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**Independent evaluation of uses and outcomes of
Espresso digital resources in Wolverhampton
Local Authority schools**

Final Report

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Acknowledgements

The author would like to thank most sincerely the many teachers, subject leaders, head teachers and teaching assistants who have willingly and openly provided evidence that has contributed to this report. Thanks are due also to Wolverhampton Local Authority personnel, Dave Whyley, Gavin Hawkins, Patrick Flynn and Sue Morris, who also provided evidence, and to the Espresso staff, particularly Lewis Bronze, Chris Davies, Christine Major and Tom Nightingale, who have continued to support this evaluation. Individuals and schools in this report have not been named, in order to ensure anonymity, which is an important requirement for those willing to provide evidence for research of this nature - this should in no way be seen as devaluing the commitment and contribution played by all involved.

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1. THIS REPORT

PREVIOUS RESEARCH

A recently completed evaluation study for Espresso Education highlighted that, across a wide user base, Espresso digital resources designed for use in primary schools were valued by very many teachers and managers in those schools, for their qualities, for certain recognised features, for their width of application across the curriculum, and for their match to learning approaches and needs of different learners of different ages (Passey, 2011a). The evaluation study identified a number of key outcomes, but some questions raised in the study remained partially or completely unanswered at that time. Part of the reason for this limitation was the difficulty in gaining access to fully related evidence across different parts of the user base. Focusing a study on a sufficiently wide, yet at the same time sufficiently compact, user base can potentially help to address this issue, and provide further evidence to consider unanswered questions in more detail.

THE WOLVERHAMPTON LOCAL AUTHORITY CONTEXT

Schools across Wolverhampton Local Authority (LA) are interested in the identification of learning outcomes and impacts from their uses of Espresso digital resources. Working across this group of schools allows an opportunity to seek evidence that will both confirm (or contradict) certain findings from the previous study and add to the evidence base that exists already.

In 2011, Espresso Education commissioned this academically-based and fully independent evaluation study to explore outcomes of uses of its online resources in primary, special and short-stay schools across Wolverhampton LA. The aims of the study were to explore how Espresso resources were being used to support teaching and learning, and to explore whether levels or patterns of use in schools might be associated with measures of pupil achievement and school performance.

EVIDENCE AND RESEARCH APPROACH

The evaluation reported in this document has drawn on a wide range of different forms of evidence, and these are analysed in ways to match the needs of the specific aims of the study that are being explored.

The overall approach adopted for this research study has been to aim to develop a robust case study, which takes elements of evidence that are both qualitative (indicating types of outcomes, their characteristics and their importance) and quantitative (indicating frequencies and levels of outcomes arising). The case study has been developed and reported using elements suggested by Yin (1994): an overview of the case study project (its objectives, issues, and topics being investigated); field procedures (including role of the researcher, access to evidence, and sources of information including documents, questionnaires, and interviews); case study questions (specific questions that the investigator explored during data collection); and an analysis of the results (in terms of relevance and relationship to the proposed framework).

RESEARCH QUESTIONS

The research study has sought to answer a number of specific and pertinent questions:

- How can access and use of Espresso resources be characterised across schools in the LA?
- What training and support have schools received, and what have been the outcomes?
- What value do teachers, subject leaders and head teachers ascribe to Espresso resources?
- How are the resources used in schools, and planned into programmes of study?
- What does the evidence say about outcomes and impacts on pupils' learning?

Espresso online digital resource evaluation

The study has explored and taken evidence of outcomes and impacts at three different levels:

- At an LA level, exploring data that already existed prior to this study and further evidence gathered for the study within a three month period.
- At an individual school level.
- At a teacher, subject leader, teaching assistant and head teacher level, across the LA.

CONTEXT AND AIMS

At a time when the curriculum (and particularly the curriculum for information and communication technologies [ICT] is being reviewed), and when economic astringencies are a factor that all managers have to consider, it is important that any school or LA investing in resource banks can feel confident that the resources are being valued, that they are associated with educational outcomes, and that it makes economic sense as well as educational sense to continue to provide and access such resources.

Historically, provision for Espresso resources across Wolverhampton LA primary, special and short-stay schools has been funded centrally within the LA, as a means to support access for all pupils and all teachers, irrespective of their individual situations. While Espresso resources have been fully accessible since 2004, there has been no online metering of the levels of use of this service across that period of time. Metering of usage has been introduced recently, in order to look at access in more detail, but this evaluation study has not had access to evidence gathered through this form of monitoring.

It is clear that the findings of this evaluation study sit alongside current concerns of those in the LA and in schools. The findings are derived from the widest possible evidence bases in order to enable those with an interest in this area to consider in as much detail as possible teacher and pupil uses and outcomes of these resources and their impacts.

2. REPORT HEADLINES

This independent evaluation study explores five key questions

- How can access and use of Espresso resources be characterised across schools in the LA?
- What training and support have schools received, and what have been the outcomes?
- What value do teachers, subject leaders, teaching assistants and head teachers ascribe to Espresso resources?
- How are the resources used in schools, and planned into programmes of study?
- What does the evidence say about outcomes and impacts on pupils' learning?

Evidence has been gathered from a wide range of sources across the period that Wolverhampton LA schools have been using Espresso

There are currently 92 school centres (nursery, infant, primary, junior, special, and short-stay schools) that use Espresso resources. Evidence about uses and impacts for this report have been gathered from three interviews with Espresso and LA personnel, attendance data from Hands-On Support (HOS) sessions in 2004, baseline self-review documents about readiness to implement school-wide uses of online resources completed by 34 schools in 2004, trainer feedback from 169 school-based sessions between 2006 and 2012, feedback from 239 teachers in school-based and centre-based sessions between 2010 and 2011, recent online usage data captured by Espresso, numbers of references to Espresso resources in school online planning documents from 2011, survey responses in 2011 and 2012 from 97 teachers, 24 subject leaders, 9 head teachers and 20 teaching assistants, and background SATs results and numbers on roll of all school centres from publicly accessible documents.

How can access and use of Espresso resources be characterised across schools in the LA?

Wolverhampton LA schools have had uninterrupted access to Espresso resources since 2004. This access has been supported by a range of forms of training and has been centrally managed and monitored. From the variety of evidence gathered, there is widespread use of Espresso resources and non-Espresso resources across schools, and school personnel value the resources for both teaching and learning purposes.

What training and support have schools received, and what have been the outcomes?

Training has been provided since 2004 for all schools and all school personnel, either within schools or through centre-based events. Although complete records of training attendance and outcomes have not been available, from those records that have been provided (which are substantial), it is clear that many teachers, subject leaders, teaching assistants and head teachers have been involved in, and have valued, the training. There is no evidence to indicate the involvement of all schools in aspects of training, but where training has happened, there is evidence that uses have in a range of cases led to longer-term and wider implementation within schools.

What value do teachers, subject leaders, teaching assistants and head teachers ascribe to Espresso resources?

From responses following training events, and from recent survey responses, school staff generally report positively on the value of Espresso resources. While it appears that about half of the online resources used by schools are not Espresso resources, school personnel recognise the contributions that Espresso resources make (although they also recognise that Espresso resources cannot necessarily cover every aspect of resource need that a school might have). It is clear that in some cases, more training could support wider use of resources that are centrally provided and accessible.

What does the evidence say about outcomes and impacts on pupils' learning?

School personnel identify clearly the ways that resources are used in a variety of ways to support teaching and to support learning. School personnel identify important ways that the resources contribute to learning approaches that provide deeper and wider opportunities for pupils (offering them ways to question and to consider other alternatives outside their spheres of knowledge or experience). The key aspects of learning that are supported by uses of Espresso resources (megacognitive, cognitive and a range of social interactions), highlighted by school personnel, are shown in Figure 10 on pages 45 and 46.

There are some indications from the analysis of correlation statistics that background factors being put in place at early stages (such as school-wide use of Espresso resources to support learning and teaching reported in school self-reviews in 2004) may be related or contribute to longer-term increases in attainment results. Those schools with higher levels of attainment at Level 4 in English in 2010 had a higher average number of Espresso resource references in their planning documents (indicating a possible wider school integration of the resources), when compared to those schools with lower levels of attainment. Those same schools also gained increasingly higher SAT results in English and mathematics across the period of time from 2004 to 2010, which coincided with the time period that Espresso resources were being integrated more fully across school curricula through a continuity of training events. These indicators of impact or impact contribution are supported by results from previous studies (Somekh *et al.*, 2007; Passey, 2011d).

How are the resources used in schools, and planned into programmes of study?

Resources are used in schools widely across subject areas, within different parts of lessons, and to support different learners. Reviews of online planning documents indicate that many schools now include Espresso resources within their short, medium and long-term planning, and that the variety of resources being accessed and used is widening (for example, through increasing uses of News Bites).

Training to support teachers and schools in using Espresso resources has been long-standing

Training sessions for schools across Wolverhampton LA have been run since 2004, and while many schools and teachers have reported benefits from these school-based and centre-based sessions, there are clearly many schools and teachers that have not taken up opportunities available to them to develop their experiences and expertise with resources that have continuously been built across that period of time. Recent facilities that are reported by some teachers as being useful are not known about and not used by many other teachers.

Access to resources is widening

While the resource base itself is widening, the ways that teachers can use the resource base is also widening. Recently, LA consultants have made access from home a great deal easier for teachers, and have enabled resources to be embedded within the LA-wide virtual learning environment (VLE), at either a school or LA level. The use of videos by schools remains high, and these resources are clearly recognised as a critically useful set of pedagogically supportive materials. Access to the weekly up-to-date News Bites, designed for specific age groups, is being used by teachers increasingly.

Espresso online digital resource evaluation

All groups of school personnel report commonly that Espresso resources are useful

From recent survey responses, 87 teachers out of 97, 23 subject leaders out of 24, 8 head teachers out of 9, and 18 teaching assistants out of 20, state that they feel Espresso resources are useful without further qualification. Almost all of the teachers indicate that they use Espresso resources because they appeal to children of this age, and many say they match subject and topic needs, that the quality of resources is high, they have good presentational qualities, and are up-to-date. Most school personnel find Espresso resources are easy to navigate and easy to find using the in-built search facility.

Teachers use Espresso resources to support teaching and learning across topics and subject areas

Most teachers use Espresso resources once a week or more on average, and they are commonly used in teaching numeracy, literacy, topic work, science, history, and religious education.

Teachers report that Espresso resources help pupils in key ways

Most teachers report that Espresso resources help pupils in important ways - to discuss ideas or speak in class, remember certain things, engage pupils practically or kinaesthetically, help them to associate ideas to other things they have experienced, and help them recall certain things to mind. Individuals build mental schema that allow knowledge, ideas and experiences to be held in mind in particular and different ways, and the media and format of Espresso resources match those ways strongly. The form of Espresso resources match the ways that individuals report that they recall things to mind, and associate these recollections with other details and other ideas.

Subject leaders indicate that Espresso resources help teachers in key pedagogical ways

Subject leaders commonly report that teachers are able to use Espresso resources to support a number of pedagogical approaches - to initiate or guide a topic, demonstrate something, explain or illustrate something, stimulate questioning, and consolidate things already covered.

Head teachers report that Espresso resources are used across the entire age range

Responses from head teachers, and indeed the responses from teachers of specific year groups, indicate that Espresso resources are being used across the entire age range, from nursery to Year 6 classes. All head teachers in this survey report that Espresso resources help to keep children focused and on-task, and help to make teaching more interactive.

School personnel want more rather than less

It is clear that school personnel would like more Espresso resources available to them rather than less. Their use of non-Espresso resources is dependent on their need to find resources to meet the needs of more obscure or specialist topic areas not currently covered in the Espresso bank, or resources in this bank that are not currently available for learners with very specific needs. School personnel do raise some issues about Espresso resources, such as their difficulties with home access to resources, and the integration of resources into other facilities, but these issues have been resolved by LA consultants and Espresso recently.

Access to resources is widespread and increasing

Usage statistics and access to News Bites resources indicates that access to these regular and up-to-date news items is increasing. It is possible that up to one in three classrooms across the school centre user base is now accessing these resources on a regular weekly basis.

Espresso resources are becoming embedded in school plans

The majority of schools (70 out of the 92 school centres in total) now specify the use of Espresso resources within their school planning documents. A search suggested by the author and undertaken by the LA showed that, across 67 infant, primary and junior schools, there were 1,580 records of specified Espresso resources in 2011 planning documents. Across 3 special schools, there were 15 records of these resources. The average is in the region of 24 references per school. This is likely to be an indication of how many schools see Espresso resources as a valuable asset that is then embedded in use in their curriculum planning.

Espresso online digital resource evaluation

Replacing Espresso resources in curriculum plans and delivery would incur high cost and time-associated well-being issues

It is clear that many schools use Espresso resources, and while teachers use other resources too, having to replace Espresso resources with other resources would incur time needs for teachers (on average a likely 3 or 4 days of time for each teacher), as most teachers would need to take more time each week to search for, vet and consider the pedagogic use of alternatives. The additional average time and cost to a two-form entry school would equate to a figure in the region of £25,810 (how this figure is calculated is detailed in Section 8). It is also not clear that values that teachers associate with Espresso resources would be easily found in alternative sources; the width of video clips, for example, is not likely to be found elsewhere, as they provide experiences often in real-life settings; and up-to-date examples and age-related details through News Bites resources may not be accessible through other sources.

3. EXECUTIVE SUMMARY

INTRODUCTION

A recently completed evaluation study for Espresso Education highlighted that, across a wide user base, Espresso digital resources accessible to primary schools were valued by teachers and managers in schools for their quality and a range of recognised features, for their width of application across the curriculum, and for their match to learning approaches and needs of different learners of different ages (Passey, 2011a). This current research study has sought to answer a number of specific and pertinent questions relating to previous findings and partially or completely unanswered questions arising:

- How can access and use of Espresso resources be characterised across schools in the LA?
- What training and support have schools received, and what have been the outcomes?
- What value do teachers, subject leaders, teaching assistants and head teachers ascribe to Espresso resources?
- How are the resources used in schools, and planned into programmes of study?
- What does the evidence say about outcomes and impacts on pupils' learning?

FINDINGS FROM PREVIOUS STUDIES

The previous independent evaluation study (Passey, 2011a; 2011b; 2011c; 2011d) explored learning impacts of Espresso resources, links to pupil achievement, school performance, and management, time and cost benefits. Evidence for that study was gathered from a range of sources - in total, 45 teacher interviews, surveys generating 338 teacher responses, and analyses of usage and performance involving 337 school sets of data.

A very large number of schools subscribe to Espresso - in September 2010, a total of 8,978 primary schools. Espresso resources are characterised by certain features. The interface for teachers and pupils is clear, colourful, and uncluttered. A number of recognisable characters appear with the resources, but the resources are largely teacher-based, rather than providing standalone learner-based activities. Espresso resources are rich not just in visual terms, but also in auditory terms, and in terms of using short video clips. The material provided is as 'real' as possible (rather than being largely cartoon-based), and is kept 'up-to-date'.

Teachers in the previous study reported significant impacts of Espresso resources in a range of important areas of learning. Teachers reported that Espresso resources can enhance aspects concerned with wider and deeper learning. Teachers reported that they used Espresso resources in different ways with different groups of pupils to support subject attainment and to support teaching and learning across topics and subject areas. From data available, analyses showed that schools gaining higher attainment test levels at the end of Key Stage 2 were on average using more Espresso resources earlier, preparing pupils in the longer term across the entire width of resources, rather than focusing later on a more particular set of subject resources. Certainly a longer-term use of Espresso resources would match teachers' views that Espresso resources support wider and deeper learning, through the enhancement of megacognitive, cognitive, social and societal aspects of learning.

Findings from the previous study also highlighted the fact that schools fully integrating Espresso resources into their schemes of work positively support teachers in terms of time saved, which in turn can offer cost benefits. However, while some schools gain from a width of potential benefits of Espresso resources, it was also clear that many schools would benefit from enhanced awareness and further training.

USER BASE AND EVIDENCE BASE FOR THIS STUDY AND REPORT

In 2011, the subscriber base across Wolverhampton LA to Espresso resources comprised 92 school centres and one education centre: 7 nursery schools; 6 infant schools; 63 primary schools; 6 junior schools; 3 pupil referral units (short-stay schools); 7 special schools; and 1 education centre. Evidence used to inform this report and its findings has taken data in various forms from across this entire user base. Evidence about uses and impacts has been gathered from three interviews with Espresso and LA personnel, attendance data from Hands-On Support (HOS) sessions in 2004, baseline self-review documents concerned with implementation readiness for school-wide uses of online resources completed by 34 schools in 2004, trainer feedback from 169 school-based sessions between 2006 and 2012, feedback from 239 teachers in school-based and centre-based sessions between 2010 and 2011, recent online usage data captured by Espresso, numbers of references to Espresso resources in school online planning documents in 2011, survey responses in 2011 and 2012 from 97 teachers, 24 subject leaders, 9 head teachers and 20 teaching assistants, and background SATs results and numbers on roll of all school centres from publicly available documents.

A HISTORICAL PERSPECTIVE

Historically, provision for Espresso resources has been funded centrally within Wolverhampton LA by the School Improvement Partnership (SIP) board, as a means to support access for all pupils and all teachers, irrespective of their individual contexts. In 2002, prior to having Espresso resources, LA-wide broadband was provided for all schools. In consultation with schools, the Espresso resource bank was purchased for schools in the first year (2002 to 2003) from the ICT in Schools (31A) government education department grant. Initially a subscription model was adopted (Espresso was first available for purchase by individual schools in 2002), but as the use of the resource bank was considered to be of sufficient value to all pupils in all schools, a decision was taken by representatives of the technology group on the SIP board to purchase the resources so that they could provide a universal pupil entitlement.

From 2004, HOS funding was used for two years to provide additional training across all areas of ICT. Espresso provided the support model, and the training was sub-contracted to Espresso for two years. This training was run through half-day face-to-face sessions with designated teachers. All schools were placed into groups of three, and each school identified one teacher annually to receive training. Each group received six half-days of training per year. All schools, therefore, put one teacher annually through an intensive training programme. The training ran initially for two years, was then extended for another two years, and yet further for another year (a provision running from 2004 to 2009). Since April 2009 Espresso consultants have been responsible for running training. LA consultants have also undertaken key elements of technical work that have enabled teachers to access Espresso resources from home more easily, and enabled them to build video resources into facilities within the VLE.

HOW CAN ACCESS AND USE OF ESPRESSO RESOURCES BE CHARACTERISED ACROSS SCHOOLS IN THE LA?

Most teachers responding in the recent online survey (97 teachers in total, representing half of the entire number of school centres across the LA) use Espresso resources once a week or more on average (see Table 1), and the resources are commonly used in teaching numeracy, literacy, topic work, science, history, and religious education (see Figure 1).

Table 1: How often teachers use Espresso and other digital resources (n=97)

Question	Number 'pretty much every day'	Number 'certainly once a week on average'	Number 'perhaps every couple of weeks'	Number 'certainly once a month'	Number 'less than once a month on average'
How often do you use Espresso resources?	32	40	18	6	1
How often do you use digital resources that are not Espresso?	36	38	11	4	1

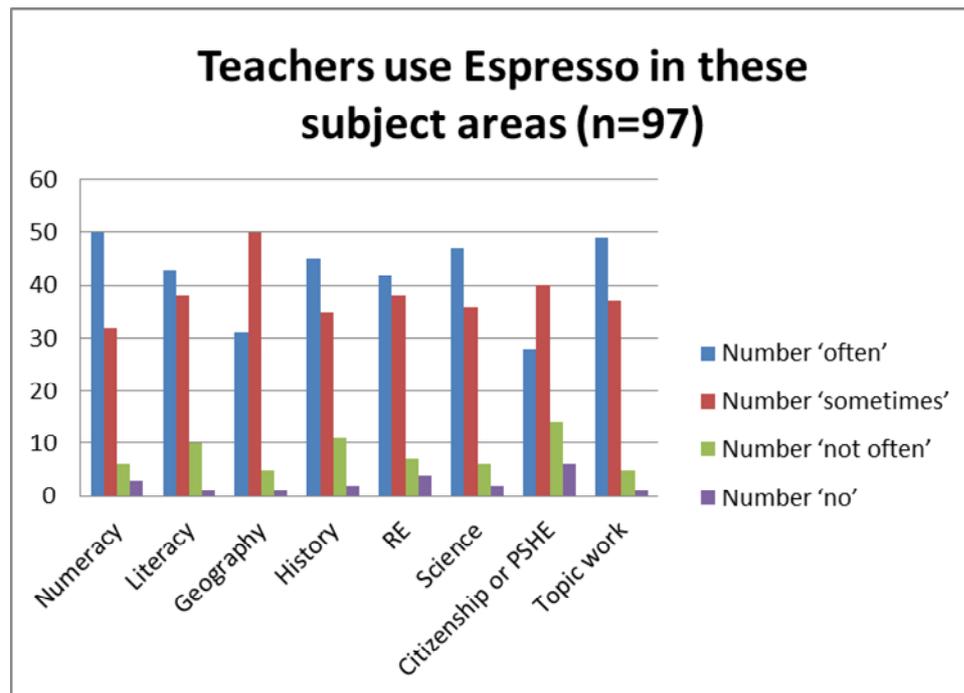


Figure 1: How often teachers use Espresso resources in subject areas (n=97)

From school personnel responses generally, it is clear that they would like more Espresso resources available to them rather than less. Their use of other non-Espresso resources is reported as being dependent often on the need to find more obscure or specialist topic areas that are not currently covered in the Espresso resource bank, or to find resources not currently designed and available for learners with very specific needs. School personnel do raise some issues about resources, such as difficulties with their home access, and the integration of resources into other facilities, but these issues have been resolved by LA consultants and Espresso recently.

Reports from teachers attending e-Continuing Professional Development (e-CPD) sessions in 2010 and 2011 indicate that certain resources are used much more commonly than are others (see Table 2). Videos are used most commonly, but levels of use of some other resources are increasing.

Table 2: Numbers of teachers reporting uses of different facilities with Espresso

Feature available that is being used	Number of teachers using this feature in 2010 (n=40)	Number of teachers using this feature in 2011 (n=31)
Videos	38	28
Access from home	23	17
Embedded videos in VLE	19	18
Learning Pathways	15	17
Route Creator	9	12
Staff Room	9	15
Flash activities	7	7
Presentation Creator	3	7
Factfiles	2	1

Usage statistics and access to News Bites resources (regular up-to-date news items designed for specific age ranges) indicate that access to these items is increasing. In November to December 2011, there were a total of 1,518 recorded hits. Over a 6 week period, this represented an average access level of 253 hits per week. It is possible that up to one in three classrooms across the school centre user base was at that time accessing these resources on a regular basis.

While the Espresso resource base itself continues to develop and is widening, the ways that teachers can use the resource base is also widening. Recently, LA consultants have made access from home a great deal easier for teachers, and have enabled resources to be embedded within a school's VLE. The use of videos remains high, and this form of resource is clearly recognised as a key set. Access to News Bites is being used by teachers increasingly.

WHAT TRAINING AND SUPPORT HAVE SCHOOLS RECEIVED, AND WHAT HAVE BEEN THE OUTCOMES?

Training sessions have been run since 2004, and while many schools and teachers have reported benefits from these school-based and centre-based sessions, there are clearly many schools and teachers that have not taken up opportunities freely available to them to develop their experiences and expertise with resources that have continuously been built across that period of time. Recent facilities that are reported by some teachers as being useful are not known about and not used by many other teachers. Teachers reporting in the recent survey indicated that about one third had not received training in the previous year (see Table 3).

Table 3: Number of teachers receiving training during the last year (n=97)

Question	Number 'no' responses	Number 'some' or 'not sure'	Number 'yes' responses
Have you received any training in the last year showing you the range of resources available?	28	4	65

Analyses using correlation statistics show that attendance and involvement in training sessions could well be related to later uses of Espresso resources in a range of ways. For example, correlation statistics show associations between prior attendance and later attendance of training sessions, between prior attendance and levels of use of Espresso resources, between attendance and wide subject use, and between practices in training sessions and practices in classrooms at a later time. These statistics also highlight associations between uses by teachers, awareness by subject leaders, and perceptions of head teachers.

WHAT VALUE DO TEACHERS, SUBJECT LEADERS AND HEAD TEACHERS ASCRIBE TO ESPRESSO RESOURCES?

From survey responses, 87 teachers out of 97, 23 subject leaders out of 24, 8 head teachers out of 9, and 18 teaching assistants out of 20, state that they feel Espresso resources are useful without further qualification. Most school personnel find Espresso resources are easy to navigate and easy to find using the search facility. Table 4 gives an overview of levels of ‘yes’ responses.

Table 4: Indications of how school personnel value Espresso resources (shown as a ratio with a maximum value of 1)

Question	Number ‘yes’ responses from teachers (n=97)	Number ‘yes’ responses from subject leaders (n=24)	Number ‘yes’ responses from head teachers (n=9)	Number ‘yes’ responses from teaching assistants (n=20)
Do you think Espresso resources are useful?	0.90	0.96	0.89	0.90
Are easy to navigate?	0.85	0.79	-	1.00
Are easy to find by using the search facility?	0.79	0.79	-	0.95

Almost all of the teachers responding in this survey use Espresso resources because they say they appeal to children of this age, and many say they match subject and topic needs, that the quality of resources is high, they have good presentational qualities, and are up-to-date (see Figure 2).

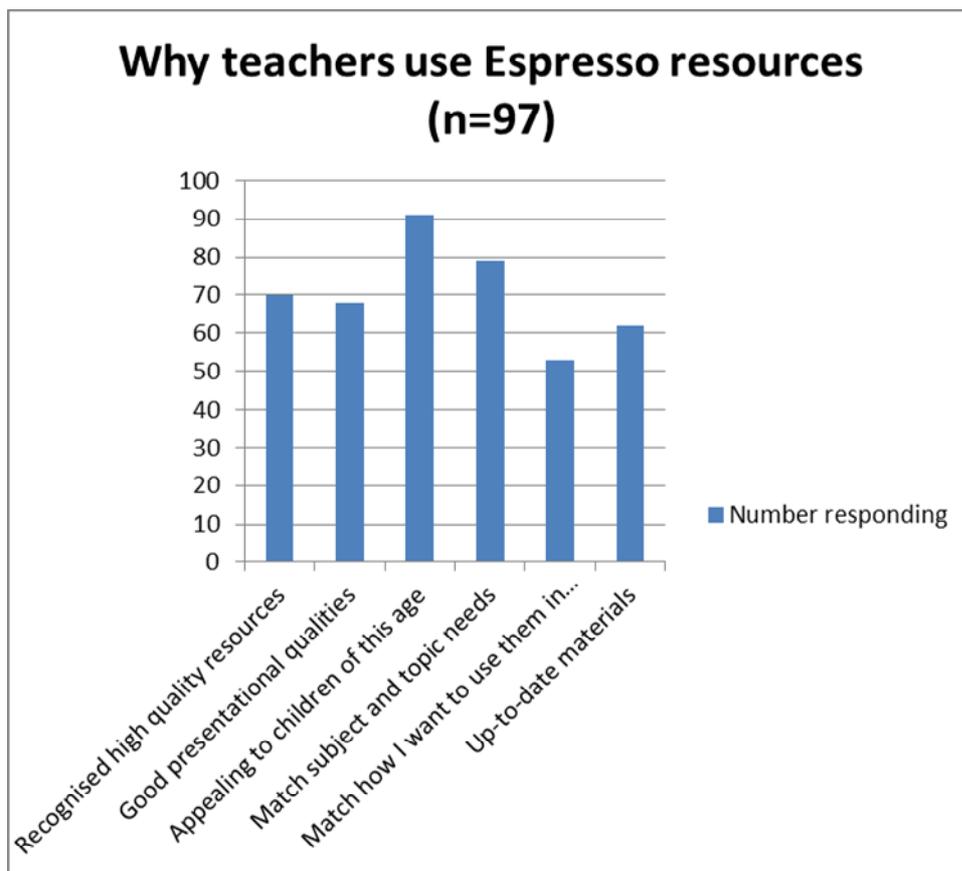


Figure 2: Reasons why teachers use Espresso resources (n=97)

Analyses from correlation statistics indicate that there could well be relationships between training events and outcomes at school levels. For example, correlation statistics indicate associations between

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teachers in training sessions and subject leaders reporting Espresso resources being built into school planning, and teachers reporting on home access in training sessions and teaching assistants reporting usefulness of the resources.

HOW ARE THE RESOURCES USED IN SCHOOLS, AND PLANNED INTO PROGRAMMES OF STUDY?

Subject leaders commonly report that teachers are able to use Espresso resources to support a range of different pedagogical approaches - to initiate or guide a topic, demonstrate something, explain or illustrate something, stimulate questioning, and consolidate things already covered (see Figure 3).

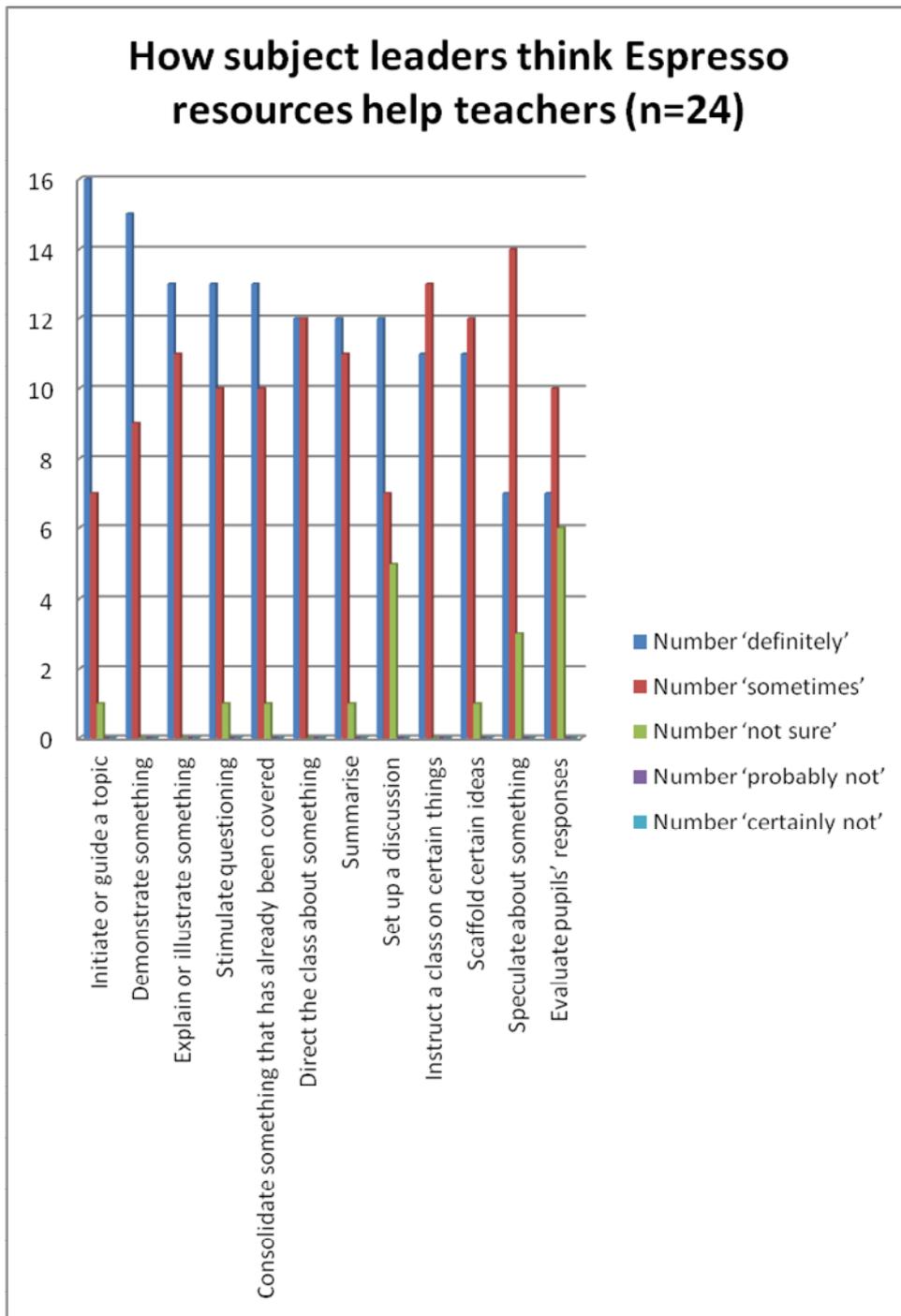


Figure 3: How subject leaders think Espresso resources help teachers (n=24)

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Head teachers, and indeed responses from teachers of specific year groups, indicate that Espresso resources are used across the entire age range (see Table 5), from nursery to Year 6 classes. Head teachers also report that Espresso resources help to keep children focused and on-task, and help to make teaching more interactive.

Table 5: How Espresso resources are used across schools (n=9)

Question	Number YN	Number YR	Number Y1	Number Y2	Number Y3	Number Y4	Number Y5	Number Y6
With which year groups do you find Espresso resources are used most?	3	3	5	7	6	5	6	5

Many schools (70 out of the 92 school centres in total) now specify the use of Espresso resources within their school planning documents. This is likely to be an indication of how many schools see the value of Espresso resources, in terms of being embedded within their curriculum planning.

It is clear that many schools use Espresso resources widely, and while teachers use other resources too, having to replace Espresso resources with other resources would certainly incur time needs for teachers and schools, meaning that most teachers would need to take more time each week to search for, vet and consider the pedagogic use of alternatives. It is also not clear that the values that teachers associate with Espresso resources would be easily found in alternative sources; the width of video clips, for example, is not likely to be found elsewhere, as the resources provided by Espresso often provide real-life examples and experiences together with up-to-date resources and details such as those provided by News Bites; these forms are not likely to be easily accessible elsewhere.

WHAT DOES THE EVIDENCE SAY ABOUT OUTCOMES AND IMPACTS ON PUPILS' LEARNING?

Most teachers report that Espresso resources help pupils in important ways - to discuss ideas or speak in class, remember certain things, engage practically or kinaesthetically, help them to associate ideas to other things they have experienced, and to help them recall certain things to mind (see Figure 4).

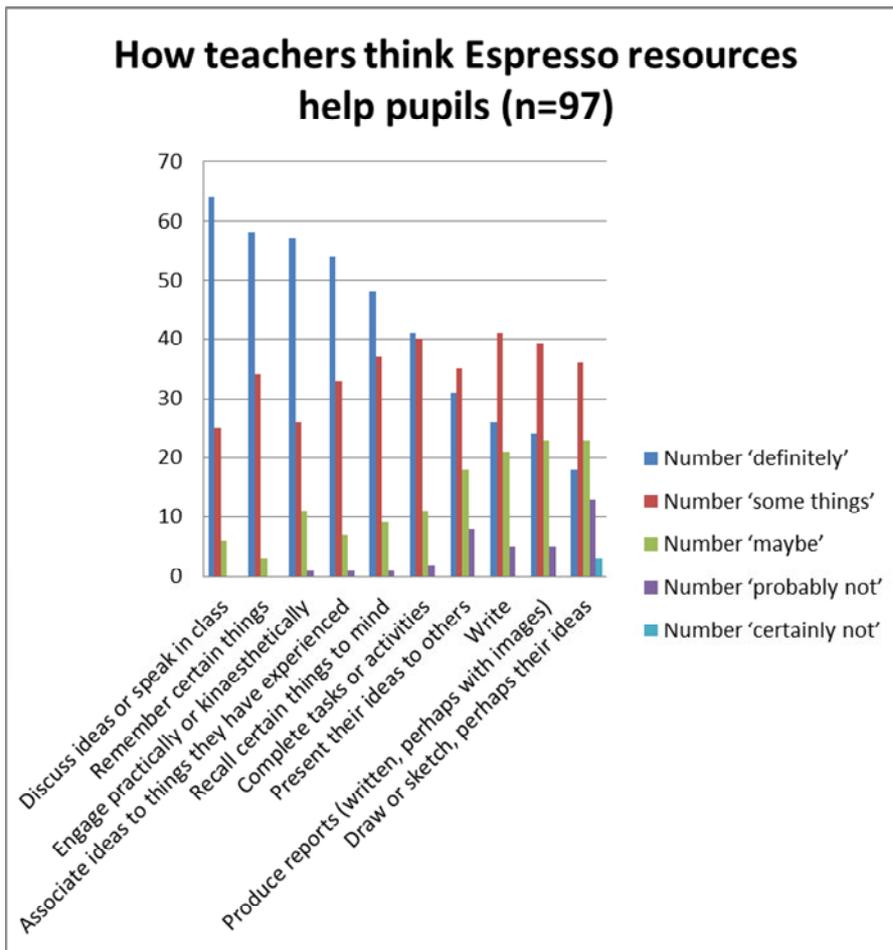


Figure 4: How teachers think Espresso resources help pupils (n=97)

Individuals build mental schema that represent knowledge, ideas and experiences, but in particular and different ways. Figure 5 shows the ways that a range of teachers recalled a particular concept to mind, indicating the way that they hold this concept as a mental schema. When the form of recall is explored, it is clear that the media and format of Espresso resources match the ways that teachers report their association with ideas strongly. In this way, Espresso resources are likely to support the creation of mental schemas for individuals, as well as supporting their association of details held within these schemas and with other ideas.

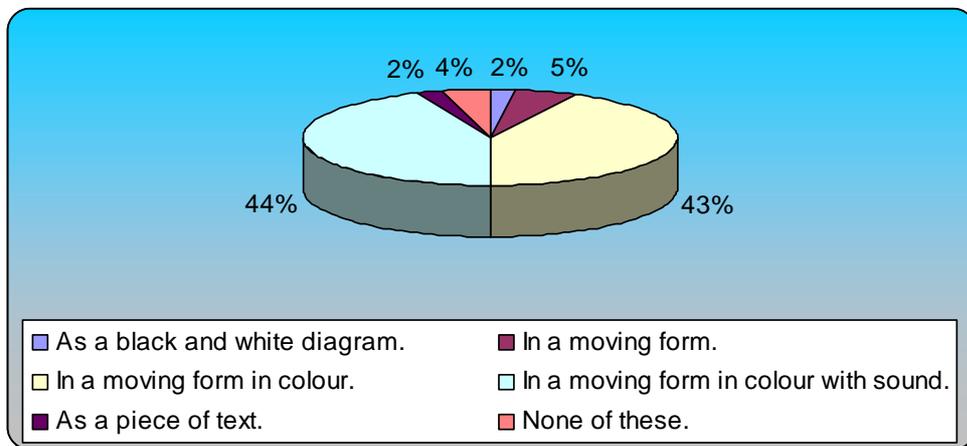


Figure 5: Proportions of teachers indicating the way a concept was recalled

4. USER BASE AND EVIDENCE BASE FOR THIS REPORT

USER BASE

The user base of Espresso resources across Wolverhampton LA is high. Historically, the LA have supported subscription to Espresso resources (explained in more detail in Section 5 of this report), and there has been a commitment to ensuring that all pupils across the LA have had access to useful online resources, judged externally and selected for their quality. According to Espresso Education records, in 2011, the subscriber base across Wolverhampton LA comprised 92 school centres and one education centre:

- 7 nursery schools.
- 6 infant schools.
- 63 primary schools.
- 6 junior schools.
- 3 pupil referral units (short-stay schools).
- 7 special schools.
- 1 education centre.

EVIDENCE BASE

Evidence used to inform this report and its findings takes data in various forms from across the entire user base. The evidence comes from eight separate but complementary sets:

- Background and contextual evidence: provided through three separate interviews with both Espresso and LA personnel.
- Historical baseline evidence: provided through documents that describe and detail sessions run, and attendance at early HOS sessions in 2004; and self-assessed indicators of school levels of integration of online resources in 34 schools in 2004.
- Trainer feedback about school-based training sessions: provided through details of responses following Espresso school-based sessions in 2 schools in 2006 to 2007, 5 schools in 2007 to 2008, 84 schools in 2008 to 2009, 19 schools in 2009 to 2010, 38 schools in 2010 to 2011 and 21 schools in 2011 to 12.
- Teacher feedback about school-based sessions: provided through details of responses following Espresso school-based sessions from 111 teachers in 2010 to 2011, and 57 teachers in 2011 to 2012, and following e-CPD sessions from 40 teachers in 2010 to 2011, and 31 teachers in 2011 to 2012.
- Recent online access data: provided through statistical records from Espresso of News Bites resources being accessed in October, November and December 2011.
- Numbers of references to Espresso resources in school online planning documents in 2011.
- Recent school personnel responses and perceptions to resources: provided through online questionnaire responses from 193 teachers, 24 subject leaders, 9 head teachers and 20 teaching assistants in 2011 to 2012.
- Recent background evidence about schools: provided through publicly accessible documents showing SATs results and numbers on roll.

5. A HISTORICAL PERSPECTIVE

THE HISTORICAL BACKGROUND

Wolverhampton LA has a long history of involvement with access to and use of Espresso resources. A single Espresso consultant has been a key contact for the LA across that entire period of time.

In 2002, LA-wide broadband was provided for all schools. At that time, with broadband infrastructure in place to support resource access in schools, an LA-wide provision of a range of resource banks was considered; the Espresso resource bank was included in that review. As a result of consultation, the Espresso resource bank was purchased for schools in the first year (2002 to 2003) from the ICT in Schools (31A) government education department grant. Initially a subscription model was adopted (Espresso was first available for purchase by individual schools in 2002), but as the use of the resource bank was considered to be of sufficient value to be of use to all pupils in all schools, a decision was taken by representatives of the technology group on the SIP board to purchase the resources so that they could provide a universal pupil entitlement. This decision was taken on the grounds that Espresso provided resources that were supported through a range of video clips, which other banks did not provide. In 2004, the SIP board agreed that the application was an excellent resource that all schools should benefit from. It was purchased centrally, using SIP funding and made available to primary and special schools, to nurseries, and for early years use. The resource bank has been funded by the SIP since 2004, for the last 7 years. An LA head teacher consultant has produced an annual report to the SIP board for a number of years, providing feedback about use of the resources.

The purchase of the Espresso resource bank was concerned with providing a focused and consistent set of resources for the primary age range across all schools. When the resource bank was purchased, Espresso initially ran a great deal of training to support schools, from 2003 onwards. There were two years of intensive support run by Espresso, and a large number of teachers in schools were reported to have attended these sessions. A case study of how the resources were introduced into classroom practice was developed and produced, based on the experiences of one of the primary schools involved.

From 2004, HOS funding was used for two years to provide training. Espresso provided the support model, and the training was sub-contracted to Espresso for two years. An Espresso trainer ran training in context, on planning uses of resources in classroom activities, across subjects, and with the curriculum. This training was run through six half-day face-to-face sessions with designated teachers. The training ran initially for two years, was then extended for another two years, and yet further for another year (a provision running from 2004 to 2009). The HOS training was run in small clusters, across a six week period over a year. It was reported that teachers liked working in small groups. These were sometimes aimed at less ICT-competent teachers. The pattern was felt to be successful. When this was moved to a cascade model of training, it was felt that this was not as successful. So, two years ago, individual school sessions were instigated.

Newly qualified teachers (NQTs) have been involved in Espresso training since 2004, also in focused ways. Of the two ICT sessions run for NQTs by the LA each year, one session has been dedicated to uses of Espresso resources, and was run by an Espresso trainer.

Espresso was a key partner in the Learning2Go mobile learning project. A large number of Espresso Learning Pathways were used heavily on the handheld technologies used by pupils and teachers in schools. These could be integrated into schools' plans – in mathematics, English, science, or history.

Wolverhampton LA was part of the Espresso Content Club. Specific Wolverhampton local studies content has been created and exists within Espresso for use by Wolverhampton schools, as well as all Espresso subscribers purchasing the Espresso Content Club.

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Since April 2009 LA consultants have been responsible for running Espresso training. More recently LA consultants have supported access to Espresso resources within the LA-wide virtual learning environment (VLE). An LA consultant wrote a specific code in 2010 so that Espresso resources could be embedded within the VLE. Espresso content can now be embedded within class, subject or pupil sites within the learning platform. Further specific code written by Espresso has enabled Espresso News Bites to be embedded and shared on the VLE class sites.

Teachers have recently gained home access to Espresso resources. However, Espresso required initially that they use different logons to access the facilities at home. This was seen as a hindrance by teachers, and they reported their dislike of this approach. From the end of 2011, this issue has been resolved by an LA consultant, so that teachers no longer need to use additional logons.

Recently the LA has encouraged VLE use rather than home use by pupils. For home use, the LA has provided additional resources, from Education City, Grid Club and Mathletics.

HANDS-ON SUPPORT

Evidence from across the entire period of the HOS training is limited. However, there is detailed evidence from the 2004 to 2005 school year. Attendance data from the first two sessions of the HOS training show that 89 school centres were represented. In the first sessions 93 teachers were involved, and in the second sessions 86 teachers were involved.

A part of the HOS training was to ask schools to monitor their uses and their integration of resources into school-based planning. Schools were asked to undertake a baseline self-review process. In this process, schools were asked to score their levels of integration in four key areas: strategic management; infrastructure and resources; learning and teaching; and monitoring and evaluation. The levels for each of these areas could then be identified by the schools as either pre-emergent, emergent, established, or advanced. At that time, 34 schools completed this process. Using a coding system (1 for pre-emergent, 2 for emergent, 3 for established, and 4 for advanced), a school could, scoring its position using each of the criterion within each area, gain a maximum score of 20 for strategic management, 28 for infrastructure and resources, 15 for teaching and learning, and 10 for monitoring and evaluation. Across the 34 schools, the average score gained by schools in 2004 was 11.59 for strategic management, 18.21 for infrastructure and resources, 5.76 for teaching and learning, and 3.32 for monitoring and evaluation. On average, therefore, schools ranked themselves as emergent for strategic management, from emergent to established for infrastructure and resources, emergent for teaching and learning, and from pre-emergent to emergent for monitoring and evaluation. These responses suggested that schools would benefit at that time from long-term support in terms of integrating online resources into school teaching and learning practices. Opportunities for this long-term support were, and have been, provided since that time.

SCHOOL-BASED SUPPORT FROM ESPRESSO

Espresso has gathered details of its school-based training sessions that were run since 2006. Numbers of training sessions and school centres involved are shown in Table 6. It should be noted that: in 2006 to 2007 and 2007 to 2008 HOS sessions were also run but are not included in these totals; from 2009 to 2010 e-CPD sessions were also run but are not included in these totals; in 2011 to 2012 no data are included from November 2011 onwards.

Table 6: Number of school-based sessions run by Espresso since 2006

Year	Number of centres taking school-based sessions	Number of school-based sessions run
2006-2007	2	2
2007-2008	4	5
2008-2009	74	84
2009-2010	17	19
2010-2011	35	38
2011-2012	18	21

Schools have had the opportunity to access a single school-based training session each year. What is clear from these data is that schools have not taken up all the opportunities that have been available to them to gain from this school-based training. There is evidence that shows that schools and teachers would like more training to keep up-to-date with resources and features available. Clearly this lack of uptake has been likely to be limiting use and application for some schools and teachers.

Espresso has gathered feedback data from teachers involved in school-based sessions during both the 2010 to 2011 and the 2011 to 2012 school years. For the 2010 to 2011 school year, teachers from 24 schools provided feedback through a survey. In total 111 teachers provided feedback, and of these, for 53 teachers it was their first Espresso school-based training. Of the 111 teachers, 21 requested weekly email updates (indicating that they felt it would be a useful way to help keep them up to date with new resources and features), and 109 (the vast majority) indicated that they would recommend the training to other schools. So, while many schools have not taken advantage of the training available, the vast majority of those teachers attending recognised value gained to the point that they would recommend it to others.

For the 2011 to 2012 school year (up to November 2012), teachers from 5 schools provided feedback through a survey. In total 57 teachers provided feedback, and of these, for 18 teachers it was their first Espresso school-based training. Of the 57 teachers, 12 requested weekly email updates, and 53 (the vast majority) indicated that they would recommend the training to other schools. These data indicate a fairly consistent pattern across this time period.

SUPPORT FROM LOCAL AUTHORITY-BASED SESSIONS

An LA consultant has collected feedback from teachers involved in e-CPD sessions over a three year period. In the 2010 to 2011 school year, the numbers of school centres represented was 35, while 40 teachers in total responded in a survey offered in the sessions. Table 7 shows from their responses the numbers of teachers using certain features accessible through Espresso resources.

Table 7: Numbers of teachers in authority-based sessions in 2010 who used particular Espresso features

Feature available that is being used	Number of teachers using this feature (n=40)
Videos	38
Access from home	23
Embedded videos in VLE	19
Learning Pathways	15
Route Creator	9
Staff Room	9
Flash activities	7
Presentation Creator	3
Factfiles	2

It is clear that the major features used were videos, access from home, embedding videos in the VLE, and Learning Pathways. Table 8 shows the numbers of teachers using Espresso resources in specific elements of a lesson.

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Table 8: Numbers of teachers in authority-based sessions in 2010 who used Espresso resources in particular parts of a lesson

Element of a lesson	Number of teachers using Espresso resources in this element (n=40)
Lesson introductions	20
Lesson plenaries	1
Whole class activities	20

It is clear that many teachers used Espresso resources for lesson introductions and whole class activities, but very few used them for lesson plenaries. The levels of use in lessons are shown in Table 9.

Table 9: Number of teachers in authority-based sessions in 2010 using Espresso resources at particular levels

Level of use in lessons	Number of teachers indicating this level of use (n=40)
Most	2
Some	29
Rarely	8
Never	1

It is clear that the vast majority of these teachers were using Espresso resources in some lessons. Feedback from teachers involved in e-CPD sessions in the 2011 to 2012 school year (up to November 2011) were gained from teachers in 20 school centres, with 31 teachers in total responding to a survey. Table 10 shows the numbers of teachers using certain features available from Espresso resources.

Table 10: Numbers of teachers in authority-based sessions in 2011 who used particular Espresso features

Feature available that is being used	Number of teachers using this feature (n=31)
Videos	28
Access from home	17
Embedded videos in VLE	18
Learning Pathways	17
Route Creator	12
Staff Room	15
Flash activities	7
Presentation Creator	7
Factfiles	1

Thee major features used are, again, videos, access from home, embedding videos in the VLE, and Learning Pathways. The pattern is very similar to that shown by responses from teachers in the previous year. Table 11 shows the numbers of teachers using Espresso resources in specific elements of a lesson.

Table 11: Numbers of teachers in authority-based sessions in 2011 who used Espresso resources in particular parts of a lesson

Element of a lesson	Number of teachers using Espresso resources in this element (n=31)
Lesson introductions	17
Lesson plenaries	2
Whole class activities	13

Again, many teachers used Espresso resources for lesson introductions and whole class activities, but very few used them for lesson plenaries. The pattern is similar to that shown by responses the previous year. Teachers' levels of use in lessons are shown in Table 12.

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Table 12: Number of teachers in authority-based sessions in 2011 using Espresso resources at particular levels

Level of use in lessons	Number of teachers indicating this level of use (n=31)
Most	8
Some	22
Rarely	1
Never	0

The vast majority of these teachers used Espresso resources in some lessons. However, the proportion using Espresso resources in most lessons is higher than that shown by responses the previous year.

REPORTS OF USES AND OUTCOMES FROM LA PERSONNEL

LA personnel report that access to Espresso resources has been valued by schools generally, and that uses are wide. However, they also report that there are some areas where use is low, and that there are difficulties in gaining data that provides an overview of what is happening across all classrooms and schools.

LA personnel report that the perception of teachers involved with pupils in early years is that resource needs for Foundation and Key Stage (KS) 1 pupils are not covered well. This statement should be considered in the context of details provided in Section 6, where teachers, subject leaders, teaching assistants and head teachers report on uses with year groups as well as aspects that are not covered well by Espresso.

A feature of the resources that is growing in terms of access and use is News Bites (weekly news clips that provide an overview of news events). However, although this feature is growing in use, it is also recognised that there are no documents accessible to teachers that indicate ‘how to use’ the News Bites resources.

LA personnel point out that Espresso provides a ‘safe’ resource, not only in terms of known content, but also in terms of the right to use it. There can be a copyright issue when using ‘free’ resources available from the Internet. Espresso, in contrast, is copyright free for schools.

LA personnel report that Espresso resources are increasingly being integrated into short and longer-term planning documents in schools. This feature is considered in more detail in Section 7. From a sample selection of schools, those with higher levels of uses of Espresso do tend to write uses into their planning documents. For example, in four schools selected, all documents on the VLE from School A made 208 references to Espresso with 162 in planning documents, School B made 61 references with 32 in planning documents (more embedded in early years, KS1 and early KS2), School C made 250 references with 122 in planning documents, and School D made 768 references with 512 in planning documents.

LA personnel report that teacher usage at home has been increasing. In late 2011, there were 33% of schools where teachers used Espresso at home. Out of those who used it (31 schools), they logged in 305 times over about a 12 week period. That equates to an average of nearly 10 logins per school over a 12 week period.

LA personnel report that embedded video usage has also been increasing. Embedding videos is an action that occurs through the Espresso central server (rather than through the central server in Wolverhampton LA). Although usage statistics on embedded videos has not been accessible, Espresso provided the LA with usage statistics that showed that the KS2 News Bites had been viewed from an embedded link 6,044 times, and KS1 News Bites had been viewed from an embedded link 3,035 times between January and May 2011. With 92 school centres having access to Espresso resources, if each

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class accessed News Bites each week, then across this period of time this would suggest that on average each class is accessing News Bites each week. This feature is explored further in Section 7, using more up-to-date usage data.

LA personnel are concerned that schools have not necessarily kept up to date with resources. In part they wonder if this might be due to the fact that a search in Espresso does not show resources in the same way as you would see them in YouTube, for example. LA personnel wonder how far embedded the use of Espresso has gone in terms of curriculum planning, and how up-to-date schools are with their knowledge of the range of Espresso resources. These features are explored further in Section 7.

6. SCHOOL USERS AND THEIR RESPONSES

SCHOOL PERSONNEL RESPONDING TO THE SURVEYS

In order to gain up-to-date responses from school personnel about their uses of Espresso, four separate surveys were set up. Teachers, subject leaders, head teachers and teaching assistants were all able to separately respond to a survey. In total, 150 school personnel responded to the survey. This represents about one sixth of the total teacher population. However, representation from across school centres (nursery, infant, primary, junior, special and short-stay) was high. In total school personnel responded from across 57 school centres, representing some three-fifths of the total school centre population.

Overall, responses from school personnel were positive. Table 13 shows from all four groups of school personnel their general responses about Espresso resources. These responses are unqualified, and although there are some other responses with some qualification, there were only a small number of ‘no’ responses from any individuals in any group (these details are shown in sub-sections following).

Table 13: Indicators from school personnel of how they value Espresso resources

Question	Number ‘yes’ responses from teachers (n=97)	Number ‘yes’ responses from subject leaders (n=24)	Number ‘yes’ responses from head teachers (n=9)	Number ‘yes’ responses from teaching assistants (n=20)
Do you think Espresso resources are useful?	87	23	8	18
Are easy to navigate?	82	19	-	20
Are easy to find by using the search facility?	77	19	-	19

TEACHER RESPONSES TO THE RESOURCES

In total, 97 teachers responded to the survey, providing details about their uses of Espresso resources, and their perceptions of use. Overall, 49 centres from the total possible 92 school-based centres were represented in this sample.

The sample represented teachers from across the widest range of year groups taught, from nursery through to Year 6. The numbers of years groups represented by teachers is shown in Table 14 following.

Table 14: Range of year groups taught by teachers giving feedback about Espresso resources (n=97)

Year groups taught	Numbers responding
YN	9
YR	15
Y1	17
Y2	25
Y3	12
Y4	21
Y5	25
Y6	21

The vast majority of teachers (87 out of 97) reported that they find the resources are useful (See Table 15). None reported that they did not find them useful at all. Many of the teachers have received training (see Table 15). However, a significant number (28 in total) have not. If this figure can be equated across the whole of the LA, then it is possible that 30% (some 530 teachers) have not received

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training, so are not necessarily fully aware of the most recent resources that are available, the most effective ways to use the resources and to gain from time savings that this would offer.

Table 15: Teacher responses about usefulness of resources and use of training (n=97)

Question	Number 'no' responses	Number 'some' or 'not sure'	Number 'yes' responses
Do you think Espresso resources are useful?	0	10	87
Have you received any training in the last year showing you the range of resources available?	28	4	65

Many teachers identify with particular qualities associated with the resources (see Table 16 and Figure 6). It is notable that the resources are identified as appealing to children in their classrooms very highly, and indicates that the resources appeal to children across the nursery to Year 6 age range. The match to subject and topic needs is also rated highly, although the match to pedagogical approach is associated less highly (but nevertheless at a greater than 50% rate overall). This latter point will be picked up later, but is likely also to be a factor that would be supported through appropriate training.

Table 16: Reasons why teachers use Espresso resources (n=97)

Why do you use Espresso resources?	Number responding
Recognised high quality resources	70
Good presentational qualities	68
Appealing to children of this age	91
Match subject and topic needs	79
Match how I want to use them in teaching	53
Up-to-date materials	62

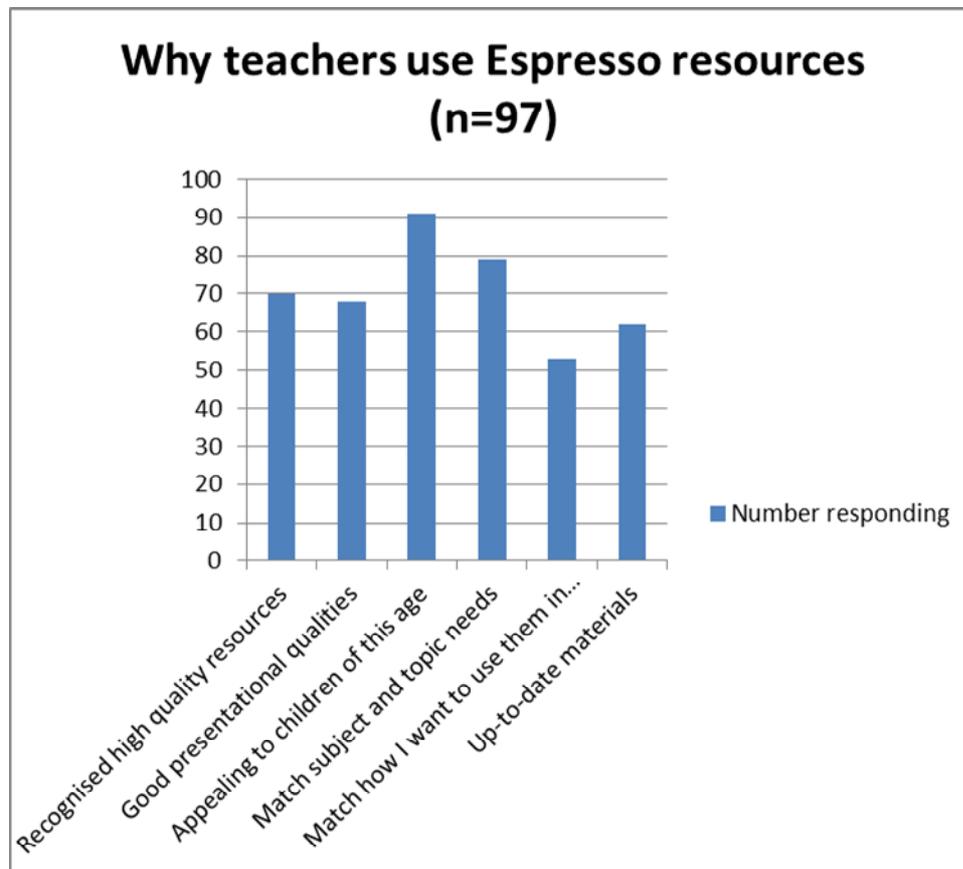


Figure 6: Reasons why teachers use Espresso resources (n=97)

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It is clear that teachers find the online facility easy to navigate, and that resources are easy to find (see Table 17). Navigation and search facilities do not appear to be a major limitation in terms of access and selection for use.

Table 17: Teacher views about ease of accessing resources in the bank (n=97)

Do you find that Espresso resources?	Number 'definitely' responses	Number 'not sure' response	Number 'no' responses
Are easy to navigate	82	12	0
Are easy to find by using the search facility	77	11	4

The rate of usage of resources is high (see Table 18). The majority of teachers use resources at least once a week on average (in 72 cases). However, the use of other digital resources that are not provided by the Espresso resource bank is at about the same level (with 74 teachers indicating use at least once a week on average).

Table 18: How often teachers use Espresso and non-Espresso resources (n=97)

Question	Number 'pretty much every day'	Number 'certainly once a week on average'	Number 'perhaps every couple of weeks'	Number 'certainly once a month'	Number 'less than once a month on average'
How often do you use Espresso resources?	32	40	18	6	1
How often do you use digital resources that are not Espresso?	36	38	11	4	1

It is clear that Espresso resources are used across a wide subject and topic curriculum (see Table 19 and Figure 7). High levels of use in numeracy, topic work, science, history, literacy and religious education indicate that the resources cover a wide subject range and can be applied by teachers to the curriculum.

Table 19: Levels of use of Espresso resources by teachers in different subject areas (n=97)

Do you use Espresso resources for?	Number 'often'	Number 'sometimes'	Number 'not often'	Number 'no'
Numeracy	50	32	6	3
Literacy	43	38	10	1
Geography	31	50	5	1
History	45	35	11	2
RE	42	38	7	4
Science	47	36	6	2
Citizenship or PSHE	28	40	14	6
Topic work	49	37	5	1

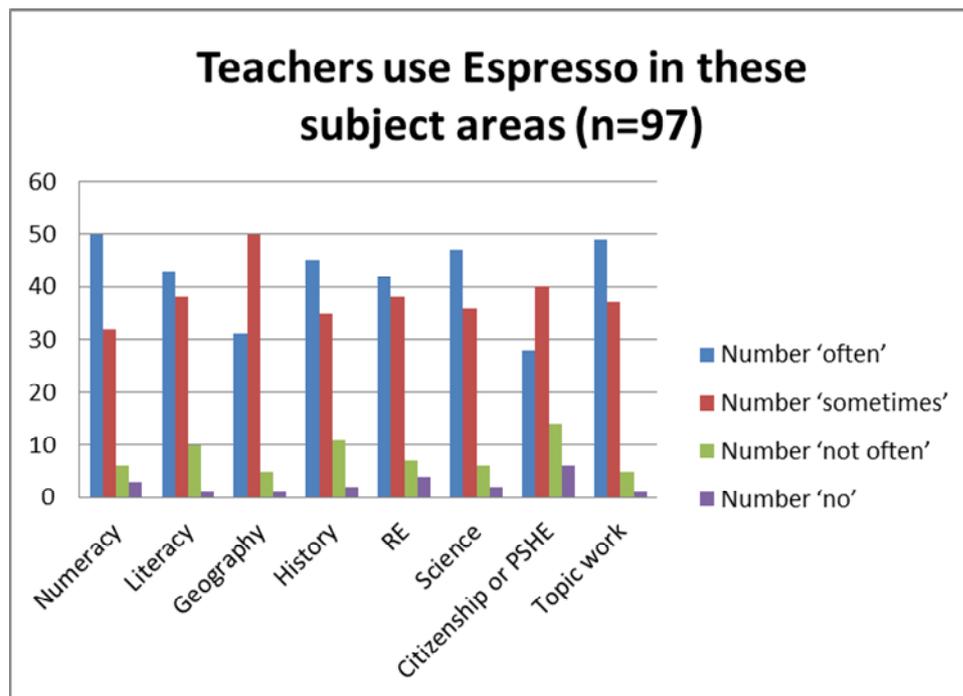


Figure 7: Levels of use of Espresso resources by teachers in different subjects (n=97)

Teachers highlight the ways that they feel the resources help pupils, and these clearly relate to important aspects for learning – depth (gaining more ideas, more detail, and discussing points more), and width (gaining additional ideas, experiences that go beyond other forms of provision, and experiencing activities that can be completed). The important ways that teachers say the resources support learning (see Table 20 and Figure 7), are associated with certain ways that individuals are likely to meet and hold ideas and knowledge and the ways that these ideas and knowledge are then later recalled and associated with other details. These associations are potentially fundamental to enhancing learning. This aspect is discussed more in Section 8.

Table 20: How teachers think Espresso resources help pupils (n=97)

Do you think Espresso resources help pupils to?	Number 'definitely'	Number 'some things'	Number 'maybe'	Number 'probably not'	Number 'certainly not'
Discuss ideas or speak in class	64	25	6	0	0
Remember certain things	58	34	3	0	0
Engage practically or kinaesthetically	57	26	11	1	0
Associate ideas to things they have experienced	54	33	7	1	0
Recall certain things to mind	48	37	9	1	0
Complete tasks or activities	41	40	11	2	0
Present their ideas to others	31	35	18	8	0
Write	26	41	21	5	0
Produce reports (written, perhaps with images)	24	39	23	5	0
Draw or sketch, perhaps their ideas	18	36	23	13	3

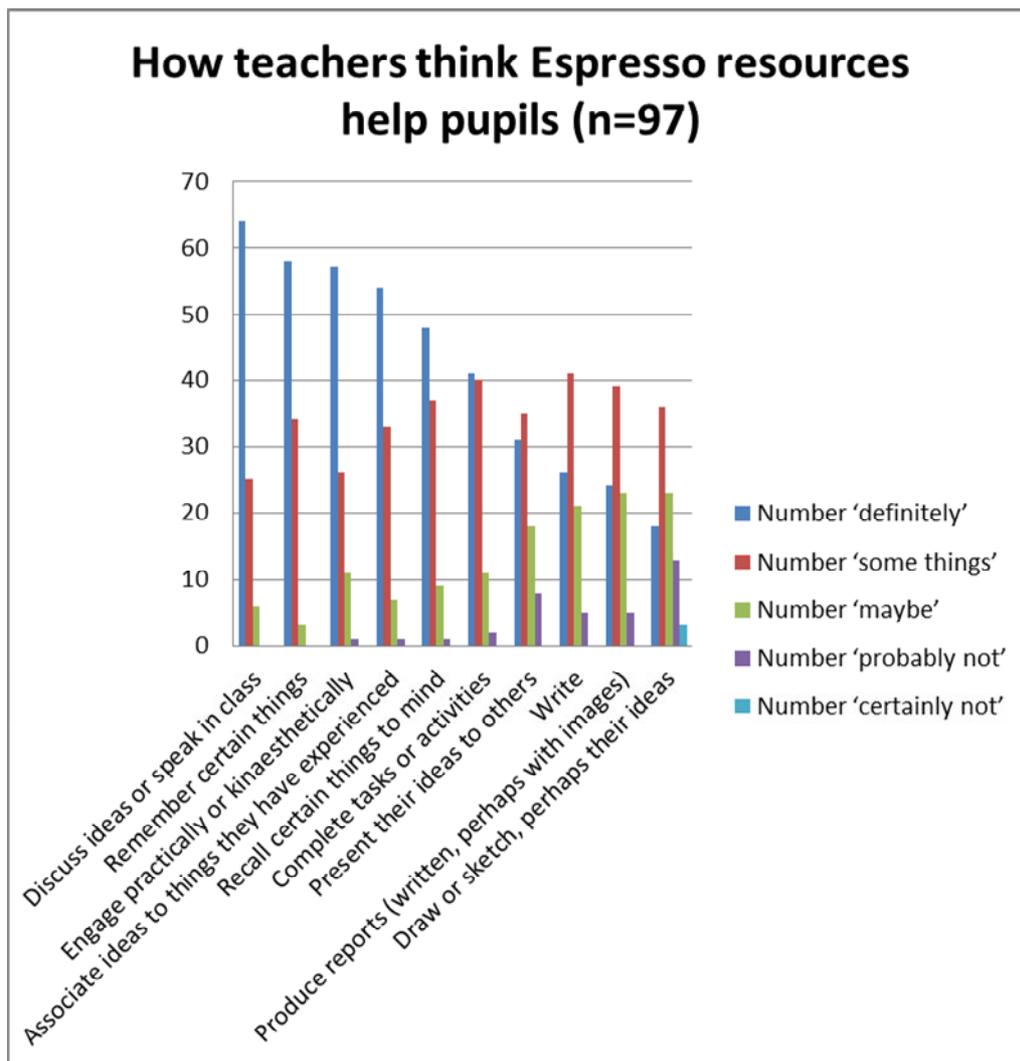


Figure 7: Ways teachers think Espresso resources help pupils (n=97)

SUBJECT LEADER RESPONSES TO THE RESOURCES

In total, 24 subject leaders responded to the survey, providing details about their uses of Espresso resources, and their perceptions of use. Overall, 19 centres from the total possible 92 school-based centres were represented in this sample.

Most of the responses were from subject leaders for ICT (see Table 21). Smaller numbers of subject leaders also provided details - for example, in the cases of literacy, numeracy, religious education and physical education.

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Table 21: Subject lead of those leaders responding in the survey (n=24)

Subject lead	Numbers responding
Literacy	4
Numeracy	4
ICT	15
Science	0
History	1
Geography	0
Modern Foreign Languages	0
Art	1
Music	1
RE	2
PE	2
Citizenship	0
PHSE	0

All subject leaders thought that the resources were useful, and the vast majority (23 out of 24) thought so without further qualification (see Table 22). Only just over a half received training the previous year, although most (23 out of 24) had already built resources into their subject plans across school at least to some extent, and over a third had built these in fully.

Table 22: Views of subject leaders about the value and development of Espresso resources (n=24)

Question	Number 'no' responses	Number 'some' or 'not sure' or 'to some extent'	Number 'yes' responses
Do you think Espresso resources are useful?	0	1	23
Have you received any training in the last year showing you the range of resources available?	10	0	14
Are Espresso resources built into your subject plans across the school?	1	16	7

Most subject leaders felt that resources were easy to navigate and to find (see Table 23). Some were not sure (about one in five or six).

Table 23: Subject leader views of ease of accessing resources in the bank (n=24)

Do teachers in your subject area find that Espresso resources?	Number 'definitely' responses	Number 'not sure' response	Number 'no' responses
Are easy to navigate	19	4	0
Are easy to find by using the search facility	19	5	0

Interestingly, over half of the subject leaders indicated that they felt that the resources could support a range of clearly important pedagogies (see Table 24 and Figure 8). They indicated that teachers could use the resources to initiate topics, demonstrate, explain and illustrate, stimulate questioning and consolidate. These are clearly vital needs within classrooms – to enhance detail, to enhance understanding, and to enhance width of ideas and knowledge. These pedagogies are vital to enhancing wider and deeper learning.

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Table 24: Subject leader views of how Espresso resources support pedagogical approaches (n=24)

Do you find that Espresso resources help teachers in your subject area when they need to?	Number 'definitely'	Number 'sometimes'	Number 'not sure'	Number 'probably not'	Number 'certainly not'
Initiate or guide a topic	16	7	1	0	0
Demonstrate something	15	9	0	0	0
Explain or illustrate something	13	11	0	0	0
Stimulate questioning	13	10	1	0	0
Consolidate something that has already been covered	13	10	1	0	0
Direct the class about something	12	12	0	0	0
Summarise	12	11	1	0	0
Set up a discussion	12	7	5	0	0
Instruct a class on certain things	11	13	0	0	0
Scaffold certain ideas	11	12	1	0	0
Speculate about something	7	14	3	0	0
Evaluate pupils' responses	7	10	6	0	0

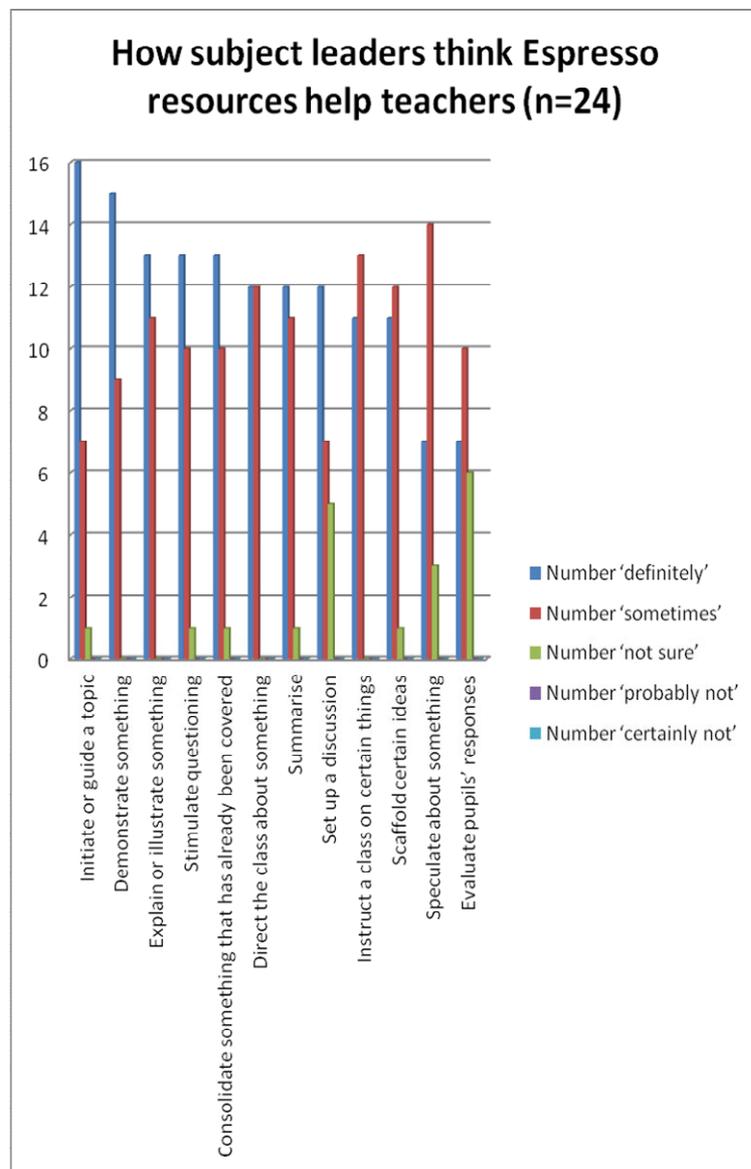


Figure 8: How subject leaders think Espresso resources help teachers (n=24)

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HEAD TEACHER RESPONSES TO THE RESOURCES

In total, 9 head teachers responded to the survey, providing details about uses of Espresso resources, and perceptions of use. Overall, 9 centres from the total possible 92 school-based centres were represented in this sample.

All head teachers felt that the resources were of at least some value and the majority felt they were without further qualification (see Table 25).

Table 25: Head teacher views of the value of Espresso resources (n=9)

Question	Number 'no' responses	Number 'some' or 'not sure'	Number 'yes' responses
Do you think Espresso resources are useful?	0	1	8

The majority of head teachers reported that resources were built into their subject plans across the school, either completely (in 4 cases out of 9), or to some extent (in 4 cases). It is clear that many schools have integrated Espresso resources into their planning (see Table 26).

Table 26: Head teacher views of integration of Espresso resources into curriculum planning (n=9)

Question	Number 'no'	Number 'to some extent'	Number 'yes'
Are Espresso resources built into your subject plans across the school?	1	4	4

There were many subjects in which use was highlighted (see Table 27). The subjects where lowest levels of use were highlighted were modern foreign languages, art and music. It should be noted, however, that in these cases there may well be less time available in the timetable to support these subjects.

Table 27: Subjects in which Espresso resources are used (n=9)

In which subjects are Espresso resources used?	Number 'not at all'	Number 'sometimes'	Number 'a lot'
Literacy	0	5	4
Numeracy	0	4	4
Geography	0	4	4
Citizenship or PSHE	0	4	4
ICT	1	3	4
Science	0	3	4
History	0	3	4
RE	0	3	4
Modern Foreign Languages	2	2	3
Art	0	6	2
Music	1	4	2

Use was reported across the entire age range from nursery to Year 6 pupils (see Table 28). Most use was reported in Years 2, 3 and 5.

Table 28: Year groups in which Espresso resources are used (n=9)

Question	Number YN	Number YR	Number Y1	Number Y2	Number Y3	Number Y4	Number Y5	Number Y6
With which year groups do you find Espresso resources are used most?	3	3	5	7	6	5	6	5

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Head teachers reported most frequently that resources were supporting teaching and learning in important and key ways (see Table 29): maintaining focus and keeping pupils on-task; supporting interactive teaching and learning; providing high presentational quality; maintaining an up-to-date and meaningful curriculum; allowing value to be gained from hardware investment; and matching ways to use them in teaching.

Table 29: Ways that head teachers think Espresso resources help teachers and pupils (n=9)

Do your teachers find that Espresso resources?	Number 'definitely' responses	Number 'not sure' response	Number 'no' responses
Keep children focused and on-task (helping to manage their behaviour)	9	0	0
Help to make your teaching interactive (children are more actively involved in their learning)	9	0	0
Have generally high presentational quality	8	1	0
Are up-to-date and help to keep the curriculum meaningful	7	2	0
Allow you to get value from investment in hardware (computers and interactive whiteboards)	7	2	0
Match the ways they want to use them when they teach	7	2	0
Can be found easily when they are planning lessons in advances as well as when needs arise	3	4	2

TEACHING ASSISTANT RESPONSES TO THE RESOURCES

In total, 20 teaching assistants responded to the survey, providing details about their uses of Espresso resources, and their perceptions of use. Overall, 11 centres from the total possible 92 school-based centres were represented in this sample.

Those teaching assistants responding to the survey supported classes across the entire age range (see Table 30). Most supported Year 3 pupils, but they ranged from nursery to Year 6 classes.

Table 30: Year groups supported by teaching assistants responding in the survey (n=20)

Year groups supported	Numbers responding
YN	4
YR	8
Y1	10
Y2	8
Y3	11
Y4	8
Y5	7
Y6	7

All teaching assistants felt that the resources were of some use, and most felt that this was the case without further qualification (see Table 31). Most had received some training in using resources during the previous year.

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Table 31: Teaching assistant views about value and training update (n=20)

Question	Number 'no' responses	Number 'some' or 'not sure'	Number 'yes' responses
Do you think Espresso resources are useful?	0	2	18
Have you received any training in the last year showing you the range of resources available?	2	0	18

Teaching assistants reported use of the resources across a wide subject range, with lower levels of use associated with subjects that have less time devoted in the curriculum (modern foreign languages, music and art). High levels of use were found in numeracy and literacy (see Table 32).

Table 32: Subjects in which teaching assistants support pupils with Espresso resources (n=20)

In which subject areas do you use Espresso resources to support pupils?	Number 'not at all'	Number 'sometimes'	Number 'a lot'
Numeracy	2	2	16
Literacy	1	4	15
ICT	0	5	8
Geography	5	4	7
Citizenship or PSHE	3	7	7
Science	5	9	5
History	3	7	5
RE	2	7	5
Modern Foreign Languages	6	4	4
Music	4	8	3
Art	5	7	3

Teaching assistants reported frequently on key features associated with the resources (see Table 33 and Figure 9): high presentational qualities; ease of navigation; maintaining pupil focus and keeping them on-task; and maintaining an up-to-date and meaningful curriculum.

Table 33: Teaching assistant views of qualities of Espresso resources (n=20)

Do you find that Espresso resources?	Number 'definitely' responses	Number 'not sure' response	Number 'no' responses
Have generally high presentational quality	20	0	0
Are easy to navigate	20	0	0
Keep children focused and on-task	19	1	0
Are easy to find by using the search facility	19	0	0
Are up-to-date and help to keep the curriculum meaningful	16	4	0

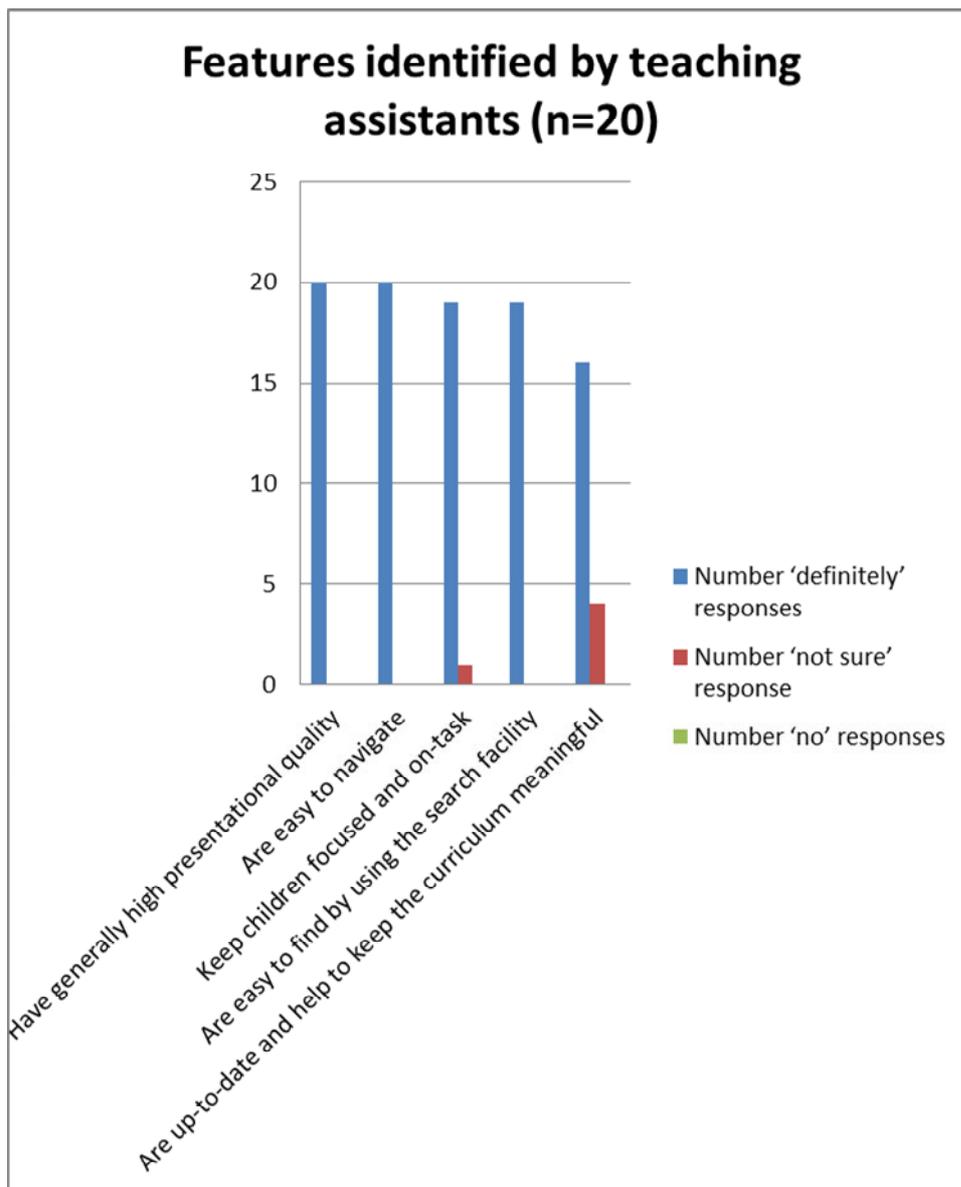


Figure 9: Qualities of Espresso resources highlighted by teaching assistants (n=20)

WHAT OTHER DIGITAL RESOURCES PROVIDE THAT ESPRESSO RESOURCES DO NOT

All school personnel were asked what other digital resources provide that Espresso resources do not provide. About half the respondents indicated ways that Espresso resources do not meet all their needs (47 out of 97 teachers, 13 out of 24 subject leaders, and 4 out of 9 head teachers). Their responses are grouped here according to their roles in school.

Some teachers said in different ways that they would like more resources from Espresso, in that other digital resources or banks: increase the breadth available (8 teachers); provide more information about specific topics (5 teachers); provide resources for more obscure subjects or other topics (5 teachers); a wider variety of pictures (2 teachers); provide resources that are more hands-on, and involve use of switches or symbol support (1 teacher); provide video clips that are longer (1 teacher); and provide more early years resources (2 teachers). Others were indicating that they would like more differentiated material in the form of worksheets or more information, to provide other ways to differentiate activities for groups of children, such as different worksheets (6 teachers) or for activities

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to be linked to assessment more. This is not necessarily, of course, in keeping with the philosophy of Espresso resources, which looks to provide resources that are non-textually based. Similarly, the philosophy of Espresso is to provide ‘real life’ rather than games-based scenarios, so as some teachers said, others resources provide activities in game forms with certificates and awards (3 teachers) or can be more interactive, being more ‘singing and dancing’ (2 teachers). Some teachers said that other resources provide easier access at home (3 teachers) and provide resources that can be embedded in Smartboard slideshows and MS PowerPoint presentations (2 teachers). However, these issues have now been resolved. Some teachers indicated that it is easier to find other resources using a general or another search engine (3 teachers), and allows work to be saved so that it can be continued at another time (2 teachers). Other teachers indicated that other banks: provide resources in less prescriptive ways (although recent developments based on findings from the previous evaluation are likely to address this issue for newly released material); are more up-to-date (although News Bites clearly offer one form of resource to meet this need); and offer a home button to avoid use of the back button (although virtually every Espresso page has its own home button, called the “Channel guide”).

Subject leaders echoed a number of the teachers’ statements. They said that other digital resources or banks: provide resources for more obscure subjects or specific topics (3 teachers); provide activities in game forms with key skill practise (3 teachers); use different media; provide easier access at home; can be more interactive; are linked to assessment more; and are preferred by some teachers.

Head teachers identified some specific elements that had been highlighted by teachers and subject leaders. They said that other digital resources or banks: provide more early years resources; allow work to be saved so that it can be continued at another time; and offer easier and more consistent access.

7. USER RECORDS AND OUTCOME ANALYSES

A SCHOOL CONTEXT

Nationally and publicly accessible records provide details of the numbers of pupils on roll in each of the schools across the LA, in the vast majority of cases. National data for 74 infant, primary and junior schools in the LA indicates that the total number of pupils on roll across the schools is 22,068. For 7 special schools, the total number of pupils on roll across the schools is 666. Using an average class size of 30 for infant, primary and junior schools, and a class size of 10 for special schools, this equates to 736 infant, primary and junior classes, and 67 special school classes – some 800 classes and teachers in total across the LA.

LEVELS OF USE OF NEWS BITES

Although the 800 classes and teachers do not represent the entire population under study across Wolverhampton LA, it does give an indication of the sorts of levels of access that might occur if use is widespread. An item that could be accessed regularly would be News Bites – a weekly summary of news events designed to meet the needs of KS1 and KS2 pupils. If these resources are accessed each week, then it could be expected that up to 800 views of these resources would be identified on a weekly basis.

Earlier statistics provided to the LA by Espresso indicated that KS2 news had been viewed from an embedded link 6,044 times, and KS1 news had been viewed from an embedded link 3,035 times between January and May 2011. The total News Bites views came to 9,079. Over a 12 week period (taking holidays into account), this would mean that the number of views per week is in the order of 757. This number equates well to the total number of classes and teachers across Wolverhampton LA. This figure suggests that many teachers are accessing this resource. However, both the definition and use of the term ‘views’ needs to be considered carefully in the context of this finding.

Espresso was able to capture usage statistics over the October to December 2011 period. They captured requests from the Wolverhampton LA network (school access) in October 2011 to two different files: t5_vid_ks1_news.txt (representing every request for the Key Stage 1 News Bites video, which came to 116 visits); and t5_vid_ks2_news.txt (representing every request for the Key Stage 2 News Bites video, which came to 436 visits). Over this four week period there were 803 hits, indicating an average weekly hit figure of 201. These figures suggest that perhaps one in four of all classrooms are accessing News Bites.

A usage report from Espresso for November and December 2011 shows some variations when compared to the results of the October 2011 report. While the overall number of visitors is reduced, the number of hits has increased. ‘Visitors’ is not felt by Espresso to be an accurate number to use in this context, as all the requests are seen to come from the same Internet Protocol (IP) address, so a single ‘visit’ can include any number of user requests. ‘Hits’ represent each individual request for the videos, so this is felt by Espresso to be a better reflection of usage.

In November to December 2011, there were a total of 1,518 hits. Over a 6 week period, this represents an average level of 253 hits per week. This represents perhaps one in three classrooms that are accessing News Bites.

When activity by day by week is viewed, it is clear that following the broadcast of the News Bites video each week the number of hits increases on a Wednesday and Thursday. This suggests that users are coming back each week to see the latest News Bites.

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While Espresso is able to gather some statistics about News Bites access, they are not able to gain any usage statistics about videos embedded in the VLE (as this occurs on a server within the LA). Although it is known that many Wolverhampton LA schools have downloaded Espresso videos and used them on their interactive whiteboards, Espresso is not able to capture any usage statistics about these. An LA consultant has, since October 2011, put monitoring software on the network system to the central server in Wolverhampton to monitor school usage. However, the way that data are gathered means that computer IPs have to be referred to lists in order to translate these into school names.

INDICATORS OF EMBEDDED USE

Many schools using the Learning Possibilities Plus (LP+) VLE post their planning documents on this site, for ease of access by teachers and managers. Planning documents can contain details of resources that teachers access, for use in specific topics, subjects and lessons. This can clearly be an indicator of embedded use – it shows that a resource is specified and identified within a particular area of work. Where these exist, it is possible for LA consultants to search these records, to show the numbers of instances where they are written into planning documents. The author requested this form of search from the LA consultants, and in total 67 infant, primary and junior schools, and 3 special schools had records on the VLE that could be searched in this way.

A search requested by the author, undertaken by the LA, showed that, across the 67 infant, primary and junior schools, there were 1,580 records of specified Espresso resources in their 2011 planning documents. Across the 3 special schools, there were 15 records of these resources. Different schools ranged widely in terms of the number of instances of Espresso records, from 17 schools with no specific references, to a school with 178 references. The average was in the region of 24 references per school.

CORRELATIONS OF INDICATORS AND OUTCOMES

The evidence base used for this evaluation has drawn together a very wide range of indicators of use in schools, perceptions of their use and indicators of their levels of embedded practice, across a number of years. These indicators cover, by school:

- Espresso school-based training sessions:
 - Number of sessions 2006 to 2007.
 - Number of sessions 2007 to 2008.
 - Number of sessions 2008 to 2009.
 - Number of sessions 2009 to 2010.
 - Number of sessions 2010 to 2011.
 - Number of sessions 2011 to 2012.
- Espresso school-based training session survey feedback 2010 to 2011:
 - Number of teachers.
 - Number of teachers involved in first sessions.
 - Number of teachers requesting weekly email updates.
 - Number of teachers recommending training to other schools.
- Espresso school-based training session survey feedback 2011 to 2012:
 - Number of teachers.
 - Number of teachers involved in first sessions.
 - Number of teachers requesting weekly email updates.
 - Number of teachers recommending training to other schools.
- e-CPD training session survey feedback 2010 to 2011:
 - Number of teachers.
 - Amount of use in lessons (most; some; rarely; never).
 - Use of videos.

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- Use of flash activities.
- Use of Factfiles.
- Use in lesson introductions.
- Use in lesson plenaries.
- Use in whole class activities.
- Use of Learning Pathways.
- Use of Route Creator.
- Use of Staff Room.
- Use of Presentation Creator.
- Videos embedded in the VLE.
- Ability to access from home.
- e-CPD training session survey feedback 2011 to 2012:
 - Number of teachers.
 - Amount of use in lessons (most; some; rarely; never).
 - Use of videos.
 - Use of flash activities.
 - Use of Factfiles.
 - Use in lesson introductions.
 - Use in lesson plenaries.
 - Use in whole class activities.
 - Use of Learning Pathways.
 - Use of Route Creator.
 - Use of Staff Room.
 - Use of Presentation Creator.
 - Videos embedded in the VLE.
 - Ability to access from home.
- Hands-On Support sessions 2004 to 2005:
 - Number of teachers attending session 1.
 - Number of teachers attending session 2.
 - Strategic management score from school self-evaluation.
 - Infrastructure and resources score from school self-evaluation.
 - Learning and teaching score from school self-evaluation.
 - Monitoring and evaluation score from school self-evaluation.
- Teacher online survey 2011 to 2012:
 - Number of teachers responding.
 - Number indicating Espresso resources are useful.
 - Number indicating Espresso resources are not useful.
 - Number using Espresso pretty much every day.
 - Number using Espresso once a week, every couple of weeks or once a month.
 - Number using Espresso less than once a month.
 - Number using Espresso often or sometimes in numeracy.
 - Number using Espresso often or sometimes in literacy.
 - Number using Espresso often or sometimes in geography.
 - Number using Espresso often or sometimes in history.
 - Number using Espresso often or sometimes in religious education (RE).
 - Number using Espresso often or sometimes in science.
 - Number using Espresso often or sometimes in citizenship or personal, health and social education (PHSE).
 - Number using Espresso often or sometimes in topic work.
- Subject leader online survey 2011 to 2012:
 - Number of subject leaders responding.
 - Number indicating Espresso resources are useful.

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- Number indicating Espresso resources are not useful.
- Number indicating training was received in the last year.
- Number indicating Espresso resources are built into school plans.
- Head teacher online survey 2011 to 2012:
 - Number of head teachers responding.
 - Number indicating Espresso resources are useful.
 - Number indicating Espresso resources are not useful.
 - Number indicating Espresso resources are built into school plans.
 - Number using Espresso a lot or sometimes in literacy.
 - Number using Espresso a lot or sometimes in numeracy.
 - Number using Espresso a lot or sometimes in ICT.
 - Number using Espresso a lot or sometimes in science.
 - Number using Espresso a lot or sometimes in geography.
 - Number using Espresso a lot or sometimes in history.
 - Number using Espresso a lot or sometimes in modern foreign languages.
 - Number using Espresso a lot or sometimes in art.
 - Number using Espresso a lot or sometimes in music.
 - Number using Espresso a lot or sometimes in citizenship or PHSE.
 - Number using Espresso a lot or sometimes in RE.
- Teaching assistant online survey 2011 to 2012:
 - Number of teaching assistants responding.
 - Number indicating Espresso resources are useful.
 - Number indicating Espresso resources are not useful.
 - Number using Espresso a lot or sometimes in literacy.
 - Number using Espresso a lot or sometimes in numeracy.
 - Number using Espresso a lot or sometimes in ICT.
 - Number using Espresso a lot or sometimes in science.
 - Number using Espresso a lot or sometimes in geography.
 - Number using Espresso a lot or sometimes in history.
 - Number using Espresso a lot or sometimes in modern foreign languages.
 - Number using Espresso a lot or sometimes in art.
 - Number using Espresso a lot or sometimes in music.
 - Number using Espresso a lot or sometimes in citizenship or PHSE.
 - Number using Espresso a lot or sometimes in RE.
- Number of Espresso references in planning documents online.
- Number of pupils on roll (2011).
- Key Stage 2 SAT results 2010:
 - English Level 4+ (%).
 - Mathematics Level 4+ (%).
 - Science Level 4+ (%).
 - English Level 5+ (%).
 - Mathematics L5+ (%).
 - Science Level 5+ (%).
- Key Stage 2 SAT results 2011:
 - English and Mathematics Level 4+ (%).
 - Mathematics Level 4+ (%).
 - Science Level 4+ (%).
 - English and Mathematics Level 5+ (%).
 - Mathematics Level 5+ (%).
 - Science Level 5+ (%).

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Simple correlation scores were generated using IBM SPSS software, to look at possible associations between the complete ranges of indicators above. In total, some 100 criteria were described for each school, generating over 5,000 correlation statistics. In all of these cases, levels of evidence, levels of scores and levels of statistical significance were explored. The statistics generated were Pearson correlation scores, and scores 0.4 or above (considered a level appropriate to indicate a reasonable level of potential association between factors), at a statistical level of significance of $p=0.05$ or lower, with at least 12 pieces of evidence for comparison, were selected specifically. From across the full analyses undertaken, there were many cases where correlation coefficient scores were highlighted as being significant but were not at a score of 0.4 or above (for example, numbers of pupils on roll and teachers using the resources pretty much every day both associated with number of Espresso references in planning documents online), while 472 (about 1 in 5) correlation scores fulfilled the level criteria. Many of these correlation scores, however, indicated relationships within groups of responses (such as the numbers of teachers responding in the school-based training survey in 2008 to 2009 and those recommending the training to other teachers). The levels of these forms of response have already been shown within previous sections of this report. For this section of the report, correlation scores that fulfilled the significance selection criteria and that indicated possible associations across groups of responses (rather than within groups) were selected and are recorded here.

There were many correlation scores that fulfilled the selection criteria indicating that attendance and involvement in training sessions related to later uses of Espresso resources in a range of ways:

- Those schools attending 2008 to 2009 school-based sessions correlated positively with those attending 2009 to 2010 sessions ($r=.677$, $p=.011$). This suggested that either attendees were satisfied with the sessions and attended further sessions, or encouraged others to attend from their school, or that some schools wanted to support use for teachers across the school widely, or a combination of these.
- There was a positive correlation between numbers of sessions in 2008 to 2009 and teachers using Espresso resources in 2011 up to once a week ($r=.411$, $p=.002$). This result suggested that attendance at earlier sessions had had a positive effect on levels of use being reported at later times.
- There was a positive correlation between teacher responses in the Espresso school-based training survey feedback from 2010 to 2011 and teachers reporting later uses in geography ($r=.407$, $p=.001$), religious education ($r=.416$, $p=.001$), in topic work ($r=.453$, $p=.000$), in art ($r=.453$, $p=.000$), and head teachers reporting later uses in art ($r=.453$, $p=.000$) and citizenship or PHSE ($r=.453$, $p=.000$).
- There was a positive correlation between teachers attending their first training session in the Espresso school-based training survey feedback from 2010 to 2011 and teachers reporting in the survey in 2012 that Espresso resources were useful ($r=.510$, $p=.420$), they used them at least once a month ($r=.440$, $p=.000$), in numeracy ($r=.472$, $p=.000$), in literacy ($r=.469$, $p=.000$), in geography ($r=.495$, $p=.000$), in history ($r=.419$, $p=.001$), in religious education ($r=.492$, $p=.000$), in citizenship or PHSE ($r=.462$, $p=.000$), in topic work ($r=.549$, $p=.000$), and head teachers reporting use in art ($r=.540$, $p=.000$) and in citizenship or PHSE ($r=.540$, $p=.000$).
- There was a positive correlation between teachers recommending training to other schools following their Espresso school-based training in 2010 to 2011 and teachers reporting later that Espresso resources were useful ($r=.420$, $p=.001$), used in numeracy ($r=.401$, $p=.001$), in geography ($r=.409$, $p=.001$), in religious education ($r=.423$, $p=.000$), in topic work ($r=.456$, $p=.000$), and head teachers reporting use in art ($r=.457$, $p=.000$) and in citizenship or PHSE ($r=.457$, $p=.000$).
- There was a positive correlation between teachers reporting uses of flash activities in the e-CPD training sessions in 2010 to 2011 and uses of Espresso resources by teachers in lesson introductions in 2011 to 2012 ($r=.405$, $p=.000$).
- There was a positive correlation between teachers reporting uses of Espresso resources in lesson plenaries in the e-CPD training sessions in 2010 to 2011 and using videos in lessons in 2011 and 2012 ($r=.443$, $p=.000$).

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- There was a positive correlation between teachers reporting uses of Route Creator in the e-CPD training sessions in 2010 to 2011 and levels of uses of Espresso resources in 2011 and 2012 ($r=.638$, $p=.000$).
- There was a positive correlation between teachers reporting uses of Staff Room in the e-CPD training sessions in 2010 to 2011 and teacher uses in history in 2012 ($r=.416$, $p=.001$), in science ($r=.400$, $p=.001$), and subject leaders indicating resources were built into school plans in 2012 ($r=.408$, $p=.012$).
- There was a positive correlation between teachers reporting uses of Presentation Creator in the e-CPD training sessions in 2010 to 2011 and levels of uses of Espresso resources in 2011 and 2012 ($r=.434$, $p=.000$) and levels of teacher uses in 2012 ($r=.493$, $p=.000$).
- There was a positive correlation between teachers reporting access from home in the e-CPD training sessions in 2010 to 2011 and levels of uses of Espresso resources in 2011 and 2012 ($r=.420$, $p=.000$) and teacher uses in citizenship or PHSE in 2012 ($r=.402$, $p=.001$).
- There was a positive correlation between teachers responding in the e-CPD training sessions in 2011 to 2012 and subject leaders indicating resources were built into school plans in 2012 ($r=.449$, $p=.005$).
- There was a positive correlation between levels of uses of Espresso resources by teachers responding in the e-CPD training sessions in 2011 to 2012 and uses by teachers in lesson plenaries in 2012 ($r=.711$, $p=.000$), use of Route Creator in 2012 ($r=.638$, $p=.000$) and use of Presentation Creator in 2012 ($r=.434$, $p=.000$).
- There was a positive correlation between teachers reporting uses of videos in the e-CPD training sessions in 2010 to 2011 and teachers reporting uses of Espresso resources in lesson plenaries in 2012 ($r=.443$, $p=.000$), teacher uses almost every day ($r=.402$, $p=.001$), uses in numeracy ($r=.408$, $p=.001$), uses in geography ($r=.404$, $p=.001$), uses in science ($r=.409$, $p=.001$), responses by subject leaders in 2012 ($r=.447$, $p=.006$), subject leaders reporting Espresso resources were useful ($r=.461$, $p=.004$) and subject leaders reporting Espresso resources were built into school plans ($r=.517$, $p=.001$).
- There was a positive correlation between teachers reporting uses of Espresso resources in lesson introductions in the e-CPD training sessions in 2010 to 2011 and teachers reporting using Espresso resources pretty much every day in 2012 ($r=.451$, $p=.000$), uses in science ($r=.423$, $p=.000$), uses in citizenship or PHSE ($r=.414$, $p=.001$), responses by subject leaders in 2012 ($r=.578$, $p=.000$), subject leaders reporting Espresso resources were useful ($r=.586$, $p=.000$), subject leaders indicating they received training during the previous year ($r=.584$, $p=.000$) and subject leaders reporting Espresso resources were built into school plans ($r=.543$, $p=.001$).
- There was a positive correlation between teachers reporting uses of Espresso resources in whole class activities in the e-CPD training sessions in 2010 to 2011 and teachers reporting uses of Espresso resources in lesson plenaries in 2012 ($r=.480$, $p=.000$) and uses in science ($r=.403$, $p=.001$).
- There was a positive correlation between teachers reporting uses of Staff Room in the e-CPD training sessions in 2010 to 2011 and responses by subject leaders in 2012 ($r=.460$, $p=.004$), subject leaders reporting Espresso resources were useful ($r=.472$, $p=.003$), subject leaders indicating they received training during the previous year ($r=.405$, $p=.013$) and subject leaders reporting Espresso resources were built into school plans ($r=.630$, $p=.000$).
- There was a positive correlation between teachers reporting embedding of videos in their VLE in the e-CPD training sessions in 2010 to 2011 and responses by teachers of use pretty much every day in 2012 ($r=.416$, $p=.001$), uses in science ($r=.412$, $p=.001$), responses by subject leaders in 2012 ($r=.578$, $p=.000$), subject leaders reporting Espresso resources were useful ($r=.586$, $p=.000$), subject leaders indicating they received training during the previous year ($r=.411$, $p=.012$) and subject leaders reporting Espresso resources were built into school plans ($r=.702$, $p=.000$).
- There was a positive correlation between teachers reporting access from home in the e-CPD training sessions in 2010 to 2011 and responses by teachers of use pretty much every day in 2012 ($r=.416$, $p=.001$), subject leaders reporting Espresso resources were useful ($r=.404$, $p=.013$),

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subject leaders reporting Espresso resources were built into school plans ($r=.528, p=.001$), responses by teaching assistants in 2012 ($r=.467, p=.000$) and teaching assistants reporting Espresso resources were useful ($r=.467, p=.000$).

- There was a positive correlation between subject leaders responding in the 2012 survey and responses by teachers in the 2012 survey ($r=.595, p=.000$), teachers indicating Espresso resources were useful ($r=.586, p=.000$), teachers indicating use pretty much every day ($r=.696, p=.000$), use in numeracy ($r=.641, p=.000$), use in literacy ($r=.617, p=.000$), use in geography ($r=.591, p=.000$), use in history ($r=.628, p=.000$), use in religious education ($r=.586, p=.000$), use in science ($r=.660, p=.000$), use in citizenship or PHSE ($r=.637, p=.000$), use in topic work ($r=.542, p=.000$), numbers of references in planning documents ($r=.406, p=.013$), uses of videos reported by teachers in e-CPD sessions in 2011 to 2012 ($r=.447, p=.006$), uses in lesson introductions at that time ($r=.578, p=.000$), use of Staff Room ($r=.460, p=.004$), embedding videos in the VLE ($r=.578, p=.000$) and numbers of pupils on roll in 2011 ($r=.463, p=.004$).
- There was a positive correlation between subject leaders indicating that Espresso resources were useful in the 2012 survey and responses by teachers in the 2012 survey ($r=.600, p=.000$), teachers indicating Espresso resources were useful ($r=.591, p=.000$), teachers indicating use pretty much every day ($r=.706, p=.000$), use in numeracy ($r=.644, p=.000$), use in literacy ($r=.620, p=.000$), use in geography ($r=.594, p=.000$), use in history ($r=.631, p=.000$), use in religious education ($r=.589, p=.000$), use in science ($r=.662, p=.000$), use in citizenship or PHSE ($r=.638, p=.000$), use in topic work ($r=.545, p=.000$), use of videos reported by teachers in e-CPD sessions in 2011 to 2012 ($r=.461, p=.004$), uses in lesson introductions ($r=.586, p=.000$), use of Staff Room ($r=.472, p=.003$), embedding of videos in the VLE ($r=.586, p=.000$), access from home ($r=.404, p=.013$), and numbers of pupils on roll in 2011 ($r=.455, p=.005$).
- There was a positive correlation between subject leaders receiving training in the previous year in the 2012 survey and responses by teachers in the 2012 survey ($r=.430, p=.008$), teachers indicating Espresso resources were useful ($r=.428, p=.008$), teachers indicating use pretty much every day ($r=.558, p=.000$), use in numeracy ($r=.493, p=.002$), use in literacy ($r=.487, p=.002$), use in geography ($r=.456, p=.005$), use in history ($r=.496, p=.002$), use in religious education ($r=.440, p=.006$), use in science ($r=.548, p=.000$), use in citizenship or PHSE ($r=.548, p=.000$), uses of Espresso resources in lesson introductions reported by teachers in e-CPD sessions in 2011 to 2012 ($r=.584, p=.000$), use of Staff Room ($r=.405, p=.013$) and embedding videos in the VLE ($r=.411, p=.012$).
- There was a positive correlation between subject leaders indicating that Espresso resources were built into school planning in the 2012 survey and responses by teachers in the 2012 survey ($r=.592, p=.000$), teachers indicating Espresso resources were useful ($r=.602, p=.000$), teachers indicating use pretty much every day ($r=.791, p=.000$), use in numeracy ($r=.645, p=.000$), use in literacy ($r=.637, p=.000$), use in geography ($r=.589, p=.000$), use in history ($r=.630, p=.000$), use in religious education ($r=.581, p=.000$), use in science ($r=.662, p=.000$), use in citizenship or PHSE ($r=.683, p=.000$), use in topic work ($r=.514, p=.000$), uses of Staff Room reported by teachers in e-CPD sessions in 2010 to 2011 ($r=.408, p=.012$), teachers responding in e-CPD sessions in 2011 to 2012 ($r=.449, p=.005$), uses of videos by teachers at that time ($r=.517, p=.001$), uses in lesson introductions ($r=.543, p=.001$), use of Staff Room ($r=.630, p=.000$), embedding videos in the VLE ($r=.702, p=.000$) and access from home ($r=.529, p=.001$).
- There was a positive correlation between teaching assistants responding in the 2012 survey and responses by teachers in the 2012 survey ($r=.703, p=.000$), teachers indicating Espresso resources were useful ($r=.705, p=.000$), teachers indicating use pretty much every day ($r=.762, p=.000$), use in numeracy ($r=.730, p=.000$), use in literacy ($r=.733, p=.000$), use in geography ($r=.667, p=.000$), use in history ($r=.704, p=.000$), use in religious education ($r=.665, p=.000$), use in science ($r=.690, p=.000$), use in citizenship or PHSE ($r=.746, p=.000$), use in topic work ($r=.643, p=.000$), teacher reports of access from home in the e-CPD sessions in 2011 to 2012 ($r=.467, p=.000$), subject leaders responding in the 2012 survey ($r=.645, p=.000$), subject leaders indicating Espresso resources were useful ($r=.656, p=.000$), subject leaders receiving training the previous year

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($r=.568$, $p=.000$) and subject leaders indicating Espresso resources were built into school plans ($r=.849$, $p=.000$).

- There was a positive correlation between teaching assistants indicating that Espresso resources were useful in the 2012 survey and responses by teachers in the 2012 survey ($r=.703$, $p=.000$), teachers indicating Espresso resources were useful ($r=.705$, $p=.000$), teachers indicating use pretty much every day ($r=.762$, $p=.000$), use in numeracy ($r=.730$, $p=.000$), use in literacy ($r=.733$, $p=.000$), use in geography ($r=.667$, $p=.000$), use in history ($r=.704$, $p=.000$), use in religious education ($r=.665$, $p=.000$), use in science ($r=.690$, $p=.000$), use in citizenship or PHSE ($r=.746$, $p=.000$), use in topic work ($r=.643$, $p=.000$), teacher reports of access from home in the e-CPD sessions in 2011 to 2012 ($r=.467$, $p=.000$), subject leaders responding in the 2012 survey ($r=.645$, $p=.000$), subject leaders indicating Espresso resources were useful ($r=.656$, $p=.000$), subject leaders receiving training the previous year ($r=.568$, $p=.000$) and subject leaders indicating Espresso resources were built into school plans ($r=.849$, $p=.000$).

A number of correlation scores that fulfilled the selection criteria were associated with indicators of background or longer-term interactions and developments concerned with patterns of use:

- There was a negative correlation between teachers reporting uses of Espresso resources in lesson introductions in the e-CPD training sessions in 2010 to 2011 and the school self-evaluation score for infrastructure and resources in 2004 ($r=-.423$, $p=.014$).
- There was a positive correlation between teachers reporting uses of Espresso resources in lessons less than once a month in 2012 and the school self-evaluation score for learning and teaching in 2004 ($r=.652$, $p=.002$).
- There is a positive correlation between teachers reporting uses of Espresso resources in science in 2012 and the numbers of pupil on roll in 2011 ($r=.445$, $p=.000$).
- There was a positive correlation between head teachers reporting uses of Espresso resources in art in 2012 and teacher responses in the Espresso school-based sessions in 2009 to 2010 ($r=.453$, $p=.000$), teachers attending those sessions for the first time ($r=.540$, $p=.000$) and teachers recommending training to other schools ($r=.457$, $p=.000$).
- There was a positive correlation between head teachers reporting uses of Espresso resources in citizenship or PHSE in 2012 and teacher responses in the Espresso school-based sessions in 2009 to 2010 ($r=.453$, $p=.000$), teachers attending those sessions for the first time ($r=.540$, $p=.000$) and teachers recommending training to other schools ($r=.457$, $p=.000$).
- There was a negative correlation between school self-evaluation scores for infrastructure and resources in 2004 and uses of Espresso resources by teachers in lesson introductions reported in e-CPD sessions in 2011 to 2012 ($r=-.423$, $p=.014$) and uses of Presentation Creator ($r=-.472$, $p=.006$).
- There was a negative correlation between school self-evaluation scores for learning and teaching in 2004 and uses of Espresso resources by teachers less often than once a month reported in the survey of 2012 ($r=-.652$, $p=.002$).
- There was a positive correlation between the number of subject leaders responding by school related to number of Espresso references in planning documents online ($r=.406$, $p=.013$).
- There was a positive correlation between the number of subject leaders responding by school indicating that Espresso resources were useful related to number of Espresso references in planning documents online ($r=.401$, $p=.014$).

These results indicate that:

- Certain background features identified through school self-review scores were in some cases associated with uses of Espresso resources reported at later times.
- Teachers and subject leaders involved in training sessions were often associated with reported later uses of Espresso resources. Positive experiences from training appeared to be translated into later uses within classrooms.

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- There were indicators of the importance of contributions of training, of certain background factors, and of whole-school practices involving different personnel (head teachers, subject leaders, teachers and teaching assistants) leading to uses of Espresso resources within a range of key subject areas. It appears likely that subject leaders play key roles in highlighting uses of Espresso resources in planning documents, and do this as a result of their perceptions of the value of these resources.

CORRELATIONS OF INDICATORS AND TEST RESULTS

Some correlation scores that fulfilled selection criteria related to associations between background factors, training attendance and longer-term test results (indicated by SAT results in 2010):

- There was a negative correlation between mathematics attainment in 2010 at level 4 and above with numbers of sessions attended in 2008 to 2009 ($r=-.413$, $p=.006$). This suggested that while there had been a focus from schools on how to use Espresso resources to improve mathematics achievement, that this had not been recognised over the short time period between sessions and tests being taken. This result supported other findings, which indicated that improvement requires more sustained use over time, rather than it being seen as something concerned with a short-term response and outcome.
- There was a positive correlation between mathematics attainment results at level 4 and above in 2010 and teachers reporting uses of Espresso resources in history in the survey in 2012 ($r=.404$, $p=.027$) and uses in religious education ($r=.436$, $p=.016$).
- There was a positive correlation between English attainment results at level 5 and above in 2010 and school self-evaluation scores in infrastructure and resources in 2004 ($r=.470$, $p=.036$) and in monitoring and evaluation ($r=.558$, $p=.011$).
- There was a positive correlation between English and mathematics attainment results at level 5 and above in 2010 and school self-evaluation scores in learning and teaching in 2004 ($r=.404$, $p=.020$).

These results related also to methods of analysis adopted and findings identified in previous studies. In a previous report exploring uses and outcomes of Espresso resources (Passey, 2011b), schools achieving 85% and above at Level 4 in end of Key Stage 2 SAT results were separated from those achieving below this level, and the comparative uses of Espresso resources across the schools were explored. Although there was no comparable usage data available to explore how the schools across Wolverhampton LA might have used Espresso resources by comparison, it was possible to explore whether there was any difference between indicators related to each of these two different sets.

Taking the end of Key Stage 2 SAT results in 2010, there were 68 schools across Wolverhampton LA with reported results, ranging between 34% and 100% of pupils achieving Level 4 or above in English. Twenty of these schools achieved 85% or above at Level 4. In separating these two groups, the average number of Espresso references in planning documents was higher for the 20 schools achieving 85% at Level 4 or above:

- For those achieving below 85% at Level 4 in English in 2010, the average number of Espresso references in planning documents for the 48 schools was 21 (to the nearest whole number).
- For those achieving 85% or above at Level 4 in English in 2010, the average number of Espresso references in planning documents for the 20 schools was 26 (to the nearest whole number).

This result supported two other pieces of evidence in suggesting that whole-school planned use is associated with higher levels of achievement:

- In a previous report (Passey, 2011b), it was found that: “Schools that were gaining higher attainment test levels at the end of Key Stage 2 were using more Espresso resources earlier, preparing pupils in the longer term across the entire width of resources, rather than focusing later on a more particular set of subject resources.”

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- In a report by Somekh et al. (2007), who studied impacts of interactive whiteboards in primary schools, they concluded that at Key Stage 2, average and high attaining boys and girls who had been taught extensively with the interactive whiteboard made the equivalent of an extra 2.5 to 5 months' progress in mathematics over the course of two years, all pupils except high attaining girls made greater progress in science with more exposure to the interactive whiteboards, with low attaining boys making as much as 7.5 months' additional progress, and boys with low prior attainment made 2.5 months of additional progress in writing.

A key question for this study is, therefore, whether these findings indicate that uses of Espresso resources via interactive whiteboards improve learning and its outcomes over time, or whether the resources are used to maintain high levels of achievement that can be supported by effective teaching and learning processes undertaken within schools over long periods of time.

Some evidence to consider this question can be gained by looking at end of Key Stage 2 results for schools involved, both in this study and in the previous study, over long time periods. For this study, results from the end of Key Stage 2 in 2004 and 2008 are explored.

For the schools in Wolverhampton LA involved in this study, their average SAT score results for 2004, 2008 and 2010 are shown in Table 34. It is clear from the data that in the case of English and mathematics, average SAT scores for the group of schools who achieved 85% or above at Level 4 in English in 2010 increased across this period, except in the case of science at both Level 4 and Level 5, where scores remained roughly the same. These data indicate that while there had been a growth in use of Espresso resources between 2004 and 2010 in these schools, there had also been an increase in attainment in English and mathematics over the same period. The extent of contribution from the Espresso resources cannot be quantified, but evidence from across this and other studies suggests that there is a valuable contribution that is being made.

Table 34: Wolverhampton LA school SAT result averages for the period from 2004 to 2010

Average SAT results	All schools 2004	Schools 85% and above Level 4 in English in 2010 (N=20) 2004	Schools below 85% Level 4 in English in 2010 (N=48) 2004	All schools 2008	Schools 85% and above Level 4 in English in 2010 (N=20) 2008	Schools below 85% Level 4 in English in 2010 (N=48) 2008	All schools 2010	Schools 85% and above Level 4 in English in 2010 (N=20) 2010	Schools below 85% Level 4 in English in 2010 (N=48) 2010
English L4+ (%)	69	80	65	79	86	77	78	92	72
Maths L4+ (%)	65	77	60	76	83	74	80	90	76
Science L4+ (%)	79	91	74	88	93	85	82	91	79
English L5+ (%)	19	25	17	26	34	22	28	42	23
Maths L5+ (%)	22	32	18	27	36	23	31	42	26
Science L5+ (%)	33	45	28	40	47	37	32	44	27

For the schools involved in the previous study (Passey, 2011d), their average SAT score results for 2004 and 2009 are shown in Table 35. It is less clear from these data that general levels of attainment improvement are being shown across this period of time. The data show that while there is a shift in

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terms of attainment levels, these are at quite low levels for schools where there were 85% or above at Level 4 in 2009, suggesting that these schools are more likely to be involving in maintaining their results. Indeed, the data indicate that average attainment levels have risen for those schools that gained below 85% attainment at Level 4 in English in 2009. These data suggest that patterns of resource use and improvements in attainment over time need to be explored more; they may be unrelated, or unrelated in a specific range of school instances, for example.

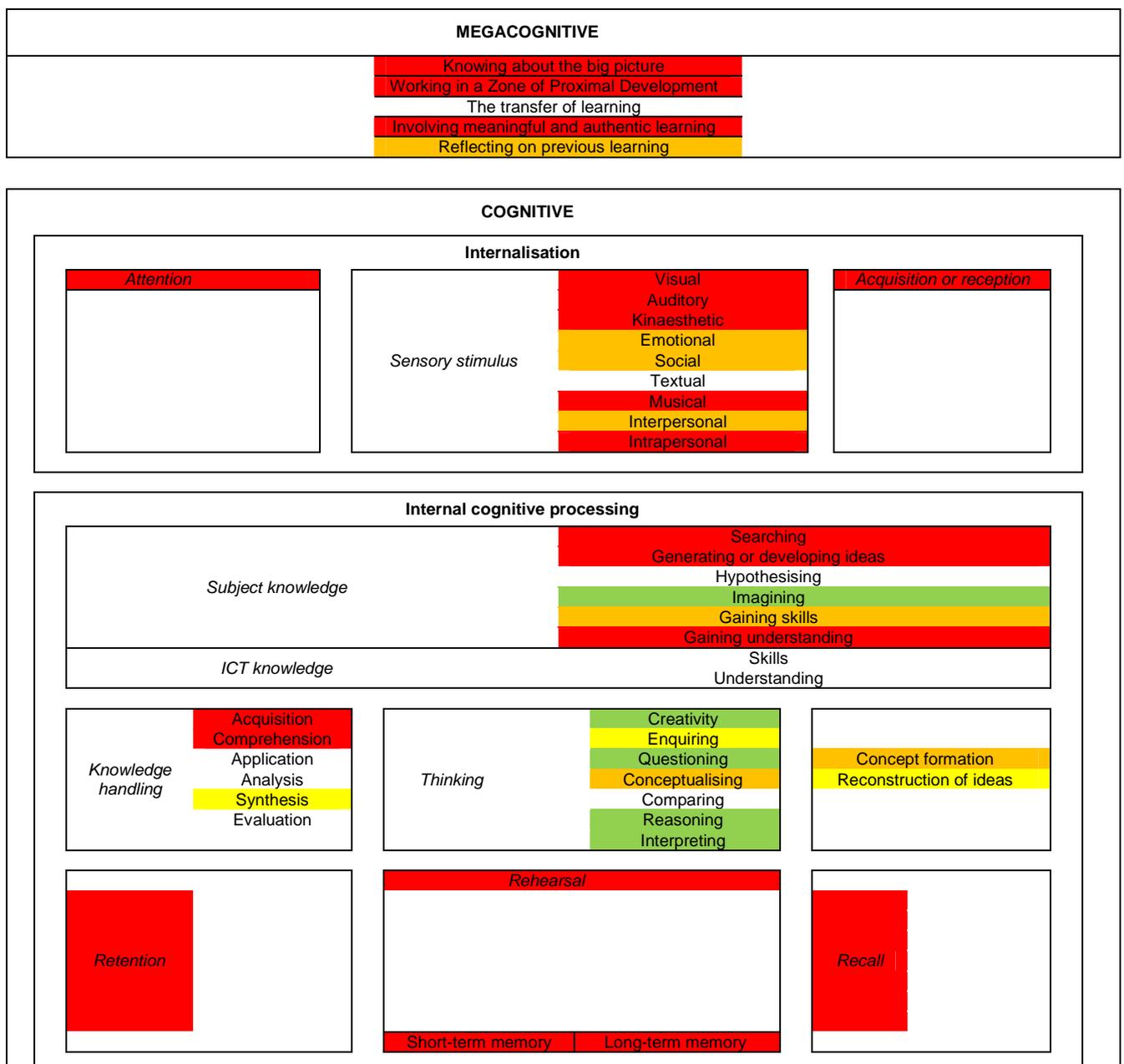
Table 35: Previous study school SAT result averages for the period from 2004 to 2009

Average SAT results	All schools 2004	Schools 85% and above Level 4 in English in 2010 (N=33) 2004	Schools below 85% Level 4 in English in 2010 (N=33) 2004	All schools 2009	Schools 85% and above Level 4 in English in 2010 (N=39) 2009	Schools below 85% Level 4 in English in 2010 (N=39) 2009
English L4+ (%)	77	86	70	81	85	77
Maths L4+ (%)	74	82	68	82	86	78
Science L4+ (%)	84	89	81	90	93	88
English L5+ (%)	27	37	18	30	34	27
Maths L5+ (%)	33	43	24	36	42	31
Science L5+ (%)	43	57	32	-	-	-

8. DISCUSSION AND CONCLUSIONS

TEACHER REPORTS OF IMPACTS ON LEARNING

The previous study reported on the elements of learning that were highlighted by teachers where they felt there had been impact arising from uses of Espresso resources. From this present study, the picture can be updated with evidence relating to some specific areas of learning. A learning framework analysis is shown in Figure 10. This framework presents evidence of outcomes and impacts gathered from teacher responses across the range of schools involved in both the previous study, and from survey responses in the study reported here. The level of response is shown for each relevant learning element by colour: red shows a very high level of response (over 80%), orange a high level (55% to 80%), yellow a low level (25% to 54%), and cream a shallow level (less than 25%). Areas shaded green indicate that there is evidence from schools but the level cannot be quantified through responses provided, and white shows there is no evidence from schools from their responses.



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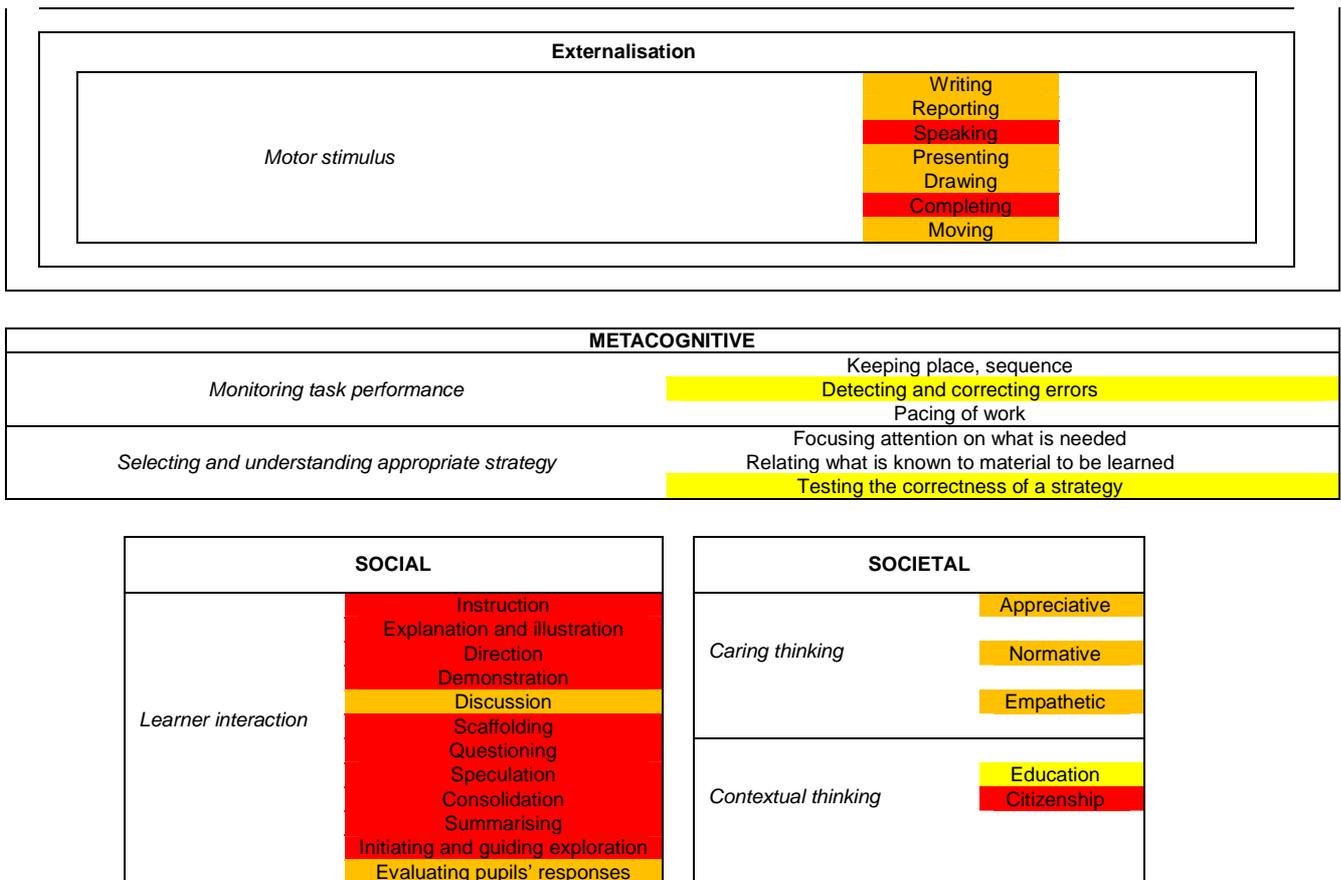


Figure 10: Learning framework showing hotspots reported by teachers when Espresso resources are used to support learning and teaching

Teachers, subject leaders, head teachers and teaching assistants indicate that Espresso resources provide them with a useful range of approaches to support their pedagogies and to support learning. Reports from personnel across Wolverhampton LA indicate that the resources have strengths in areas of metacognition, cognition, memorisation, and supporting teaching and learning through a variety of social interactions.

IMPORTANT WAYS RESOURCES SUPPORT LEARNING AND WAYS WE HOLD IDEAS IN MIND

The findings of this study are concerned with the ways that Espresso resources support learning. Learning is concerned with the ways that knowledge, ideas and experiences are held in mind, allowing these to be integrated with other knowledge, ideas and experiences, as well as allowing them to be recalled and associated with other links. To do this, mental schemas are held, but they vary from individual to individual. It is known that many people hold a range of mental schemas in forms of moving, colour images so that the details associated with these schemas are those that are subsequently generated when they recall concepts or ideas. It is worth considering how certain findings from this study relate to forms of memorisation and recall.

Recent research by Passey (presented at the BERA conference, 2011) illustrates some of the background to these points. The data for this research were collected from teachers, using response (interactive voting) devices in four different conference sessions. The teachers held a range of roles; 13 were head teachers, 54 were senior leaders, and 27 were practitioners. So, of the 94 in total, many were senior leaders.

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The first piece of evidence gathered from the teachers related to their understanding of how they learned from conference activities. The teachers were asked to think of something they had learned from the conference they were attending, or from a previous conference (the results are shown in Table 36 and Figure 11 following). They were asked in which of the following forms it had been learned:

- Listening to and remembering what someone said.
- Observing and remembering what was done or presented.
- Discussing it with someone and thinking about its use.
- Thinking it through and thinking about its use.
- None of these.

Table 36: How something was learned from a conference

Think of something you have learned from this, or a previous conference. In what form was it learned?	Responses
Listening to and remembering what someone said	22
Observing and remembering what was done or presented	15
Discussing it with someone and thinking about its use	29
Thinking it through for yourself and thinking about its use	30
None of these	2
Totals	96

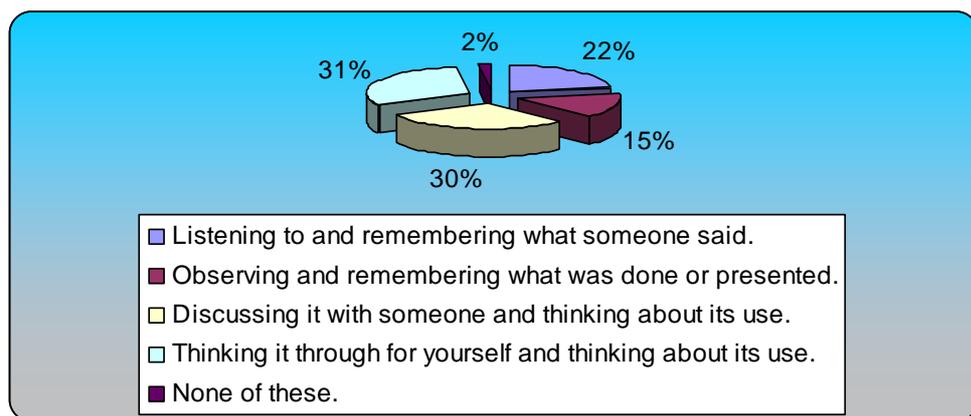


Figure 11: Proportions of teachers indicating how something was learned from a conference

It is clear that different individuals reported that they had learned specific things in different ways. It is clear from a range of other research (Vygotsky, 1978; Pask, 1975; Alexander, 2008) that dialogic learning and discussion play an important role in deeper and wider learning. To support this area of learning, Espresso resources clearly offer a range of opportunities, since video films, handled in ways that support discussion in class and outside class, can clearly enhance dialogic learning and discussion.

The second piece of evidence gathered about memory and recall functions from the teachers was concerned with how they recall a concept. The teachers were asked to think of a volcanic eruption (the results are shown in Table 37 and Figure 12 following). They were asked in which of the following forms they recalled this concept:

- As a black and white diagram.
- In a moving form.
- In a moving form in colour.
- In a moving form in colour with sound.
- As a piece of text.
- None of these.

Table 37: In what form a concept was recalled

Think of a volcanic eruption. In what form did you recall this concept?	Responses
As a black and white diagram	2
In a moving form	5
In a moving form in colour	40
In a moving form in colour with sound	41
As a piece of text	2
None of these	4
Totals	94

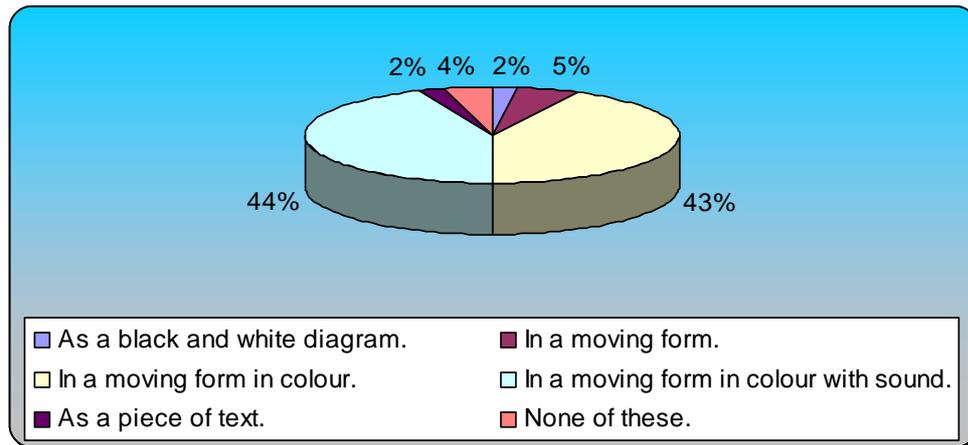


Figure 12: Proportions of teachers indicating the way a concept was recalled

It is clear that different individuals have recalled this concept in different ways. Although most have recalled it in a moving form in colour, only about half of them have recalled it with sound. It is clear that video films can provide the means to match the form of this recall with the form of engagement.

The third piece of evidence related to the ways images are brought to mind. The teachers were asked to bring the image of a square to mind (the results are shown in Table 38 and Figure 13 following). The teachers were asked in which of the following forms they recalled this image:

- In sketch form.
- An exact image with sides of equal length subtended by angles of 90 degrees.
- An exact image in outline in black.
- An exact image in outline in colour.
- An exact image in outline where the centre is a different shade or colour.

Table 38: In what form a square was recalled

Bring an image of a square to mind. In what form is the image?	Responses
In sketch form	8
An exact image with sides of equal length subtended by angles of 90 degrees	8
An exact image in outline in black	53
An exact image in outline in colour	18
An exact image in outline where the centre is a different shade or colour	12
Totals	99

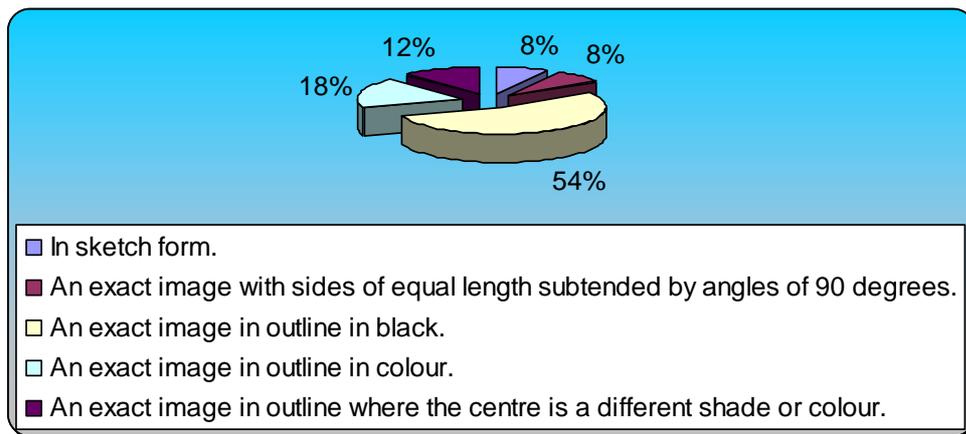


Figure 13: Proportions of teachers indicating the form in which a square was brought to mind

Not surprisingly, different individuals recalled this image in different ways. However, although very many teachers (92%) recalled it in exact form, more specifically about half (54%) recalled it in outline in black. It is clear that video films and exact imagery can provide a means to match the form of engagement with the form of recall. The fact that learners refer often to the exactness of imagery when ICT is used as being a benefit to their learning could well be an indication of a form of ‘shortening’ or ‘matching’ of presentational format to recall format.

It should be noted here that the responses above are from a teacher audience. The audience is a sample, and although the results provide evidence about that sample, it should not be assumed that this evidence is necessarily representative of all teachers (for example, evidence from teachers of art might not be proportionately the same as evidence from teachers of music or history). Similarly, this evidence may not be representative of pupils of different ages, or of different interests. This evidence is, therefore, illustrative.

What is clear, however, is that video films can offer a means to provide a match between the form of presentation and the way that a concept might be held in mind and recalled later. Showing the power of this match is an important key in understanding both the way that video films bring about deep and long-lasting learning, and the way that they support the initial and longer-term developments of conceptualisation, wider interest, and engagement with future activities that are science based. This study indicates from evidence that videos provide opportunities for learning through delivery mechanisms that match cognitive processes of some individuals more readily than they are matched through more traditional text-only formats.

EMBEDDED USE AND IMPLICATIONS FOR CHANGE

From the evidence gathered and reported here, there is every indication that schools are increasingly embedding uses of Espresso resources into their teaching. In a time of change, it is possible that alternatives could be found for some of these resources, but there are two key concerns that need to be considered:

- Video resources are the most widely used resources currently, and it might well be unlikely that much of this material could be alternatively sourced to provide the forms of engagement that are possible for pupils offered through this medium.
- News Bites are increasingly being accessed, and it is difficult to see how this very up-to-date and regular source would be provided alternatively for pupils in forms that would be entirely appropriate to age.

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Even if the entire resource base could be alternatively sourced, there would be huge implications:

- Currently, training is included as a part of the resource subscription package. At the moment each school is entitled to one day of school-based training. If resources are changed, more training will be needed rather than less, and the cost incurred would need to be considered.
- Finding alternative resources on the Internet will require many teachers to be involved in using a higher time commitment.
- Building new resources into school planning documentation will require an additional time commitment.
- Much of these time commitments are likely to be sourced beyond and outside the school, so impacts on well-being will need to be considered.
- If alternative sources do not provide the same levels of quality, depth and width, then pupils will have a less rich provision accessible to them.

In cost terms alone, if alternative resources are to be identified, there will be wide implications. Teachers currently use Espresso resources between once a week and once each day on average. Taking an average of 3 resources being used per week, over a 39 week year, and involving each teacher in taking 13.35 minutes to find, vet and consider the pedagogical approach appropriate to each new resource being found on the Internet (see Passey, 2001c), this will mean that each teacher across the LA will on average need to spend an additional 1,561.95 minutes per year. This amounts to 26 hours of time per teacher (3 or 4 days in total), costing something in the region of £1,560. Across the LA, therefore, this would equate to about 20,800 hours of time, costing some £1,248,000. This figure does not include a factor to account for impact on well-being. The figure also does not account for the time needed to consider the balance of these resources across the curriculum, and their integration into planning documents. On average, currently, schools have some 24 Espresso references in their 2011 planning documents. Looking at the replacement of these with others that are balanced and that will match curriculum needs, this process is likely to take in the order of a minimum 10 hours of time for a school, costing some £600.

In total, therefore, for a two-form entry primary school, the average cost implications could be:

- £300 to cover one or more sessions of training with new resources.
- £24,960 additionally required for teacher time to allow 16 teachers to find, vet and match uses of new resources to their pedagogical needs.
- £600 to cover time needs to integrate the resources into curriculum planning documents.

Based on a figure of one additional training session, 26 hours of time for each teacher to search and find new resources, and 10 hours of time to integrate resources across the subject curriculum and into planning documents, the total additional cost for a school is likely to be in the order of £25,860 (without factoring in well-being costs). Whilst it could be argued that this figure might be offset in the future by a lack of need to continue to put in this same level of commitment, it can also be argued that this development could not happen within a single year, and would be spread out across a number of years, possibly affecting forms and levels of access for pupils for a longer period of time.

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About the author

Dr Don Passey is a Senior Research Fellow and a Director of the newly established Centre for Technology Enhanced Learning in the Department of Educational Research at Lancaster University. He has wide experience with developing and using evaluation and research methods to look at technological innovation, and has studied and reported on outcomes of uses of leading edge technologies and their impacts on teaching and learning over the last 20 years.

He has recently completed an evaluation for Espresso that has looked at outcomes and uses of digital resources across their very wide user base, and studies for Wolverhampton LA on the implementation of a parental reporting pilot in 5 schools, and on the implementation of the LP+ learning platform.

He is undertaking a range of studies on home access and uses of technologies to support young people's learning, has previously undertaken an evaluation study for the BBC looking at outcomes of the BBC News School Report project, and a number of studies for Becta looking at potential uses of technologies with young people who are not in employment, education or training (NEET). He has over the past few years undertaken a series of evaluation studies on how schools in Aston Pride have supported the development of community and home access to ICT, as well as a review of the ICT development practices and outcomes arising in Wolverhampton LA. He was commissioned by the BBC to look at learning uses and outcomes of the BBC jam resources at an early stage of their development. He previously completed studies on the role and learning benefits of IT Academies for the DfES, the use of broadcast video clips in schools and uses of multimedia support for at risk young people for the BBC, the uses of specific online learning resources for regional broadband consortia (RBCs), the ways in which ICT is linked to pupil motivation for the DfES, the role of ICT in supporting learning practices for disadvantaged communities for a NDfC project, the outcomes of uses of interactive whiteboards, and the development of e-learning practices across RBCs and local authorities (LAs). He has undertaken studies and reported previously on the outcomes and implementation of Pathfinder LEAs for the DfES, the development of Year 7 online course materials for mathematics for RM, and the use of a number of integrated learning systems in schools. He previously led a team that investigated the outcomes of laptop use in schools and homes as part of the Microsoft UK Supported Anytime, Anywhere Learning Project, and led a study for the Qualifications and Curriculum Authority (QCA) looking at the implications of uses of ICT for coursework in examination assessment.

He has worked with government agencies, commercial and non-commercial groups, educational institutions and schools, in undertaking research to inform both policy and practice. He has been a consultant to the DCSF (then DfES) on a number of projects, and has worked on the development of innovative approaches to data management systems in schools and LAs. He has worked with commercial companies in the UK, Switzerland and Germany, with state pedagogical research institutions in France and Germany, with educational groups in Hong Kong, Bermuda, and Peru, with LAs across England and Scotland, with RBCs, and with individual schools. He established, in collaboration with the Specialist Schools and Academies Trust (SSAT), a Masters in Research course in Innovation in School Practice for teacher practitioners, focusing on researching the uses of data and technologies within schools and in homes.

He is a member and vice-chair of the International Federation for Information Processing (IFIP) Working Group on Information Technology in Educational Management and a member of an international Working Group on Elementary Education and ICT. He is a member of the BCS Schools Expert Panel. He has written widely on aspects of leading edge ICT uses in primary and secondary education, and is on the editorial board of the IFIP journal.

8th April 2012

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