

**Barriers and enablers
to the embedding of learning technologies
in the delivery of learning, teaching and assessment
in the further education sector**

Report for



by Sero Consulting



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Executive summary

This study explores the barriers to embedding learning technology in the delivery of teaching, learning and assessment in further education colleges. Interviews and focus groups were held in three FE colleges with senior managers, e-learning co-ordinators, curriculum managers and mainstream lecturers to identify barriers and enablers to the embedding of learning technology.

The main barriers identified were:

- Unreliable IT infrastructure
- Problems caused by classroom and building design
- Lack of staff confidence in their digital skills
- Difficulties in accessing digital resources and lack of opportunities to share good practice
- Lack of time for digital content creation
- Communication issues within colleges
- The difficulties of keeping up with new developments in digital technology
- Patchy training for staff and lack of mentoring
- Incompatibility of some pieces of kit with internal IT systems.

The main enablers identified were largely the reverse of the barriers, but also included:

- Availability of Just-in-Time (JIT) training at appropriate times
- Reward and recognition systems for staff
- Use of tools and materials from external organisations
- Staff-student partnerships
- Specific examples of software and hardware.

The evidence from this study indicates that college senior leaders have a critical role to play in embedding learning technology in their organisations through developing, managing and implementing a digital strategy, which is linked equally to teaching and learning as well as to the demands of management information systems. The college needs to identify and support an e-learning manager and the senior leadership team should ensure that quality managers buy in to the strategy.

Senior leaders need to establish clear lines of communication and a communication strategy which values and responds to bottom-up suggestions for improving use of technology and facilitates horizontal communication across Schools / departments and the leadership team should take overall responsibility for ensuring that the IT infrastructure is robust, reliable and resilient.

Within a positive management structure, there are five areas where ETF could make a difference:

- Helping staff build their self-confidence through the provision of generic online training courses in short chunks.
- Developing an interactive Weblinks programme for accessing, reviewing and cross-referencing online curriculum materials.
- Identifying colleges that use technology effectively and helping other colleges to learn from them.
- Developing an Open Badge system which is not tied to a single brand of VLE and helping colleges to implement this.
- Developing programmes of digital skills for employability for both staff and students.

1. Introduction

Sero Consulting Ltd was commissioned by the Education and Training Foundation (ETF) to identify and explore barriers to embedding learning technology in the delivery of teaching, learning and assessment in further education colleges. In addition to identifying barriers, this study also identifies enablers - in many ways, the reverse side of the same coin - and makes recommendations for training and guidance which might enable embedding.

Fieldwork was carried out in three further education colleges during March 2018, and we are extremely grateful for the whole-hearted co-operation of the three FE colleges selected for this study. In each of the colleges a range of staff were invited to focus groups and 1:1 interviews with the college e-learning manager and an appropriate member of the senior leadership team were held. Further details of methodology are given in the Appendix.

2. Barriers to embedding learning technology

Five main barriers were identified by staff in the colleges in this study:

- Restrictions caused by classroom design, including access to wifi / hardware
- Lack of staff confidence in their digital skills
- Difficulties in accessing digital resources and lack of opportunities to share good practice
- Lack of time for digital content creation
- Unreliable IT infrastructure.

In addition to the five main barriers selected by staff, the research team also identified four additional themes that emerged from the focus group discussions and interviews:

- Communications issues within colleges
- The difficulties of keeping up with new developments in learning technology
- Availability of training and mentoring
- Incompatibility of some pieces of kit.

2.1 Access to wifi and hardware and classroom design

Variable access to wifi in different parts of the colleges was cited as a significant barrier by staff in all three colleges, with lecturers in one of the colleges expressing particular concern:

"We are on the top floor and if we stand in the corridors we get lovely wifi. If we stand in the classrooms we don't." (Lecturer)

"I've got some iPads and surface tablets out of my budget for teachers but the wifi doesn't work everywhere." (Lecturer)

"I've actually found wifi strength varies in different areas of my room...you'll have wifi connection and then you move and it disappears. It's frustrating." (Lecturer)

'Computer labs' with banks of desktop computers round the perimeter of the room inhibited creative teaching:

"I teach from the back if I'm in an IT suite, so I can see what the students are doing." (Lecturer).

The physical design of some classrooms effectively disabled some learning technology:

"In some of the rooms you can't use the SMART boards at all because of the light...huge skylights 20 feet up." (Lecturer)

2.2 Lack of staff confidence in their digital skills

Perhaps inevitably, most of the staff in the college focus groups self-assessed their digital skills as relatively expert and used a wide range of technology, but were very conscious that their expertise and confidence was not shared by many of their colleagues:

"There is that fear of using technology in front of students, in case it doesn't work." (Lecturer)

"I think it's (a matter of) confidence...I can be shown how to do it but I learn more practically (by doing it)." (Lecturer)

2.3 Difficulties in accessing digital resources and tools and lack of opportunities to share good practice

Staff were aware that excellent free resources were available on the web:

"There are some pretty good resources out there, things like the V&A's online courses which you can access, image banks, and archives." (Lecturer)

"There are some pretty good resources on the telly. There is stuff out there," but "It's having the time to find it, though," (Lecturer)

There were concerns about accessibility being hampered by weaknesses in internal communication and many examples of teachers not knowing what curriculum leaders knew. Because of lack of communication between subject areas, some staff had not heard of types of software that others were using regularly (or could not get training), e.g. Sharepoint, e-Stream, Office 365:

"I've not heard of SharePoint before so the problem is within the college (is that) people are doing their own things and there is not time to pass it on to other areas. I don't know what's happening in your area about technology." (Lecturer)

Individual staff often came up with their own solutions to digital issues, but these were not necessarily shared. Colleges are busy and relatively large organisations, so it was not entirely surprising that the staff who had volunteered to attend the focus group sessions did not necessarily all know each other. One particularly striking example of this emerged in the smallest of the three colleges, where staff started their discussions with a round of introductions. As a result of their discussions two members of staff made arrangements to connect with other departments where they had never been before, in order to look at learning technologies in action which they felt could be useful for their own curriculum areas.

2.4 Lack of time for digital content creation

Given the pressures on resources that all colleges face, it was unsurprising that lack of time was often cited as a significant barrier to creating relevant resources:

"It's having the time to create a lot of things...sometimes you have to use older stuff because you haven't got the time to create something new." (Lecturer)

"For an hour's content you would need 20 hours to create it." (Lecturer)

"Creating a quiz on Moodle is very time-consuming. It doesn't assist me at all. It's just not very user-friendly. I would love to use it more." (Lecturer)

"I use Moodle a lot because it's the college system but it's desperately difficult to make quizzes. It takes me about 3 days to get one done with about 10 questions. Then I'm OK with that once it's in there and I'll use it a lot but it's very time-consuming and there must be a better way of doing it." (Lecturer)

The comments about lack of time were also applicable to the difficulties experienced in sharing resources and good practice.

2.5 Unreliable IT infrastructure

The problems created by patchy wifi coverage have been highlighted in section 2.1 above, but other significant barriers related to the lack or reliability of college IT infrastructure emerged in discussions:

"I've been into classrooms where I'm all set up to use technology and then, oh no: the screen's not working or the sound's not working and you have to adapt...and not everyone's good at adapting to try and cater for that." (Lecturer)

In some instances the unreliability of particular systems caused difficulties, especially with OneDrive:

"Students kept losing work that they were doing. I had a learner that was saving work but when they logged on next time it had disappeared, so he had to bring in a memory stick to save his work." (Lecturer)

Lack of technical support sometimes undermined the effectiveness of training:

"I found the whiteboard training quite useful but then I had a couple of occasions when the whiteboard didn't work, so I stopped using it. If they (IT technicians) can't support it I won't use it." (Lecturer)

In all colleges lecturers felt frustrated by lack of reliability and two comments summed this up clearly:

"Malfunctioning tech is what affects me most on a daily basis. If the technology worked seamlessly all the time, every day, we would use it....It's confidence, isn't it?" (Lecturer)

"There is a real barrier for teaching staff – a real frustration." (Lecturer)

2.6 Communication issues

In all three colleges, including the one where staff generally appreciated the lead being given from senior management, there was evidence of top-down decision making, with management imposing single solutions for all curriculum areas together with a lack of consultation with the staff who were key learning technology users, impeding the take up and embedding of appropriate technology:

"We don't get to pick and choose what we get to learn. We're told we should be doing this because he's doing it. He got an Outstanding grade and we need to get that from Ofsted, so you need to do what he's done. But that's not how you get an Outstanding grade." (Lecturer)

"You have historically a top-down approach to the use of technology: 'Right, we're going to do this now.' We get into a tick-box mentality: that's good, that's bad." (Lecturer)

"I feel management use digital technology to beat you, as in 'You must do this', instead of enhancing what we do with 'This is going to make your life easier and better, so therefore we're going to buy it.' Not 'We need this to make your life more difficult,' because people are going to switch off and they're not going to use that... That's what happened with e-portfolio." (Lecturer)

The 'one size fits all' approach was not seen to be working:

"Different teaching areas require different training." (Lecturer)

There was also evidence of lack of communication between teaching and technical staff:

"I teach CAD and I told the technicians specifically not to change the software while I was teaching the course. I went in 2 weeks ago and they'd changed all the software in the upgrade to Windows 10 and they forgot to put CAD back on it." (Lecturer)

2.7 Keeping up to date

Several staff, including the self-assessed technology experts from the focus groups, are finding it increasingly difficult to keep up with the pace of development of software:

"We seem to be introduced to so many different tools we can use that sometimes we just don't know which one to choose." (Lecturer)

"If somebody said 'you've got two months free to build resources and do what you want, we would get some momentum and we would be quicker doing it. We never have that down time to build stuff up and then run with it. We're always just staggering from one new technology to the next." (Lecturer)

"You just get your breath and then something else comes along." (Lecturer)

2.8 Availability of training and mentoring

Where training in the use of learning technology had been available (and staff acknowledged that there had been training at various times), it was not always perceived as being timely and appropriate and staff would have welcomed greater availability of mentoring in the application of tools and programmes.

"I think generally we could all use more specific training," ... "But they tried to do that last year and people just didn't turn up." (Lecturer)

"Support is available from IT Helpdesk, when something is not working, or from MIS. But there are no mentors for using technology for teaching and learning." (Lecturer)

2.9 Incompatibility of kit

A number of staff found their efforts to use learning technology were impeded by hardware and software incompatibility:

"Wifi is not compatible with some equipment" (Lecturer)

“Also there is a problem using the iPad because they’re not configured to let students log on so they can’t do any work and save it. They’re just purely for research, so there’s been a campaign to exchange them for laptops but we’re really short of those.” (Lecturer)

“People are using different systems so to collaborate is difficult.” (Lecturer)

“On some of the courses we give them all iPad and we can do lots with them but on other courses it’s very difficult because they’re all using their own devices and they can’t do the same things on there that the others are doing.” (Lecturer)

3. Enablers for development

In many ways, the enablers which emerged from the focus groups and interviews are the reverse of the barriers identified. However, there was very little evidence of effective exploitation of enablers, or measuring of their effectiveness – which is unfortunate, given that some staff still question the extent to which learning technology can have a positive impact on learning outcomes. Teachers did not identify much that was working well in the three colleges that enabled them to embed learning technology. Staff need strong and convincing evidence that technology will make their work easier or improve students’ learning before they will embrace technology and learn to use it better.

They felt they should not be expected always to find their own solutions. Collaboration and sharing best practice was identified as an important enabler but staff could find little evidence of this happening in practice. As one member of staff remarked:

“I think it’s interesting that we are trying to look at what’s positive, but we’re still going on about what’s negative.” (Lecturer)

The main enablers identified through this study were:

- Reliable IT - infrastructure and wifi; digital content creation (with time)
- Availability of Just In Time (JIT) training at appropriate times
- Reward and recognition systems for staff
- Use of tools and materials from external organisations
- Staff-student partnerships
- Specific examples of software and hardware.

Building staff confidence in their digital skills was a theme running through all the main enablers, but digital skills for employability did not feature strongly in focus group discussions about either barriers or enablers: this is highlighted in section 5.3 below.

3.1 Reliable IT infrastructure and classroom design

Underlining all the discussions about enablers were the same concerns about infrastructure that had been voiced when discussing barriers:

“Management structure and culture - then you need to have your infrastructure in place. Then you need to think about your classroom design. And then you need to think about what you’re going to do with all of it.” (Lecturer)

3.2 Availability of JIT training at appropriate times

Staff could often see the value of particular software, but had not necessarily received training at an appropriate time or felt that there were opportunities for dissemination which could be better exploited.

Curriculum management meetings were identified as effective venues for training and dissemination, provided they were not held at the end of the working day and were used for consultation on training needs:

"It would be good if we shared best practice in our curriculum leader meetings. That could be filtered down to our department. They started doing it and there was a working party but there are time constraints." (Lecturer)

"Usually training is from 4 till 5 pm at the end of the day and you know you have that time thing. It always feels a little bit rushed." (Lecturer)

"I think it would be beneficial to go into each department and ask, 'how would you like to use IT, what is useful to you guys and what isn't useful?' and then developing something that way, rather than trying to get the whole college using the same thing." (Lecturer)

New software and systems would be more effective if training was provided when they were first introduced:

"They've introduced the Read Write Gold software on all laptops. It helps students to read text and to write their answers but, again, we haven't had training in that. I've got three students who are supposed to be using it on a regular basis but I really don't know how to show them how to use it." (Lecturer)

"I've recently had some training on Google Classroom. We've had Google suite for three years but no one knows how to use it. The big enabler would be to have more training." (Lecturer)

Whilst Digital Champions (see section 3.3 below) are relevant to JIT training, the development of online forums is a potentially useful alternative (or addition) to ILT mentors and Digital Champions:

"Why don't we have places online for the stuff that we use where people can ask questions on online forums so if somebody doesn't know how to do it they post it in there?" (Lecturer)

3.3 Reward and recognition systems for staff

All three of the colleges had at some stage identified Digital Champions, who were tasked with cascading good practice and delivering training to other staff. However, whilst the creation of Digital Champions was seen as potentially a powerful enabler, the structures had withered away, because their remits had not been made particularly clear. Whilst the staff concerned in one college had initially been given some remission, as financial pressures grew they were expected to cascade and deliver training without any time allocation for their additional responsibilities.

"We would like to give people remission to do training for and support for others. We had it a few years ago. We had digital champions and it was very effective. It was the furthest we moved in a very short space of time." (Lecturer)

"We haven't done any group training on digital technology in the classroom for many years. We would welcome group training. (It could be called) 'Welcome to the 21st century'. The staff could do some training themselves. We used to have the time but we don't have time now so it's more difficult." (Lecturer)

An experienced curriculum manager in one of the colleges had used Moodle badges with departmental staff, with a termly awards ceremony in a departmental meeting, when statistics for Moodle use by staff and students had been collated. Her staff both enjoyed and valued this and this was a model which she felt could be replicated – although the college was migrating from Moodle to a different VLE.

There are a number of useful MOOCs which could be used by staff at times that suited them, but here again, rewards are essential:

“The issue I found with MOOCs is that unless there was accreditation at the end I couldn’t find the time to sit down and do it...Because I wasn’t driving towards a deadline, I just didn’t have time to do it.” (Lecturer)

3.4 Use of tools and materials from external organisations

Three significant examples were mentioned in discussion. Two of the colleges were participating in the 2018 run of the Jisc Digital Capability tool (<https://digitalcapability.jiscinvolve.org/wp/>) and saw this as potentially very useful in both identifying the existing levels of digital skills of staff and students and tailoring course delivery and training to maximise the effective use of learning technology. Neither college had yet harvested the results but both were expecting this to provide useful information.

The FELTAG Blended Learning Consortium (<http://www.blc-fe.org/>) was mentioned by one college. This college had signed up to the consortium when it was first established and the Consortium had proved to be a rich source of materials and a stimulating forum for the exchange of ideas.

The other tool available from external organisations that was mentioned in one college was using an expert from the company producing the software.

“They do that with ProMonitor and Markbook. There are Markbook champions, so to speak, who are super-users...I know X is a Google-certified trainer, which you can do online and for free.” (Lecturer)

3.5 Staff-student partnerships

Although none of the three college had formal structures for staff-student partnerships related to the use of learning technology, several individual staff had found that using the technology savvy of their students was useful in solving technology problems, sharing useful tools and giving students a sense of empowerment over their own learning:

“We’ve found that when we set assignments, having the iPad means they do the assignments in different ways. In the past, everyone would do the assignment in the same way but now we see a lot more creativity from them. That’s a good enabler in terms of their participation and how much they get into it and how they’re pleased and proud of what they’ve achieved.” (Lecturer)

“My students introduced me to Flipagram this year, which I’d never heard of.” (Lecturer)

“Research skills you have to help them with, but they’ll tell you about such-and-such an app. One student showed me how to download YouTube videos and that’s going to literally change my life!” (Lecturer)

“Actually students have been quite good at saying ‘Oh no, that’s how you do it’ and they haven’t necessarily laughed at us.” (Lecturer)

Students can help create resources: *“Most of my Moodle page is full of students’ work.”* However, this lecturer added a cautionary note: *“But again that’s time: there’s a very limited time we get with our*

students. It can take weeks and weeks to create something yet you've got so much to cram in with that student." (Lecturer)

3.6 Specific software and hardware

Three examples of enablers were mentioned by several staff in two of the colleges:

- The use of Google Classroom:

"We've settled now on Google Classroom for sharing digital technologies and everyone can go into that and help out with that. That's something where you can go in and watch a 2-minute video and it will give you options to collaborate a bit better. That's something that's just been put in. I think it will be really useful and solve the barrier of time." (Lecturer)

- Cloud storage:

"Cloud storage has helped a lot... When it works." (Lecturer)

"One of the things I see as a real enabler for the college is remote access to stuff." (Lecturer)

"We need some training on Cloud storage because it allows access from anywhere." (Lecturer)

- iPads for students – see the comment on student creativity in 3.5 above.

4. Digital strategies, digital support frameworks and pre-conditions for embedding learning technology

4.1 Issues arising from our fieldwork

None of the three colleges had a strategy they felt able to share. From interviews with senior staff it emerged that two out of the three stated they did have digital strategies, which were the responsibility of a named member of the senior leadership team, but they were currently in the process of revising and redeveloping them. The third college does not appear to have a strategy and has no SLT responsibility for it at present. We were not presented with any clear evidence that the digital strategies in these colleges were closely related to teaching and learning – the demands for management information were perceived by staff to dominate as these provided auditable data in a target-driven culture.

All staff felt that a designated e-learning manager, supported by a mixed teacher / technician team, should be a key driver of change and development. Internal digital support frameworks can be effective if there are enough people with timetable remission to support other staff and the internal trainers listen to staff's expressed needs. Whilst staff clearly valued the work that the e-learning manager did, they expressed concerns that their post holders were stretched too thinly, with insufficient support and expected to do too much.

4.2 Pre-conditions for effective embedding of learning technology

It would appear that there are several pre-conditions in the college's organisation and systems if learning technology is to be effectively embedded in teaching and learning. First, a resilient, reliable and responsive IT infrastructure is essential. Secondly, the college needs a clear digital strategy

which covers investment in technology for teaching and learning as well as management information systems. A member of the college senior leadership team should have designated responsibility for this strategy and the communication of this strategy across the college. Thirdly, there need to be clear three-way communication channels for dissemination of learning technology materials and issues, top-down from senior management, bottom-up from mainstream lecturing and technical staff and horizontally across Schools / curriculum areas and between teaching and technical staff. Fourthly – the holy grail for teaching staff – there needs to be adequate time for training in the use of resources and for their creation.

These four pre-conditions are illustrated in comments from the colleges on barriers and enablers to embedding learning technology which have been described in sections 2 and 3 of this report.

5. Support for staff in embedding learning technology

5.1 Support for leaders

There are several areas where ETF might seek to support college leaders in the embedding of learning technology in teaching, learning and assessment – all of these have implications for ETF's leadership training programme.

First and foremost, there needs to be an identified member of the college senior leadership team, with overall responsibility for a digital strategy, which is linked equally to teaching and learning as well as the demands of management information systems. The senior leadership team needs to identify an e-learning manager who is fully aware of the needs of teaching and learning, and is not expected to do too much on her/his own without adequate support. The senior leadership team should ensure that Quality Managers and other senior staff buy in to the strategy.

Secondly, the senior leadership needs to establish clear lines of communication, which values and responds to bottom-up suggestions for improving use of technology. Too much technology development is driven top-down which teachers often see as irrelevant to their delivery needs. The communications structure needs also to allow for horizontal communication across Schools / departments.

Thirdly, the senior leadership team should take overall responsibility for ensuring that the IT infrastructure is robust, reliable and resilient. Whilst there are always likely to be problems from time to time, the existence of good communication structures will mitigate problems, provided that staff can understand the issues and are not kept in the dark.

5.2 Support for curriculum managers

Curriculum managers should be encouraged to develop learning technology reward and recognition schemes for their staff, both through a reward scheme (e.g. the provision of open badges) and through making time available within their departmental budgets. Staff need access to just-in-time training and curriculum managers should ensure they listen to their staff.

Curriculum managers should encourage peer support and staff-student partnerships. Identified needs should be backed up by appraisal conversations, starting with minimum requirements for IT/LT skills on recruiting and inducting teaching staff. As one curriculum manager said:

“Until a staff member starts, you really have no idea what their IT skills are. On the job spec we should be clearer about what IT literacy should be.”

5.3. Support from ETF for effective training

ETF can help to build a fruitful environment for learning technology through its leadership programme, helping colleges to create management structures and IT infrastructure that address the pre-conditions described in section 2 of this report and linking with the support for leaders described in section 5.1.

Within a positive management structure, there are five areas where ETF could make a difference:

- Helping staff build their self-confidence – through the provision of generic online training courses in short chunks, so that staff can access them at a time, in a place and at a pace that suits them.
- Developing an interactive Weblinks programme using <https://extensions.joomla.org/extensions/extension/official-extensions/weblinks/>. This would address the issues of accessibility to resources; it should be developed as a resource for all curriculum areas and will require curation.
- Identifying colleges that use technology effectively and help other colleges to learn from them, similar to the now defunct Becta Technology Exemplar Network.
- Developing an Open Badge system which is not tied to a single brand of VLE and helping colleges to implement this.
- Developing programmes of digital skills for employability – there could be separate programmes for staff and students. As one curriculum manager put it: *“What are all our local small businesses using for their technology?”*

Appendix

Notes on methodology

Two focus groups were held in each college, one consisting of mainstream lecturers and the other of curriculum managers. The focus groups of staff and curriculum managers were presented with a set of 12 cards, each with a topic heading related to the use of learning technology in teaching, learning and assessment. The groups were asked to discuss the topics on the cards and agree on the five most significant barriers to embedding learning technology in the college, putting their top five in rank order and making additional notes of key issues. After 25 minutes on this exercise, the groups were then asked to switch to discussing enablers for embedding learning technology, using the same 12 cards and again agreeing on their top five issues and rank ordering these. Barriers were things that were actually causing problems. Enablers were things which were not necessarily in place but 'would be nice' - sometimes an enabler was a piece of software. These sessions were audio recorded and the card sorts photographed to enable a complete record of the sessions to be kept for analysis.

Two 1:1 interviews were held in two of the colleges, one with the college e-learning manager / co-ordinator and one with a member of the senior leadership team with overall responsibility for learning technology. In the third college it was not possible to arrange an interview with a member of the senior leadership team. All interviews were conducted by the same researcher, and followed a pre-planned structure designed to explore interviewees' views on the current state of digital technology in the college and barriers and enablers to embedding learning technology.