. Success rates combine the two, and show the percentage gaining qualifications of those that started a course.

3.5 Learners' achievement of LLN qualifications and embedding

Literacy achievements

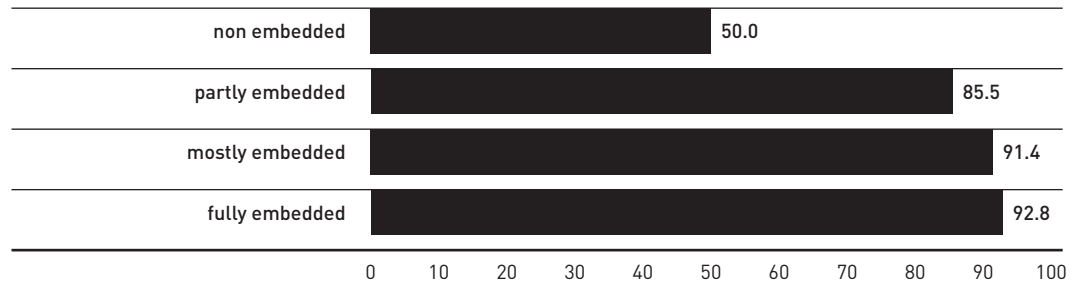
For the analysis of the relationship between learners' achievement of LLN qualifications and the degree of embeddedness of LLN, the data used were for those learners in the sample who were assessed at below Level 2 in literacy, language or numeracy at entry to their programmes.

The analysis indicates a strong link between the degree of embedding of LLN and achievement of qualifications in literacy (Figure 3.4). The proportion of learners gaining a literacy qualification was more than 35 per cent higher where there was some degree of embedding as compared with provision where LLN was provided separately. Where LLN was fully integrated this difference rose to over 42 per cent. This finding appears to support the hypothesis that learners on vocational courses are more likely to engage successfully with literacy when they recognise its relevance to their vocational study and that the teaching of literacy is most successful when it is embedded into that study.

The steep rise in achievement between non-embedded and partly embedded reflects the view of learners, reported in Section 4, that on L2 courses, the LLN teachers' understanding of the

demands of the vocational subject and the professional goals of learners were as important as the specific arrangements for the teaching of LLN in terms of their motivation.

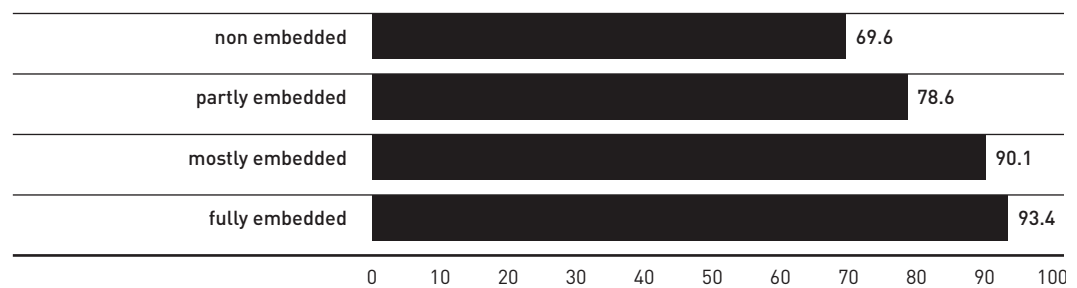
Figure 3.4 **Learners achieving Literacy/ESOL qualifications**
For learners assessed below L2 in LLN on initial assessment



Numeracy achievements

The analysis also indicates a clear association between the degree of embedding and achievement of qualifications in numeracy (Figure 3.5). The difference between the proportion of learners obtaining a numeracy qualification on courses with separate provision and that on fully embedded courses was over 20 per cent. This suggests that learners also engage more successfully with numeracy when it is integrated into their vocational study.

Figure 3.5 **Learners achieving Numeracy qualifications**
For learners assessed below L2 in LLN on initial assessment



Levels of literacy and numeracy achievement

The data for learners' literacy/ESOL or numeracy achievement were also analysed separately by the levels gained, Entry Level or Level 1 or 2. The resulting graphs indicate that embedding is associated with an increase in achievement of LLN qualifications across the range from Entry to L2 in literacy and at Entry and L1 in numeracy (Figures 3.6 and 3.7). These figures, however, need to be treated with some caution as the sample sizes in each case are small. In the case of Level 2 numeracy the number of learners was too low to include in this analysis.

Figure 3.6 **Learners achieving a Literacy/ESOL qualification by Literacy/ESOL level**
For learners assessed below L2 in LLN on initial assessment

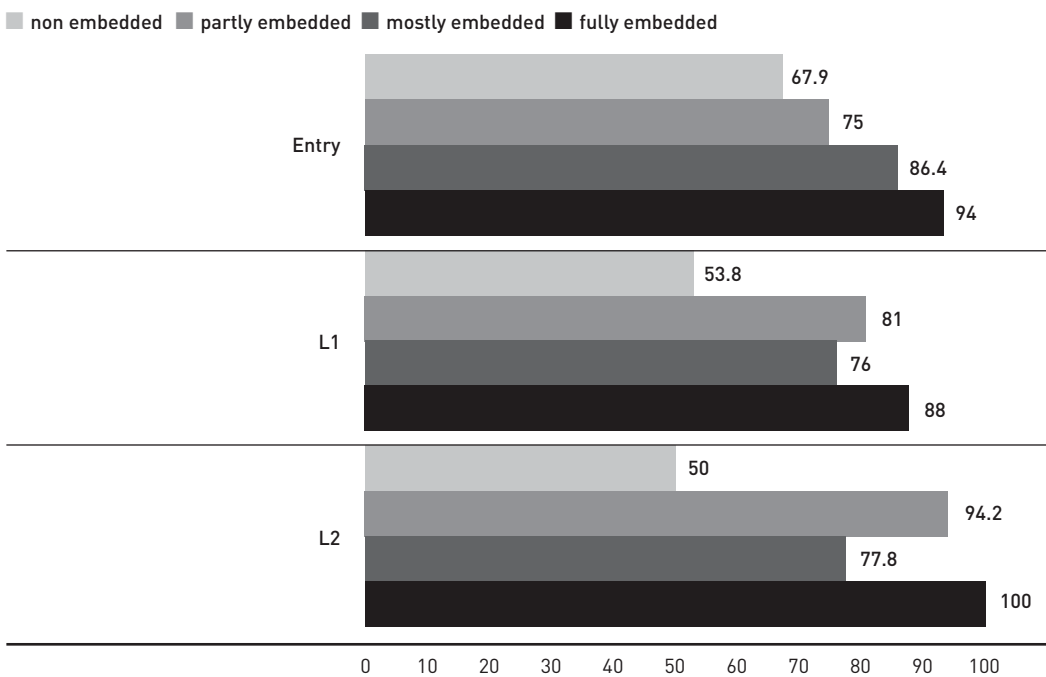
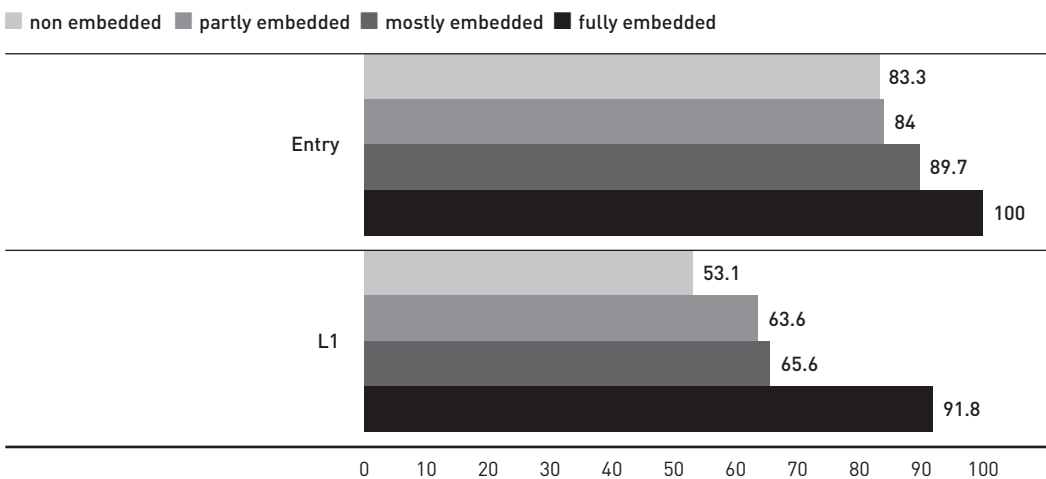


Figure 3.7 **Learners achieving a Numeracy qualification by Numeracy level**
For learners assessed below L2 in LLN on initial assessment



When the LLN achievement data for vocational courses at L1 and L2 were analysed separately differences emerged (Figures 3.8 and 3.9). Again, smaller sample sizes call for caution in the interpretation of these patterns. The figures suggest that for L2 courses the embedding of literacy or numeracy was associated with increased achievement of LLN qualifications.

On L1 vocational courses there were differences between the patterns of achievement in literacy and numeracy. In literacy, separate provision appeared to be linked to low rates of achievement of literacy qualifications, whereas in numeracy, separate provision was associated with a relatively higher rate of achievement of numeracy qualifications. Possible explanations of this difference that would repay further investigation might include:

- a greater stigma attached to separate literacy provision
- the importance of context in literacy learning
- better, more responsive teaching of numeracy in separate provision.

Figure 3.8 **Learners achieving a Literacy/ESOL qualification by vocational level**
For learners assessed below L2 in LLN on initial assessment

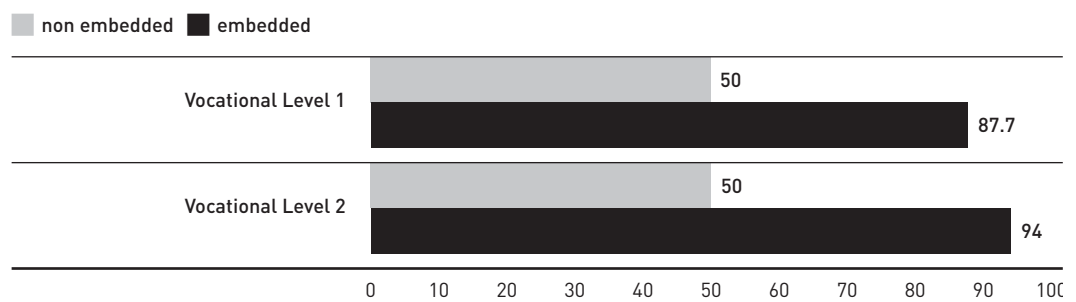
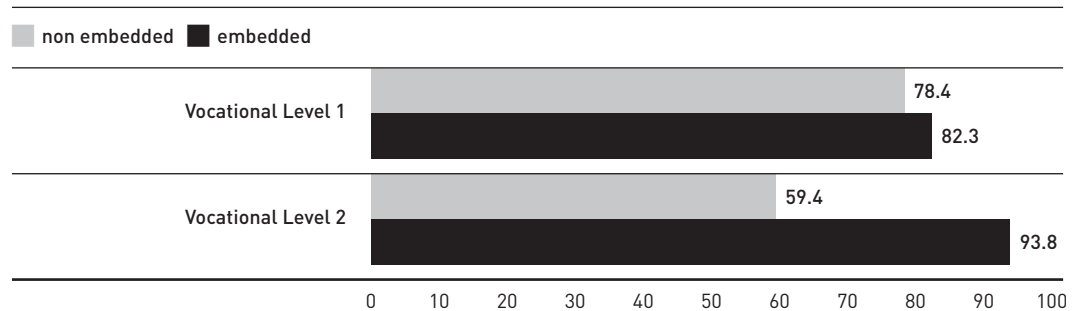


Figure 3.9 **Learners achieving a Numeracy qualification by vocational level**
For learners assessed below L2 in LLN on initial assessment



3.6 Other important factors

Analysis was undertaken to identify which, if any, of a wide range of variables were most strongly associated with positive learner outcomes. Two points of interest arise from this. First, vocational area is a significant factor in relation to completion, vocational achievement and achievement of LLN qualifications. Data on retention and achievement were analysed by vocational area. The results indicate differences between the curriculum areas in terms of learner outcomes although the pattern of these was complex, and the sub-sample for each of the five areas was relatively small, which means that any results need to be treated with caution. These potentially important differences and their relationship to differences between vocational areas in terms of culture, language and the importance of literacy and numeracy would merit further research.

A second point of interest is that, in terms of completion, the results of this analysis indicate that learners who receive Additional Learning Support (ALS) have a higher probability of completing their course than those who do not. Learners receiving ALS were found across courses that spanned the range of ‘embeddedness’ but our analysis suggests that this can be most effective when integrated with the vocational teaching and learning.

3.7 Staffing – dual responsibility for vocational and LLN teaching

One question concerned whether or not the LLN and vocational teaching were provided by the same teacher. A small number of teachers taking dual responsibility were dual-qualified and experienced, but most were vocational teachers taking additional responsibility for teaching LLN. The analysis of this question indicated that where one teacher was given responsibility for all the teaching of the vocational subject and LLN, the probability of learners achieving LLN qualifications was lower. Learners taught by non-specialists were twice as likely to be unsuccessful with LLN qualifications.

The qualitative research found a small number of exceptional teachers who were dual-qualified and/or highly committed to both the vocational subject and LLN, but these were outweighed in the quantitative analysis. This finding suggests that, other than in these exceptional cases, giving one teacher responsibility for both the vocational teaching and the teaching of LLN may not be a productive approach to embedding. Vocational and LLN specialists working together in teams are likely to be more effective in most contexts.

3.8 How reliable are these findings?

In any educational research carried out in real classrooms, there are always many factors in play, which cannot be controlled; for example, selection of learners, quality of teachers and resources. However, the main sample sizes in this research were large and the associations found in the analysis of literacy and numeracy achievements are strong and present a consistent picture. This, and the fact that the analysis took place on more than one level, suggest that the findings can be treated with confidence. Some reservations must be noted. Some data were missing for some learners in the sample. The conclusions that can be drawn from subsets of data, for example, learning areas by level, are based on much smaller samples and are less reliable than the main findings. These subsets suggest areas for further research.

3.9 Summary

The results of the analysis presented above provide evidence of a positive relationship between the degree of embeddedness of LLN in vocational courses and each of the three outcome measures: success rates for vocational qualifications, retention and achievement of LLN qualifications. The results indicate:

- Learners on embedded courses had higher retention rates.
- Embedded courses had higher success rates than non-embedded courses.
- Learners on the embedded courses had higher levels of achievement of literacy qualifications, with 42 per cent higher achievement on fully embedded than on non-embedded courses in the sample. There was a strong positive relationship between literacy achievement and embedding.
- Learners on the embedded courses had higher levels of achievement of numeracy qualifications, with 20 per cent higher achievement on fully embedded than on non-embedded courses in the sample. There was a positive association between numeracy achievement and embedding.

Analysis of the data by the level of the vocational course indicates a more complex, but less statistically reliable, pattern of relationships:

- Retention is positively associated with the degree of embeddedness on L2 courses but not for L1 courses.
- On L2 vocational courses there is a difference between non-embedded and embedded, with the most significant difference being between separate provision for LLN and some degree of embedding in relation to both achievement of numeracy qualifications and retention.
- On L1 vocational courses a rise in achievement in LLN qualifications is associated with LLN teaching that is mostly or fully embedded/integrated.

The results of the analysis also suggest that:

- giving individual teachers responsibility for both the vocational subject and LLN teaching may not be the most effective approach to embedding LLN, unless the teachers are highly skilled and qualified in each area of teaching. Vocational and LLN specialists working together to embed LLN increases the probability for learners to achieve.
- learners who receive Additional Learning Support (ALS) have a higher probability of completing their course than those who do not receive ALS.

4 What do learners think?

It is widely accepted that many young adults on vocational courses have largely negative attitudes towards the key skills or LLN courses that are often mandatory aspects of their overall vocational programmes. Other NRDC research studies confirm this (McNeil & Dixon 2005; Cranmer et al 2004; Roberts et al 2005).

In addition to analysis of the relationship between achievement, retention and the degree of embeddedness of LLN, this study aimed to collect insights on the attitudes and beliefs of learners regarding the LLN content in their vocational courses, embedded provision and vocational identity.

Data were collected via learner questionnaires and learner focus groups. Of the full 1,916 learner sample, 482 completed the learner questionnaire. Questionnaires were administered during the first quarter of the project, in the learners' last terms of attendance. Questions ranged from asking learners to indicate the degree to which they valued strong LLN skills in relation to occupational identity and success, to whether or not the value they placed on strong LLN skills changed at all during the course. In addition, learners were asked a series of questions to determine the extent to which they saw links between the work of their vocational and LLN teachers. They were also asked about vocational and LLN content/materials and how far they had anticipated LLN input on their course. A copy of the full learner questionnaire can be found at www.nrdc.org.uk

More than 25 voluntary learner focus group sessions were organised. Course teachers did not take part in these sessions, each of which involved between four and fifteen learners. Individual learner interviews were conducted as well. Researchers asked learners a range of questions to gather insights on their motivations, attitudes and aspirations. For example, learners were asked about:

- the factors that motivated them to select their current provider and vocational course
- their longer-term vocational aspirations
- the degree to which they felt their current course would assist them in reaching their longer-term vocational goals
- their views on the role of developing LLN skills and vocational success
- the degree to which they felt the current vocational and LLN teacher interaction was effective.

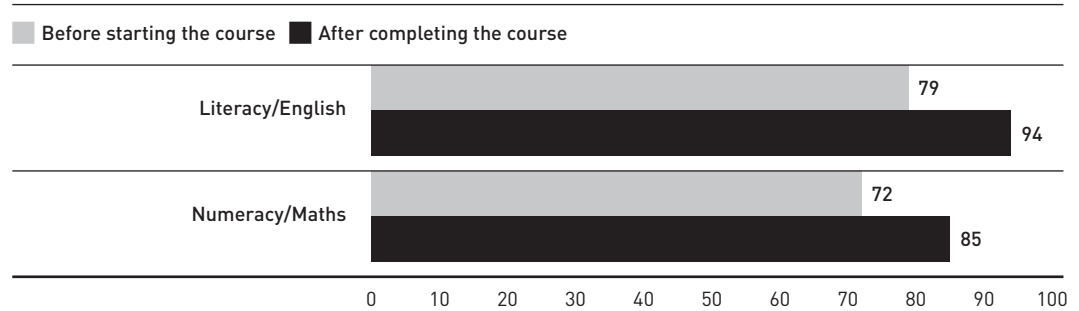
A full list of focus group questions can be found in the technical appendix on the NRDC website www.nrdc.org.uk

Three major themes arise from the analysis of learner questionnaires. The focus group quotes selected in this section complement findings from the quantitative data analysis.

4.1 The value of strong LLN skills

The majority of learners who completed the questionnaire indicated that LLN was very important for the jobs they wanted to do. Furthermore, the questionnaire responses suggest that learners attached even more importance to LLN at the end of their courses (Figure 4.1).

Figure 4.1 Learners rating English/Maths as important for the job they want to do



This view was supported by focus groups in which learners described the various ways in which strong LLN was necessary for their vocational success:

"You know, I need to have strong communication skills not only to deal with customers but also to set up my business. I need to know maths in order to set up a salon, like looking for a space, and dealing with all the orders and contracts..."

"I have worked with my dad, he has his own business, and so I have seen how strong maths skills are not only important for technical plumbing work but also for dealing with business stuff like invoices..."

Focus group respondents also supported this view, often acknowledging their participation in their vocational programme as a second chance in education, some even viewing this as a last chance for career development. They consistently mentioned the need to improve their LLN skills, which were still under-developed when they left school. A number of focus group respondents were also in employment or had been working since leaving school and starting their vocational course. These learners spoke about the challenges they had faced in gaining meaningful and sustainable employment without further qualifications. However, not all learners were as convinced of the value of LLN qualifications:

"Key skills qualifications are not what you need when you're learning a trade."

"Learning to be a plasterer, no one cares whether you've got qualifications in English and maths."

Learners spoke about the need to develop stronger LLN skills in order to improve their lives overall, although many queried the value employers put on maths and English qualifications.

"Practical experience is more important."

"Employers are not bothered about key skills."

Additionally, learners were highly sceptical about English and maths provision being related to their vocational goals if they perceived the subject as being taught in a 'school-like' manner.

4.2 Structure, delivery and a unified team

Many focus group respondents spoke about their lack of awareness of the LLN content in their vocational programme when they enrolled. Where learners could see the connection between LLN input and the vocational programme or goals, this input was seen as positive. However, where learners perceived a disconnect between their LLN input and their vocational programme, their dissatisfaction was obvious:

"It is clear that our key skills teacher knows nothing about our (vocational) course, so then how can they help us make sure we succeed in our course? I mean, that is what we are here for. Our (vocational) teacher tries to help us with our key skills work, but it is clear they don't work together."

In the same institution, with a different cohort of learners, the following opinion was offered:

"It doesn't take a lot to work out that if key skills was scheduled in between our (vocational) sessions more people would attend...now they are on days when we don't even have to be here (in the college) for any (vocational) sessions. We pay for travel and some of us work...if it is meant to be one programme, they should structure it that way."

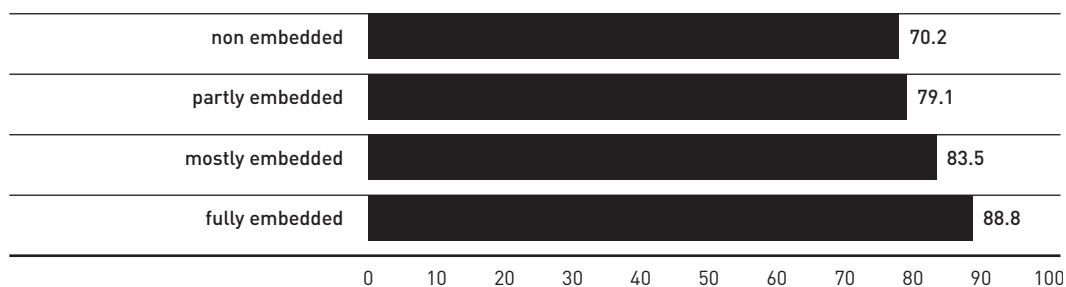
Learners gave very positive feedback in another institution, where they had an explicit understanding of how their vocational and LLN tutors were working together:

"(ESOL teacher) knows what we need to deal with in our course – I mean he comes and sits in with us every week (in the vocational session) – he asks our (vocational) teacher questions, he sees what we need to know, the vocabulary and stuff...then we have our class with him, it feels like he can totally support us."

4.3 Learner attitudes and embeddedness

Correlating data from the learner questionnaire and the study's four-point scale of embeddedness showed that as the degree of embeddedness increased, learners became more likely to say that the course had prepared them well for future work.

Figure 4.2 **Positive learner responses to how their course has prepared them for their future work**



Further research could focus on potential causal relationships between degrees of embeddedness and learner achievement, retention and shifts in attitude.

4.4 Learner recommendations

Learners who participated in focus groups made various recommendations in relation to embedded provision in vocational courses:

- More coherent, seamless scheduling of vocational and LLN provision.
- Strong working relationships between vocational and LLN teachers. Many learners felt it was important to have different specialist teachers for LLN input due in part to their own perceived weaknesses in these areas and their need for expert teachers.
- Better recognition by employers of their LLN qualifications. Although many learners mentioned the heavy workload related to completing both vocational and LLN qualifications, they were more concerned that their LLN qualifications should be recognised by employers than for LLN and vocational qualifications to be combined. However, better integration of qualification aims was seen as a potentially positive development.
- Contextualisation of LLN materials was seen as positive by learners but of greater importance was that the LLN teacher should clearly understand the demands of the vocational course and the vocational goals of learners.
- Better induction processes to prepare them for the LLN demands of vocational programmes and to begin, early on, explicitly and continually, to discuss links between LLN development and vocational success.
- A shared professional attitude by all teachers supporting both LLN and vocational achievement. Learners felt their own negative attitudes towards LLN input were often reinforced by a lack of positive teacher attitudes.

4.5 Conclusion

Learners gave articulate and sophisticated responses in focus group sessions. In many instances researchers received the negative feedback on LLN input that is commonly associated with young adult learners. However, both data from learner focus groups and learner questionnaires would suggest that LLN that is well integrated with vocational content is highly valued by most learners, both those who are well focused on the vocational route their course supports and those for whom the course is a step on a learning journey.

For learners it is important that educators make strong connections between LLN, vocational success and personal development. Learners may be suspicious of input which is not vocationally aligned or valued, particularly those who have more clearly determined vocational goals. LLN must therefore be perceived as valuable, not only by learners but from organisational, pedagogical and practitioner viewpoints. An embedded approach may be seen as an effective methodology for supporting both the vocational and more holistic learning needs of the learners.

5 The key factors in embedding LLN

This section aims to explain each of the features that were identified as making a difference between provision being embedded or not. Building on previous work, and the early stages of this research, 30 features of embedded provision were identified. There were, however, many ways in which programmes differed, from those at one end of the continuum which had no characteristics of embedding to those at the other end which had many characteristics of high quality embedded provision. The reality was that programmes had ‘spiky profiles’ as regards embedding. What these features meant in practice differed from one course to another, and courses with different configurations of features could be equally successful. There was no one set of features that formed a ‘winning profile’.

It was not just a question of whether the programme had structural features of embedding in place, for example two teachers timetabled for one class for particular sessions. There were significant differences between institutions in the degree to which they were making these features work for learners and treating LLN as integral features of the vocational area. It was important to make this distinction, because structural features of embedding may not be sufficient in themselves for achieving anticipated outcomes. Attitudinal factors were equally important.

5.1 Significant features of embedding related to LLN achievement

Of the 30 features of embedded provision that were identified in the initial analysis (Appendix 2) a number were found to have a significant statistical association with achievement in LLN. The top nine factors associated with achievement in both literacy and numeracy are listed below.

Significant features related to both numeracy and literacy/language achievement:

- Formal shared planning (i.e. in officially allocated time) between vocational staff, LLN staff (and ALS staff where applicable) supports integration of LLN into vocational teaching.
- Departmental and institutional management structures support embedded provision in practice.
- The staff development policy and provision within, and available to, the college support the integration of LLN with vocational areas.
- LLN teachers are viewed by staff and learners as contributing to learners’ vocational aspirations.
- LLN teachers understand and engage with the vocational area as part of their work.
- LLN teachers are willing to develop their skills in relation to the vocational area.
- Vocational teachers are willing to develop their skills in relation to LLN.
- Initial/diagnostic assessment is used to contribute to the integration of LLN into vocational teaching.
- ILPs and/or other forms of on-going formative assessment contribute to the integration of LLN into vocational teaching.

Additionally, the following features were significant for numeracy and literacy/language respectively:

Numeracy:

- Vocational staff, LLN staff, (and ALS staff where applicable) work as a team.
- LLN development is considered in principle to be as relevant to all learners as for those who are identified with LLN needs.

- Vocational teachers understand and engage with LLN as part of their work.

Literacy/Language:

- LLN teaching is linked to practical, vocational content and activities.
- LLN are seen as essential in the development of learners' professional identity and for success in their vocational area.

It is important to note that many of the features listed above represent aspects of good teaching, learning, partnership and delivery. Therefore, the research suggests a direct relationship between effective embedding and good practice and strong teamwork more generally. In effective embedded provision, good practice, such as formative assessment and the use of ILPs, helps support the effective teaching of LLN.

5.2 Relationships between factors

A further factor analysis was conducted on the original 30 features to discover whether any statistical relationships existed between the features. This kind of analysis tests our assumptions of how features may be naturally related or grouped together. Not all features clustered together, nor were those that did limited to the top 14 features presented above. However, four broad groupings emerged:

1. Features of teaching and learning
2. Teamwork
3. Staff understanding and values
4. Organisational characteristics

The following sections illustrate these four groups of features that can enable or constrain the embedding of LLN teaching and learning.

5.3 Features of teaching and learning

This broad grouping combines the following features:

- LLN teaching is linked to practical, vocational content and activities.
- LLN materials are contextualised to the vocational area.
- Initial/diagnostic assessment contributes to the integration of LLN into vocational teaching.
- There is differentiation according to LLN needs in the way in which the vocational subject is taught.
- LLN are seen as essential in the development of learners' professional identity and for success in their vocational area.
- LLN development is treated in practice as relevant to all learners, not only necessary for those who are identified with LLN needs.

What these mean in practice varies enormously from one curriculum area to another. For example, on a Level 2 Health and Social Care course, the vocational teacher uses her own experience as a nurse and quotes real life situations to demonstrate the importance of literacy and numeracy for such vocational tasks as measuring drugs and report-writing. On an Entry/Level 1 Motor Vehicle course, the LLN teaching, evidencing and assessment are carried out

in practical sessions in an automotive engineering workshop, and differentiated to three levels. On this course, literacy and numeracy are taught by a multi-skilled vocational teacher, who has fully integrated these subjects into his vocational teaching.

In a Health and Social Care department, which integrates literacy and numeracy with vocational teaching throughout its courses, LLN is taught not by an individual but by a course team. Here, literacy, numeracy and Health and Social Care are taught in different sessions. One teacher states:

“When I look for passages [for reading] they are all health-related. I try to find magazines and newspapers that relate to the course content being covered. So this is literacy with health and care in the literacy session, and then I put it back into a health and care vocational assignment as well.”

This type of provision is driven by experience, commitment, language awareness and recognition of the holistic needs of learners.

On a Level 1 Hairdressing course, successful participation in activities that require LLN is treated as part of the vocational training, and as essential to successful achievement of the qualification, to progression into employment, and to future career development in the vocational area. A mature learner on this course said:

“At our age if you could read and write it was a bonus but now to get any kind of employment you’ve got to be computer literate and you’ve got to be able to do CVs ... there is a lot of support from the teachers, the salon teacher and [the key skills teacher].”

In fully embedded provision the differing LLN needs and trajectories of all individual learners on the vocational course are taken fully into account. For example, some learners who were aiming for a GNVQ Level 2 in Construction were entered for a full Level 2 key skills accreditation, while another learner on the same course was entered for an Entry 3 *Skills for Life* qualification in Literacy, and a Level 1 key skills qualification in Application of Number.

5.4 Teamwork

This broad grouping included the following original features:

- Formal shared planning (in officially allocated time) between vocational staff, LLN staff (and ALS staff where applicable) supports integration of LLN into vocational teaching.
- Informal shared planning (without officially allocated time) between vocational staff, LLN staff (and ALS staff where applicable) supports integration of LLN into vocational teaching.
- The vocational staff and LLN staff (and ALS staff where applicable) work as a team.

These features were illustrated in one college within both Health and Social Care and Engineering, where all but one of the five courses in the sample were graded as ‘mostly embedded’ by NRDC researchers. Vocational and LLN teachers and ALS staff had a high level of informal contact and identified themselves as a cohesive working team. Vocational, LLN and ALS teachers had a high degree of understanding of one another’s delivery demands and there was an explicit, shared sense of responsibility for the overall achievement of their learners.

Learners acknowledged the sense of being part of a team that existed between vocational, LLN and ALS teachers in their department. This was due in part to the highly visible collaboration between teachers, whether in shared tutorial time or informally planning and addressing learner concerns.

All teachers spoke of the need to have more time for formal shared planning. The current teaching team spoke about their long-standing relationships and commitment to their college, neighbourhood and learners as the foundation of their good will. However, they acknowledged that more formalised shared planning and development time will be needed as new members of staff join the department.

This point was clearly demonstrated by one course, non-embedded on the four-point scale, that involved ESOL and Health and Social Care. The new ESOL teacher was housed in a separate department, with little or no informal or formal planning time with the vocational teachers. The teacher did not identify herself (nor was she identified by vocational teachers) as part of the Health and Social Care team. Although she aimed to contextualise her delivery to the vocational area, she spoke about her isolation from the vocational department, content and aims. She said she struggled to support her learners in terms of questions and concerns related to vocational achievement.

5.5 Staff understandings, values and beliefs

This broad grouping was made from the following original features:

- LLN teachers are viewed by staff and learners as contributing to learners' vocational aspirations.
- LLN teachers understand and engage with the vocational area as part of their work.
- Vocational teachers understand and engage with LLN as part of their work.
- LLN teachers are willing to develop their skills in relation to the vocational area.
- Vocational teachers are willing to develop their skills in relation to LLN.

This set of features draws attention to the importance of teamwork which is underpinned by a level of understanding, on the part of both LLN and vocational teachers, of one another's work. A willingness to put effort into the development of skills in areas in which they may have no previous training or experience is also important. It is not simply a matter of vocational teachers developing LLN awareness and brushing up their LLN skills. LLN teachers also need to develop an understanding of the vocational area(s) with which they work and the ways in which literacy, language and/or numeracy are used within these areas. As was pointed out in section 4.2, learners recognise and value LLN teachers' efforts to become familiar with the vocational subject and view their contribution more positively as a result.

Positive attitudes on the part of the LLN and vocational staff can make a real difference. In one large Construction department in an area of high social deprivation, having a designated basic skills coordinator with a background in the building industry has been the key to a change in staff attitudes. The learning support and basic skills teachers undertake basic Construction courses. The coordinator said: 'Within the specialist team of 15 basic skills and learning support staff across Construction, the uptake of staff development was very good. All of the staff were on courses'. One of the learning support teachers said: "I am doing a Level 1 course in all areas so I am able to understand the terminology and where the learners have problems so I can support them properly."

The vocational staff see the relevance of LLN to their work. The basic skills coordinator said: “I went around the unit two months ago to see the vocational staff about doing the basic skills awareness course and I got 20 vocational teachers who said they would be interested. The key to this success is that I’m on the shop floor daily.” A vocational teacher in the department, recognising the value of the contribution made by the LLN colleagues in the team, said: “I have things to learn from the basic skills people...”

Working in this way requires not only the interest but also the commitment of staff and has implications in terms of time for activities such as training, classroom observation and meetings that will facilitate the development of understanding and skills and exploration of ways in which LLN can be best integrated into particular courses. The evidence of this study, however, suggests that such efforts are repaid in terms of learners’ achievements.

5.6 Organisational features

This broad grouping included the following original features:

- Departmental and institutional managers and policies support embedded provision in principle.
- Departmental and institutional management structures support embedded provision in practice.
- Organisational arrangements support embedded provision.
- Resourcing and working conditions support embedded provision.

These features underline the importance of a whole organisation approach to the embedding of LLN. The need for time for joint planning and for opportunities for training and observation, if embedding is to work effectively, have already been noted. Support for embedding from senior and middle managers through institution-wide policies makes it easier to direct resources in ways that will support embedded LLN.

Teachers engaged in working in embedded teams need time to work and plan together. Institutional policies need to cater for these priorities in timetabling.

In one college in our sample, an ad hoc group, led by the vice principal, was working towards a formal strategy to ensure the implementation of the college’s *Skills for Life* framework. This was seen by the staff as critical to moving towards an effective framework for embedding on both a practical and a strategic level. There is an organisational understanding of the importance of embedding LLN in relation to retention of learners.

The college embeds ESOL into childcare, business and engineering courses and the head of school for ESOL and the head of school for curriculum support and education worked closely together. The college provided extensive training for ESOL teachers, and vocational teachers were receiving a day or half-a-day of basic skills-awareness training. This was a first phase of training and more was planned.

Skills for Life has a high priority in the college. There is an organisational understanding of how important LLN is for retention.

6 How do embedded programmes work as a whole?

This section offers five ‘pen portraits’ of ways of embedding provision of LLN in vocational courses. They reflect different curriculum areas and course levels and are taken from different parts of the country and different types of organisations. The cases, and the contrasts between them, reveal the uniqueness of each type of provision, and give a flavour of the complex range of factors that were considered in rating the embeddedness of the LLN provision, and how they interact. In particular, they illustrate the role of the ‘top 14’ characteristics of embedded provision that were identified in the quantitative analysis as strongly associated with achievement in Communications/Literacy and/or Application of Number /Numeracy (section 5.1). They also illustrate some of the inherent tensions, and some of the obstacles to fully embedded provision.

6.1 Course A – Motor Vehicle Level 1. (Curriculum area: Engineering)

Two particular features have contributed to the successful embedding of LLN in this course. One is the belief, expressed by the course leader, that improved literacy and numeracy, together with key skills qualifications, are essential for the learners in relation to their course, their future employment and their lives more widely. The other is the in-depth knowledge and understanding of the vocational subject on the part of the key skills teacher who, in addition to being an experienced key skills specialist, has first-hand knowledge of working in the motor vehicle industry.

The key skills teacher introduces the learners to practices she knows will be required on the job.

“In number, for example, they have to learn to use a micrometer to measure in hundreds of mms, so I’ll teach the skill in the maths session then they will apply that in the workshop with the equipment.”

She explained the vocational relevance of key skills in the motor vehicle industry:

“We took our MV learners to Jaguar...robots taking human jobs and the amount of paperwork their staff have to do filling in line and bar charts, checking if mechanical parts are working, ordering parts from abroad. Whereas we used to produce parts now we import them as we need. Giving these life skills will definitely give them an advantage at interview. I think you’ve got to get out there and see what the need is. It’s quite a scary thought that in MV it was always a hands on, largely male-dominated environment where jobs were safe. Not now! So for our lads (only two are female out of 147) to continue, they need high IT skills and good literacy skills.”

Planning for learners’ LLN progress

Course teachers in this department use their own system of continuous review to record value added and distance travelled. These records feed into learners’ self-assessment books, and are available for everyone to consult. The key skills teacher uses the initial diagnostic

assessment report on a continuing basis to check progression, and has devised her own ILP. She says: "It's important that we do it ongoing, not just at the beginning and the end." Across the whole college it is mandatory for every scheme of work and lesson plan to be profiled to show how literacy and numeracy are going to be addressed for every learner.

The key skills teacher treats LLN development as relevant to all learners. She said:

"[Level 2 learners] are working to a higher level [than Foundation] but they still need reassurance and challenge. They are using a higher level of grammar and analysing the documents they produce. You would expect them to have confidence but there is still the fear factor 'is this right, is this the correct level for what I'm doing.?' ... They use me as a support."

Teamwork

Formal planning is generally undertaken electronically but informal planning is responsive and face-to-face as needed. The key skills teacher is invited to the weekly department meeting. She told us:

"At first it was 'Oh! a woman!' but I've gone in and shown them what I know and I think I've removed a fear factor because they will come to me and say 'I'm delivering this in the workshop – for example, a plan of the workshop working out area etc., and [the vocational teachers] said 'If we help them to do measurements would you be able to help them in your session ...could you work with us and check that what they're actually doing is correct?'"

One of the ways in which the vocational teachers and the key skills teacher work as a team is by exchanging schemes of work. The course leader said:

"We have worked with [the key skills teacher] giving her material in advance, and access to the shared area. Schemes of work are available to everybody on-line."

The key skills teacher explained how she used the material the vocational teachers give her in order to integrate her work with theirs:

"If you look at the whole package you can identify a lot of skills that occur naturally. ...For example, for one part of an assignment they have to buy parts for a motor vehicle. They might not get that part in this country, so I get them to research using the internet for car parts. We look at the price in pounds sterling, in American dollars, in Euros."

She explained how this work is valuable for their vocational and maths qualifications but also if they go on holiday abroad.

Joint planning strengthens the team and helps the staff to provide mutual support. The key skills teacher said:

"As the standards change we need to have a very strong relationship."

Staff values and beliefs

The key skills teacher has further developed her understanding of the vocational subject through discussion with staff, familiarity with teaching materials and visits to workplaces. Her experience and commitment is valued by the course leader who recognises her as “an essential part of the team”.

The course leader spoke of good co-operation and learning within the department. Many of the vocational teachers were willing to develop their skills in relation to LLN although not all are keen to take up formal staff development.

“I would rather have those on board who are interested and not insist on all vocational teachers having to take this on. Motivated staff who want to do embedded work will produce the best results.”

Organisational factors

Senior management and the cross-college head of essential skills set up the whole organisation approach to embedding. The course leader said:

“...there was total support at a time when we were not able to recruit staff. Now we have new staff who are focused specifically on the essential skills curriculum.”

The course leader takes a strong lead on staff development. He gave the vocational teacher on this course a light timetable so that he could shadow the key skills teacher, and paid for the key skills teacher to provide staff development over the summer holidays.

The course has a supportive external verifier, as the course leader acknowledged:

“When he comes in he can talk at every level with the staff and I’ve noticed that when he does that it does impact on even the most negative staff.”

The course leader is very keen to bring essential skills and vocational qualifications together as much as possible, ideally into one award administered by the engineering department.

6.2 Course B – NVQ in Admin and IT, Entry/Level 1. (Curriculum area: Business)

In this course there are opportunities for literacy and numeracy practices to arise naturally within a real work environment, and the learners’ LLN development is integral to working in this context. The classroom for this course is set up as a training office doing real work such as photocopying, memos, filing, handling mail, letters for college staff and outside clients. The learners are also assessed in the context of these practical sessions. Additionally, there are separate classes for teaching literacy and numeracy skills that take place in the same room, but literacy/numeracy work also takes place continuously alongside the practical activities in the training office. For example, the learning of multiplication tables is linked to the process of ordering stock, and to calculating how much paper is needed for double-sided photocopies.

There are several learners on this course with specific learning difficulties, disabilities and/or social/life issues. There is a wide range of skill in the group, with half at Level 1 and six at Entry Level, all with ‘spiky profiles’.

Planning for learners' LLN progress

A key feature of the course is the way in which it uses initial assessment, more detailed diagnostic assessment, ILPs and a variety of forms of on-going formative assessment to fine-tune the course to individual needs. The course team treat LLN as relevant for every learner. They undertake holistic initial assessments, identifying not only literacy and numeracy needs but also social and life factors that impact on the learners' learning. More in-depth diagnostic assessment is done by the ALS team in the first week. In addition to tests, each learner has an in-depth interview. As a result, each person's timetable is slightly different, tailored to individual needs. The learners are streamed for the separate literacy and numeracy sessions.

ILPs and ongoing assessment in practical sessions are used as a means of continuously reviewing individual learners' progress in relation to their specific profiles. These are discussed at weekly programme meetings which are attended by all staff involved in the programme. The ILPs and the discussion around them inform what each teacher focuses on and supports in each individual case. One teacher explained:

"I differentiate around each task. For example, to create a perfect memo/letter, I give more able learners the full thing to do and step it; the less able I give the paragraphs of the memo and layout and at low Level I would leave gaps – give it on a floppy or email him a copy with the gaps."

Another consequence of the use of on-going individual reviews of progress was that learners could be entered for qualifications when it suited them.

"They're progressing all the time and can build on and extend and go for a higher level whenever they are ready."

Flexibility in time taken to complete the course (it can be taken over one or two years) means that it is possible for even the less able learners to achieve their qualifications.

Teamwork

Collaboration between members of the team facilitates the embedding of LLN in the vocational area. The team consists of the course leader/vocational teacher, the key skills teachers and the ALS teachers. ALS staff are integral members of the team in view of the high number of learners with learning difficulties. The course leader has dual responsibility. She is the essential skills coordinator within the team, teaching some of the literacy and numeracy alongside the vocational content, providing a model for embedded LLN.

There is continuous joint planning between vocational, LLN and ALS staff, some of it timetabled, but most spontaneous and informal. Every six weeks the team meets for more formal planning and target-setting, discussing how best to help the learners. The course leader said:

"We are a small group of individuals so we work alongside each other in the training office and meet on corridors etc. ...we are learning from each other as specialists. Every aspect is discussed ... and is always on the agenda, and if a learner is struggling we would ask each other".

Staff values and beliefs

The values, attitudes and beliefs of the team members are an important factor in enabling embedded learning. Most of the teachers teach both business and aspects of LLN, so they have

shared objectives for the learners' holistic development. One said:

"Individual teachers recognise the need for [embedded learning] and feel comfortable managing it."

The support of literacy and numeracy development is given as much attention as the vocational teaching:

"It's got to be as they are at L1 and your aim is to up their skills generally."

The staff spoke of a strong culture and ethos of supporting the 'whole learner' with a 'whole team' approach, and a commitment to share and learn from each other. This is reflected in the high level of mutual respect that exists between staff with different specialisms, and between staff and learners. Strong leadership is provided by the course leader, who is an experienced teacher of LLN and of business studies. She believes that LLN is key to the learners' achievement, not only in the vocational course but life generally. Commitment to continuous, informal whole-team planning on a daily and weekly basis is crucial to the successful support of these learners, but this is dependent on the goodwill of the staff.

Organisational factors

The embedding of LLN in the vocational area is facilitated by departmental structures and arrangements. All planning and delivery of the vocational subject, literacy and numeracy, and Additional Learning Support is conducted in the same place. Timetabling and resourcing also support an embedded approach. The course leader handles in-house staff development for her team.

Reflections on the course

This course offers highly integrated provision, with holistic support of the learners and their learning. The learners' wide range of skills and their individual needs mean that different things count as success for different people. For example, the course leader said:

"Over the years it has become apparent that the vocational qualification is of secondary importance to personal and social skills and we have built it into the course because the typical group of learners has issues like working with others and the need to function [holistically] in today's society. Darren, when he came two years ago, would not walk in without his Mum. We have worked with him to build his confidence. He has poor literacy skills, a speech impediment which has hindered his progression, he's shy with a low self-esteem. He had his first argument with me last week – fantastic – success!"

6.3 Course C – NVQ Hairdressing, Level 1. (Curriculum area: Hair and Beauty Therapy)

This course demonstrates an interesting model of embedded provision. ESOL learners receive discrete language provision from practitioners working within the organisation's ESOL department. However, their ESOL input is fully contextualised. This occurs through intensive development work on the part of the ESOL practitioners. In addition to informal planning between ESOL and vocational teachers, ESOL staff "sit-in" on one vocational class each week. This paid development time is seen as a way for ESOL practitioners to develop an understanding of the vocational content, input and demands faced by their learners, which in turn informs their planning of language teaching sessions.

Planning for learners' LLN progress

Both vocational and ESOL practitioners discuss learner assessment, placement and progression. Learners perceive strong working relationships between their vocational and ESOL teachers and are able to explicitly describe the ways in which their ESOL input strengthens their participation in the vocational course:

"I have a different level of confidence because of the ESOL class...I am not only learning about my vocational subject, but I am learning about the language I need to be successful in my career..."

"...We can fully learn the technical vocabulary and review the concepts covered in our vocational course. (Our ESOL teacher) is learning about the language of hairdressing, like us, we see him in our vocational class, this makes me feel like I can ask him any question, he understands what we are going through...I feel confident about progressing to the next level and developing my career."

Teamwork

This course presents an interesting example of staff co-operation. In addition to timetabled time to work alongside vocational teachers, ESOL teachers have paid development time to familiarise themselves with vocational content, input and delivery. This development time has been seen by practitioners as invaluable in getting to grips with the demands of the vocational course. Both vocational and ESOL practitioners would like to see more time devoted to this kind of exchange and ensure that vocational practitioners also have an opportunity to see ESOL delivery in action.

Staff values and beliefs

This course represents a group of professionals actively developing strong working partnerships. However, as the responsibility of embedding is seen as coming from the ESOL department, some tension arises in terms of increasing the value of ESOL input from vocational practitioners. Staff in both departments cited more joint professional development and planning time as a way to mediate this tension.

Organisational factors

This site has benefited from an embedded "champion" post, at department management level. This position is seen, by both ESOL and vocational departments, as critical to taking the embedded agenda forward within the organisation. This post is allocated responsibility for increasing awareness, setting up partnerships and ensuring quality of embedded work across the organisation.

Reflections on the course

This course provides an example of an effective model of embedded provision which takes into account a developing and considered approach to practitioner partnership, organisational buy-in and learner progression.

6.4 Course D – Plastering, Level 2. (Curriculum area: Construction)

Planning for learners' LLN progress

On this course the learners do not attend any separate key skills sessions. LLN is brought into the plastering workshop and there are no separate assignments for key skills. LLN is viewed as 'key skills', but also as 'maths and English' in the widest sense, linking to elements of

professional work and everyday life. Embedding is seen as relating LLN to the vocational area, thereby making it authentic, “making links to real life”...“working it in without them [the learners] really knowing”.

Teamwork

The plastering teacher and key skills teacher ‘team teach’ on Monday afternoons during the time nominally allotted as a ‘key skills session’. Team teaching allows one teacher to teach from the front and the other to focus on individuals who need particular support. Learners perceive that there is no differentiation – “everyone does the same, no matter how good they are”, but they also acknowledge that “teachers give more help to those who need it”. Pre-produced materials are not used. The plastering teacher sets exercises/problems, and the key skills teacher tries to highlight elements of the task relevant to the key skills scheme of work.

Both teachers are clearly seeing the benefits of working in this way:

“It works best when you have a teacher from the subject and a teacher from key skills. If [the learners] had to do English and maths unrelated to the subject, they would be asking ‘why are we doing it?’” Plastering teacher

Both teachers acknowledge that their good working relationship makes both their roles easier, and say they value each other’s expertise. The plastering teacher (PT) was ready to quit the job before the key skills teacher (KST) arrived. He has sought tuition for himself to improve his own key skills as part of his teaching role.

PT: I am not confident in my own key skills...

KST: But that’s why I’m here.... So you can help me make it more interesting.

PT: Without [key skills teacher] I was ready for jacking... because of that pressure. You wouldn’t expect a plasterer to go and teach English and maths, and you wouldn’t expect a maths teacher to teach plastering”.

Staff values and beliefs

The key skills teacher is convinced that LLN has a central role in the vocational course and value to learners in their everyday lives. But the plastering teacher, who until recently worked as a professional plasterer, voiced doubts.

PT: As a plasterer, I’ve been teaching for two years.... And this is just realistic... I’ve never needed to do the stuff [referring to the requirements of the key skills qualification] I’m doing in here... areas and perimeters, that’s it.

KST: So as a plasterer, you don’t need it...?

PT: No.

KST: But as a human being ... You do ...

The plastering teacher experienced a conflict of values when a representative from the Construction Industry Training Board came to visit the class and told the learners: “You don’t need to put dots or capitals where they should be, or worry about corrections.” He finds it

difficult to underline the importance of key skills when he doesn't always perceive it himself.

The learners echo his views:

"We won't use key skills on site, they won't be helpful."

"I chose plastering because I thought there would be no English and maths."

"I learned it all in school, I don't need to carry it on, don't need to do it anymore."

"We won't need to do anywhere near as much as the teachers say."

"It's a waste of time."

The key skills teacher is viewed negatively by learners and she is aware of this: "They think I'm the most picky person in the world, because I keep asking them to make corrections and so on."

This case study provides an example of a course with many characteristics of embedding. However, it also highlights the distinctions, made in section 1, between the different purposes for embedding LLN: to teach the LLN required to undertake a course and gain a vocational qualification, to teach the LLN required to gain key skills or *Skills for Life* qualifications and to teach the LLN required to do the job itself. It illustrates how these distinctions can lead to tensions for practitioners, as here, between the requirement for learners to gain a key skills qualification, and the beliefs of the vocational teacher about the role of LLN in the practice of his trade. However, the quote from the teacher in course A shows the fast-changing literacy practices in motor vehicle engineering. In many cases the key skills qualifications require teachers to address aspects of LLN that are not immediately relevant to the practice of the vocational skill. This can create tensions as different objectives exert influence on limited time and resources.

6.5 Course E – Certificate in Administration NVQ, Level 2. (Curriculum area: Business)

This course, like others in the sample, illustrates the demands that can be put on teachers when it is assumed that vocational teachers can simply add LLN to their teaching role. The organisation had previously had quite separate provision for key skills but during the year of the study was in a transition phase. Vocational teachers sat in on key skills sessions with the intention of preparing them to take over the key skills in both Communication and Application of Number (AoN) in the following year. The key skills staff would then move to an advisory role.

Planning for learners' LLN progress

The group had one hour-long session per week on AoN. This was part of the timetable for the whole group. In 2004–05 this was taught by a key skills teacher with the vocational teacher observing.

Vocational teachers point out that it can be difficult to embed either literacy or numeracy fully into certain vocational subjects because the vocational skills and knowledge do not afford opportunities to integrate numeracy to a sufficiently high level or to cover the requirements of the qualifications. The key skills teacher put considerable effort into the contextualisation of AoN assignments but acknowledged that there were aspects of key skills AoN that were difficult

to link to the learners' secretarial studies. The secretarial teacher stated that learners were quite resistant to working on numeracy because they did not believe they would need it.

Quite the opposite was true for literacy. The administration course provides ample opportunities to embed literacy. The vocational teacher was already responsible for key skills communication and she was experienced and confident in this role.

Teamwork

The key skills teacher was a qualified *Skills for Life* teacher and had responsibility for *Skills for Life* training for staff. He encouraged the vocational teacher to learn by "watching and taking notes" and to get involved herself by, for example, checking learners' answers, to "get the feel of it".

Although the vocational teacher had the opportunity to observe the key skills teacher no time had been allocated for meetings or joint planning. In addition, teachers had to use their own time to attend training to equip them for the new roles that they were required to take on as part of college policy.

Staff values and beliefs

A good level of mutual respect existed between the key skills and vocational teachers and it appeared that the dual staff model worked well for AoN. The vocational teacher, however, had serious concerns about the arrangements for the coming year. She had been willing to develop her skills and had attended a Level 2 course in numeracy as well as the training on numeracy teaching, in her own time. She did not, however, feel confident to take over responsibility for key skills AoN. She was aware of her limitations in relation to maths and felt that AoN would be much better taught by a specialist. She was also aware of the challenges of embedding the requirements of AoN into the secretarial course and recognised that she would need more support with this.

Organisational factors

The college has a *Skills for Life* strategy and from September 2004 introduced a new policy of embedding key skills. Its plan states:

"key skills will be embedded into the main course structure and a programme of staff development devised to ensure the standards are met and learners get a high quality learning experience."

One document states that in 2004-05:

"key skills delivery will be integrated into learners' main programme... All teachers will develop learners' literacy, numeracy and IT through their lessons."

Separate provision of key skills had been unpopular with the learners who had been reluctant to attend the weekly sessions and the key skills/*Skills for Life* manager believed that the change in policy was for the best. However, while the key skills staff would still be available to offer support and advice to the vocational staff, in practice there was little or no time set aside for this to happen. In addition, although the need for further staff development was acknowledged, reliance on teachers undertaking this in their own time would make this difficult to roll out.

Reflections on the course

This course illustrates the difficulties that may be encountered if vocational teachers are required to take responsibility for LLN as well as their vocational area. A policy for embedding LLN teaching in vocational teaching which depends solely on this model is likely to meet problems. In this case it was the view of the staff involved that, for AoN, the interim arrangement, whereby the key skills numeracy specialist taught alongside the vocational teacher in the vocational classroom, worked well for learners. The effect of the college policy, however, was to transfer the teaching of number to a teacher who, despite passing L2 numeracy, still had serious concerns about teaching, not to speak of embedding, number skills and would have limited access to support.

6.6 Key themes

A number of key themes arise from these pen portraits. First, as discussed in section 5 of this report, effective practice, good teamwork and strong organisation frequently feature in cases where embedding has been seen to be effective. The research suggests these factors could be as, or possibly more, important for effective embedding than a specific model of delivery alone.

A strong relationship between ALS support and the vocational staff and mutual respect between vocational and LLN teachers are key to developing effective embedded provision. Additionally, where teachers are able to reflect on and address their own attitudes towards LLN and vocational success, increased mutual respect can be fostered. Joint planning and professional development can be an important method to develop working relationships and challenge attitudes.

Sustainability is important. There were few sites which had on-going, formal planning or development opportunities related to embedding. Although there were many cases whereby good will and existing solid teamwork helped to develop effective practices, there also are questions around how sustainable, or transferable such informal arrangements can be in the long term. Similarly, effective embedded practices can exist within one team or within one department which may not have a wider impact on other departments and may not be sustained when members of staff leave and new members join.

These issues of sustainability suggest that it is important for the lead for embedding to come from the senior management of an organisation and for the senior management to fully appreciate the implications of embedding in terms of pedagogy and teachers' professional expertise. The case studies, however, also indicate the importance of vocational departments having ownership of embedding. Its implementation needs to be undertaken in consultation with vocational managers and staff in ways that are appropriate to the requirements of particular subjects and the skills of the staff.

Adopting a model where one teacher is asked to take dual responsibility for LLN and vocational teaching can appear to provide a clear route to fully embedded provision. However, the depth of expertise, planning, time, training and support this requires should not be underestimated. Not only subject-specific expertise in LLN but expertise in embedding itself was seen as necessary for successful practice. As case study B illustrates, there are practitioners who are specialists in both the vocational subject and LLN teaching and who can use their skills to provide LLN teaching that is truly embedded in the vocational teaching. These are, however, the exceptions. In fact, this model, as perceived by learners (see section 4.4) and in terms of learner outcomes

(see section 3.7) can be less effective than an approach using a team of experts in different subjects.

Based on responses from teachers and learners, it appears that the most obvious LLN practices are sometimes assumed and therefore receive less importance in terms of delivery. For example, researchers heard from some practitioners and learners that LLN was not necessary to carry out the basic functions of the vocational role or that LLN activities were so embedded that “learners don’t know they are doing it”. This raises a concern about the development of a recursive cycle whereby LLN practices become less visible, and explicit attention to their development is lost within the embedding process, LLN need to be explicitly taught, but in ways that learners perceive are clearly integrated within their own vocational motivations and aims.

7 Conclusions and recommendations

7.1 Outcomes for learners

The findings of this study provide a clear and consistent message: vocational courses at Levels 1 and 2 in which LLN is embedded are linked to more positive outcomes for learners than courses for which the LLN provision is separate. In courses in which LLN was embedded:

- retention on programmes was higher, particularly at Level 2
- success rates in the vocational subject were higher
- learners were more likely to achieve literacy and language qualifications
- learners were more likely to achieve numeracy qualifications
- learners believed that they were better prepared for their work in the future.

Analysis of the data by the level of the vocational course identified some interesting variations between courses at Level 1 and Level 2. For vocational Level 2 courses the figures suggested that even a small degree of embedding of LLN makes a significant difference to learners' retention and achievement. For courses at vocational Level 1 on the other hand, a rise in achievement was associated with the higher degrees of embedding of LLN.

The analysis also showed variations between the five curriculum areas covered by the project. The sub-samples in these cases were small and the validity of the variations was uncertain. However, the researchers did observe potentially significant differences between the five curriculum areas in terms of culture, language and numeracy requirements and approaches to teaching, which suggest that it would be valuable to explore these variations further.

7.2 Characteristics of embedding LLN into vocational programmes

The research presents an analysis of the key features of embedding LLN in vocational programmes. The features that were most strongly associated with LLN achievement for both literacy/language and numeracy are described and illustrated. These can be grouped as follows:

- Teamwork between LLN teachers and vocational teachers
- Staff understandings, values and beliefs
- Aspects of teaching and learning that connect LLN to vocational content
- Policies and organisational features at institutional level

Some of the features associated with LLN achievement were quite specific to the process of managing embedded LLN provision. But others are recognised principles of good practice employed to support effective embedding; for example, the use of diagnostic assessment as the basis of differentiation for vocational tasks as well as LLN learning.

There is no single model of embedded provision. In particular, the researchers found successful embedding was not just a question of whether the programme had structural features of embedding in place, for example the timetabling of an LLN and a vocational teacher for the same session. There were significant differences between institutions and departments in the degree to which they were making these features work for learners and treating LLN as an integral part of vocational learning. It was important to make this distinction, because structural features of embedding may not be sufficient in themselves. Teamwork and shared understandings and beliefs were equally important.

7.3 Staffing and resources

Embedding should not be seen as a cheap option. The evidence from this project suggests that embedded provision is more, rather than less, resource intensive, but that the initial investment can be very productive. To make embedding work well institutions need to ensure:

- easy access for LLN and vocational teachers to each other and opportunities for joint planning
- opportunity for LLN teachers to become familiar with the content and style of vocational teaching and learning
- opportunity for vocational teachers to understand the role of LLN skills in learning and work for their vocational areas
- occasional opportunities for team teaching and/or observation
- appropriate professional development for staff (see section 7.4).

These requirements make both organisational and resource demands. However, if institutions can achieve increases in qualification outcomes along the lines found in this research, the investment in additional time and resources may be well worth it. For teachers, successful embedding of LLN teaching is likely to be professionally more demanding and more time-consuming than traditional models, but also more rewarding.

Giving one teacher responsibility for teaching both the vocational subject and LLN is often seen as the route to full embedding. However, the findings of this study indicate that where this was the case learners were less likely to succeed with their LLN qualifications. The evidence suggests that the breadth and depth of expertise and experience required, not only to teach both subjects but to embed LLN teaching successfully, should not be underestimated. The research team met a small number of highly skilled individuals who were qualified and experienced in teaching both subjects and were committed to embedding LLN. These, however, were the exception. The effective solution in most contexts seems to be for teachers with different specialisms to work closely together.

For successful embedding of LLN teaching to be sustainable it is important that it has the support of senior management and that senior managers fully understand the implications of embedding, both in terms of the practical support it requires but also in terms of pedagogy and teachers' expertise. Without this support, excellent examples of embedding, created by enthusiastic and committed teachers, can be difficult to maintain and may not spread to other parts of the institution.

7.4 Recommendations

- **Embedded LLN provision should be recognised and implemented as the norm not the exception for Level 1 and 2 vocational courses.** This may sound obvious and simple, but it will require consistent change to many institutional and professional practices. Very many vocational and LLN teachers will have to develop and change aspects of their sense of identity and their professional practices.
- **The current emphasis on whole organisation approaches to LLN should be strengthened and continued.** An understanding of the most effective whole organisation approaches should be drawn together based on those colleges already identified through research and development projects (including this one) as having such effective whole organisation arrangements.
- **Managers with responsibility for teaching staff timetables** need to fully understand the crucial importance of ensuring that staff who are to work together in embedded teams need to have dedicated time to plan together as well as opportunity to meet for more informal discussions.
- **Research should be established to investigate further some of the issues emerging from this study.** These would include possible differences for embedding LLN in relation to Level 1 courses and for different curriculum areas.
- **Professional development for vocational and LLN teachers to support embedding should be made more widely available.**

Vocational teachers need support to increase their awareness of the needs of LLN learners, and to develop their vocational teaching styles to cater fully for the differentiation required to meet the needs of LLN learners. They also need to be fully confident in their own skills in English and maths.

LLN teachers, especially those new to embedding, need support to adapt their teaching approaches to one which is essentially led by the vocational curriculum, and in which they are not the sole lead. They also need opportunity to gain an understanding of the vocational areas within which they are to work and the requirements of the vocational curricula.

All teachers need professional development activity to encourage the growth of collaborative teamwork.

Appendix 1 – The organisations included in the sample

NRDC Site ID	Vocational area covered	Type of provider	LSC area	Index for Multiple Deprivations average	Index for Multiple Deprivations rank	Year of Ofsted inspection	Learners	percentage of non-white (ethnic minorities)	percentage of full time learners
1	Health and Beauty Therapy Health and Social Care	Further Education College	London East	45.88	4	2005	8,276	79.0	26.0
2	Engineering Health and Beauty Therapy	Further Education College	London West	25.95	81	2004	16,400	68.0	40.0
3	Business Construction	Further Education College	London East	31.32	42	2003	11,610	42.0	22.0
4	Engineering Health and Beauty Therapy Health and Social Care	Further Education College	London North	30.24	47	2002	16,000	60.0	Data not available
5	Health and Beauty Therapy Health and Social Care	Further Education College	London Central	42.65	6	2004	18,000	43.0	25.0
6	Health and Beauty Therapy Health and Social Care Engineering Business	Further Education College	London North	37.7	13	2004	15,063	50.0	17.0
7	Business Engineering Health and Social Care	Further Education College	London South	14.5	220	2005	7,000	50.0	28.0

NRDC Site ID	Vocational area covered	Type of provider	LSC area	Index for Multiple Deprivations average	Index for Multiple Deprivations rank	Year of Ofsted inspection	Learners	percentage of non-white (ethnic minorities)	percentage of full time learners
8	Health and Beauty Therapy Health and Social Care	Further Education College	West of England	27.72	67	2001	40,000	17.0	14.0
9	Construction Health and Beauty Therapy	Further Education College	Bedfordshire and Luton	17.52	167	2004	13,000	19.0	Data not available
10	Business Construction Engineering Health and Beauty Therapy Health and Social Care	Further Education College	South Yorkshire	31.5	40	2004	24,364	6.0	13.0
11	Construction Engineering Health and Social Care	Further Education College	South Yorkshire	28.19	63	2003	9,200	5.0	13.0
12	Construction Engineering	Further Education College	Lancashire	28.47	59	2003	33,000	12.6	14.0
13	Business Construction Engineering Health and Beauty Therapy	Further Education College	Lancashire	33.91	24	2003	21,000	1.3	43.0
14	Business Construction Engineering Health and Social Care	Further Education College	Lancashire	28.53	58	2005	10,299	13.0	11.0
15	Business Construction	Training Provider	Liverpool	49.78	1	Data not available	Data not available	Data not available	Data not available
16	Construction Engineering Health and Social Care	Further Education College	Greater Merseyside	30.06	48	2002	15,236	Data not available	18.7

Appendix 2 – Features of ‘Embedded provision’

- 1 Vocational and LLN teaching are physically integrated – i.e. taught during the same timetabled sessions.
- 2 Vocational and LLN teaching are undertaken by dual or multi-skilled tutor(s).
- 3 Vocational and LLN classes are run by the same department.
- 4 LLN teaching is linked to practical, vocational content and activities.
- 5 The vocational materials are adapted or differentiated to take account of different LLN levels and needs.
- 6 LLN materials are contextualised for the vocational area.
- 7 Initial/diagnostic assessment contributes to the integration of LLN into vocational teaching.
- 8 The use of ILPs and/or other forms of on-going formative assessment contribute to the integration of LLN into vocational teaching.
- 9 The vocational subject is taught with differentiation according to the LLN needs of learners.
- 10 Formal shared planning in officially allocated time between vocational staff, LLN staff and ALS staff, where applicable, supports integration of LLN into vocational teaching.
- 11 Informal shared planning without officially allocated time between vocational staff, LLN staff and ALS staff, where applicable, supports integration of LLN into vocational teaching.
- 12 Vocational staff, LLN staff, and ALS staff, where applicable, work as a team.
- 13 Vocational and LLN teachers have shared aims for the holistic development of the learners.
- 14 LLN teachers have shared aims (with the vocational tutors) for the holistic development of the learners.
- 15 LLN are seen as essential in the development of learners’ professional identity and for success in their vocational area.
- 16 LLN development is considered in principle to be relevant to all students, not only as necessary for those who are identified with ‘BS/ES needs’.
- 17 LLN development is treated in practice as relevant to all students or as only necessary for those who are identified with LLN needs.
- 18 LLN teachers share vocational department objectives for the students.
- 19 LLN teachers are viewed by staff and students as contributing to learners’ vocational aspirations.
- 20 LLN teachers understand and engage with the vocational area as part of their work.
- 21 Vocational teachers understand and engage with LLN as part of their work.
- 22 LLN teachers are willing to develop their skills in relation to the vocational area.
- 23 Vocational teachers are willing to develop their skills in relation to LLN.
- 24 LLN teachers value the work of vocational teachers.
- 25 Vocational teachers value the work of LLN teachers.
- 26 The staff development policy and provision within, and available to, the college support the integration of LLN with vocational areas.
- 27 Departmental and institutional managers and policies support embedded provision in principle.
- 28 Departmental and institutional management structures support embedded provision in practice.
- 29 Organisational arrangements support embedded provision.
- 30 Resourcing and working conditions support embedded provision.

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