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Can tablet computers enhance learning in further education?

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Interest in the potential benefits of providing tablet computers to students has grown in recent years, both in UK institutions, and across the world. Limited research studies have been reported in higher education (HE), and primary and secondary school settings, tentatively suggesting a range of positive impacts on learners, but little conclusive research has been published on the introduction of tablets in further education (FE). This article presents a case study of a single, mid-size English FE college, which piloted the provision of tablets to bounded groups of students and teachers in four diverse curriculum areas. The author was invited to help design the college's evaluation of the pilot, which would inform a potential business case to extend the pilot to all students. One element was a qualitative research project, with data captured through a series of focus group interviews with all 64 students who received tablets, and separate interviews with their ten teachers. Findings are reported here, exploring the extent to which students and teachers perceived learning benefits from the tablets: for some learners, this was reported as enhancing the organisation of learning; supporting greater independence of learning and enabling more purposive learning. Barriers to learning enhancement were also identified, including institutional issues (frustration with technical infrastructure), and individual learner disengagement (distraction and surface engagement with mere ‘novelty’). Concluding that the tablets’ clear benefits were not automatically transformative, and engagement was not uniform, findings are relevant to FE managers and leaders of other institutions considering tablets as a possible learning panacea.

Keywords: tablet computers; learning in FE; ILT in FE

Introduction

This article reports on a research study undertaken in one mid-size English college of further education exploring the benefits of providing tablet computers (tablets) to pilot groups of selected students and their teachers in four contrasting curriculum areas (health, sport, business and hospitality). In England, FE colleges provide post-compulsory education and training, often through skills-based vocational programmes, from basic levels up to foundation degree. They operate in a distinct educational environment, between

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secondary schools and institutions delivering higher education, teaching 16–19 year olds and adult learners. Globally, FE colleges might be compared to technical colleges, or colleges offering continuing education. The college in which this research was undertaken was interested in changing learning behaviours, the extent to which students could be more effectively engaged in learning with tablets, and whether providing tablets to all learners would lead to a more personalised approach, enabling greater success in student outcomes. The college undertook the pilot study in spring 2013, having negotiated an arrangement with Dell, which provided 40 new tablets with Microsoft Office 365 software and Windows 8 operating system.

The substantive research focus was to explore students’ and teachers’ perceptions of the impact on learning behaviour of having access to a tablet at all times. Specific questions from the literature on learning behaviour to be explored included: to what extent might tablets be a panacea for FE colleges to re-engage learners, especially the most passive and disadvantaged; might easy access to mobile learning and support anywhere/anytime offer new flexibilities for FE learners; for FE teachers, would tablets introduce complex challenges to the role (Mifsud 2013)?

Tablets currently offer the opportunity for educational institutions to capitalise on the potential of mobile and ubiquitous learning, by providing students with a relatively inexpensive, ready-to-hand portable computer with a good battery life. Tablets are regarded as an additional ‘always-on’ device to augment and expand the connectivity of students, (Fischer et al. 2013), offering power, flexibility and a user-friendly touch-screen (the new hybrids in the pilot also had a detachable keyboard) to complement, or even challenge the learning enhancement claimed for smartphones and laptops. The mobility enabled by tablets opens up anytime, anywhere learning, across contexts as well as geographies, galvanising fresh thinking about pedagogic practices and technology.

Tablets have been available to students and educational institutions in the UK for over a decade, but earlier studies tended to focus on inroads made into university medical education and enthusiastic early-adopters in some schools. One survey of the available literature relevant to re-engaging young adult (16–24 year old) learners perceived tablets as a niche market (Savill-Smith and Kent 2003). Twining et al. (2006) suggested that the key educational shift with mobile technologies had to be from limited small-scale pilots to institution-wide implementation – and despite tablet popularity with enthusiasts, there were concerns about providing sufficient numbers, the adequacy of support available and the devices’ robustness. Not until 2010 and the launch of the iPad did claims that tablets would revolutionise learning appear any more than marketing hype. What seems to have changed since 2010 is that schools and universities (and perhaps to a lesser extent, colleges) have considered the advantages of students having 24/7 access to a device that potentially provides a platform for collaboration.
(Sullivan 2013) as well as a possible tool for more independent learning (Price and Kadi-Hanifi 2011). The college in this study was interested in the extent to which tablets could support these examples of active learning.

Although the introduction of the original 2010 iPad prompted a rise in individual tablet use among HE students (Culen and Gasparini 2012), this appeared to be predominantly for individualised and collaborative social activity, and universities were slow to adapt to the potential learning benefits. In HE settings, some individual lecturers have sought to adapt to students’ technology-driven lifestyles by issuing tablets to all learners and digitising all course material (Fons 2010). This bottom-up, individually- or disciplinary-driven approach to providing tablets was also reported in Enriquez (2010), who noted statistically significant impacts on the performance (homework, tests, retention of knowledge) of engineering undergraduates – derived from student perceptions of the benefits of an interactive learning network in lectures, which enabled real-time feedback. For engineering students, this provided an antidote to the traditional academic lecture, and was presented as part of a more effective pedagogy needed to retain students in STEM subjects and enable them to succeed. Only in the last couple of years has institutional provision of tablets appeared a serious strategic option.

To date, there has been some informal evidence from HE research studies of an increase in peer feedback and enhanced formative assessment as a result of the blanket introduction of tablets (Mang and Wardley 2012). In addition, in HE classrooms aimed at supporting student writing, shifts to a more collaborative learning environment have been reported following the introduction of tablets (Sullivan 2013). Tablets have also been utilised to develop problem-based approaches to learning (Gikas and Grant 2013), but any causal connection between the introduction of tablets and improved assessment grades remains problematic (Connelly and Gregory 2012). Benefits were reported in a very small pilot with disabled students in HE (Henderson et al. 2013), with usage compared positively to laptops in terms of assistive technologies. Interestingly, a positive attitudinal impact leading to better retention for HE in FE students has been reported, based on what the authors (Price and Kadi-Hanifi 2011) refer to as popular communication technology.

In HE, the tipping point for tablets has not quite been reached. It may be that senior management is waiting for credible empirical research on educational impact, before wholeheartedly embracing cross-institutional provision that would, proponents claim, impact on learning behaviour by generating active and collaborative learning. In addition, a key conundrum is financial – should institutions provide tablets when many students already have their own laptops and smartphones?

Recent years have also seen a developing interest in tablets from a number of schools seeking to build on pupil enthusiasm around their social
use. This recent take-up can be observed globally. For example, an English comprehensive in Blackburn has been reported as seeking to improve results by using tablets to bridge the gap between classroom and home study (Daily Telegraph 2013). A private school in Scotland is reported as equipping students and staff with tablets to boost attainment (Denholm 2013), and Education Scotland is reported to be exploring the potential of tablets in ten local authorities and 20 schools (Scottish Government 2012). In Thailand, the government is reported as promising to provide tablets to all 470,000 first grade pupils (Bangkok Post 2012). Such top-down provision assumes potential benefits for all students.

Only descriptive research studies of limited scope have been reported in school settings, tentatively suggesting a range of positive impacts on learners. In primary schools, pilot studies have concluded that the key variable is the way in which teachers choose to implement tablets in their teaching (Couse and Chen 2010) – thus emphasising the critical role of the teacher in leading on learning through technology, and firmly placing the tablet as an element in an effective teacher’s scaffolding repertoire, rather than an automatic panacea in its own right. Positive impacts on persistence and motivation were reported, but technical issues did challenge implementation. The introduction of tablets in primary schools has also been seen as providing opportunities to document students’ learning digitally (Parnell and Bartlett 2012), thus enhancing teacher assessment.

In studies of tablet use in secondary schools, a number of key variables have been identified: the tablet is most useful when the teachers and students using it are provided with training, the infrastructure that supports it is stable and predictable and each teacher and student has their own tablet 24/7; the tablet enables students to organise learning materials; and the tablet supports note taking, note enhancing and note reviewing (Scheckelhoff 2007).

In the context of tablet use in FE, a number of generic statements have been made regarding colleges capitalising on their investments in information and learning technology (ILT). In particular, a high-level aspiration has emerged to develop an FE system that is fully confident in its use of technology, in which technology-enabled learning is flexible and responsive, in which lecturers are competent in using technology with learners, and which supports equality and cohesion through increasing digital participation (BECTA 2010a, 2010b). Twining et al. (2006) envisaged tangible educational advantages in providing mobile devices for all learners in FE – emphasising an active learner-focused model in which student research and collaboration are key, and suggesting that individual devices empower learners rather than place organisational restrictions on them and that learners show a responsible attitude if provided with a device. Crucially, their report noted that, where students individually ‘owned’ a tablet, estimates of use were far higher in comparison to shared use or if issued by and returned to
a teacher in the classroom – essentially because learning continued at home. However, little published conclusive empirical research on the learning impact of tablets in further education exists, other than enthusiasm for the use of e-books for assignments (Welham 2012) and interest from colleges in the USA aspiring to expand institutional provision. For example, O’Connell (2012) reports that 1,250 iPad2s are being made available for every full-time student and faculty member at Regis College.

**Research setting**

The college in this study operated across three campuses (two were utilised in the data collection) in a regional centre with pockets of above-average social deprivation. Cohorts at the college included 3,000 16–18-year-old students, 5,000 adult learners and 2,000 learners on training programmes. The full-time curriculum was mixed, ranging from L1 (Basic education) to Higher National Diplomas (HE), with a balance of GCSE/A level academic provision and vocational courses including art, design and media, business and management, computing and IT, construction, engineering, hairdressing and beauty, hotel and catering, and motor vehicle.

Prior to the pilot study, students either brought their own laptops and smartphones into class each day or they relied on accessing suites of PCs in the college’s learning resource centres (LRC) in their own time or, if allowed, out of lessons to conduct research. Relying on students’ own equipment offered individuals the opportunity to research in lessons, in the classroom – and teachers utilised this possibility – but offered little chance for collaboration across the different platforms. Indeed, a number of students did not own, or chose not to bring in, their own computing equipment. The centrally organised suite of PCs was relatively inflexible, offering limited time slots in very busy and crowded facilities. Crucially, it meant that students might have to leave the classroom to conduct research – and as all student printing had to be collected from the library, this was not conducive to consistent engagement with ILT as mediated by a teacher.

A 2011 Ofsted (Office for Standards in Education, Children’s Services and Skills) inspection report acknowledged the college’s ambition to improve learners’ experiences and success, and noted that teachers made greater use of ILT in lessons than was the case in 2009. Previously Ofsted had reported a failure to provide learners with opportunities to use ILT and a need to further encourage teachers to utilise it. (Ofsted undertake independent inspection and regulation of education providers in England and report to Parliament. Its judgements are publicly available, grading providers from 1 = outstanding to 4 = inadequate).

The tablet pilot was thus part of a strategic enhancement of learning and teaching that included the embedding of ILT consistently in lessons for all learners. The college consciously chose contrasting groups for the pilot, in
order to explore potential impacts across different levels, different disciplines and different levels of engagement. The health students were considered a mature and committed group, whereas the business students were renowned as poor attenders. Sport and hospitality offered the opportunity to see if learning in largely practical subjects might benefit from the tablets. All 64 students in the four pilot groups were provided with a tablet, and training was incorporated into their first lessons.

Methods

Given the gaps in our understanding of FE learners’ responses to being provided with a tablet, and the lack of clarity on the educational impact such an initiative might have, this study sought to explore changes in perceptions and learning behaviours through a case study in which data was elicited from the students and teachers taking part in the pilots.

In order to scope the main study, a series of iterative data collection methods were developed with the college steering group and used in the same way across each of the four pilots. Internal surveys before and after the pilots provided a sense of where the students perceived themselves to be in terms of ILT confidence and competence. Teachers also contributed to ‘before and after’ questionnaires. These provided a useful starting point and contextualisation for the design of the substantive exploratory element of the qualitative research project, which utilised data captured through a series of focus group interviews (Wilson 1997) with all students who received tablets, and interviews with their teachers.

Qualitative data was collected from the pilots in a series of mini-case studies designed to gain evidence to address the key research question – the impact of tablets on learning behaviour. Each curriculum area was given the choice of how to organise its students into focus groups – so health divided its 17 students into two roughly equal groups (H1 and H2 in the findings), whereas sport decided that, to give quieter students a voice, the 18 students would best be divided into four smaller groups (S1–S4 in the findings). It was planned that the two or three staff involved in teaching the groups would be interviewed separately in mini-focus groups (for example, PC3 in the findings). Only in health was a separate one-to-one interview necessary (H4). See Table 1.

Each semi-structured focus group interview had no fewer than four and no more than nine students, and, for staff, two or three as appropriate. Each focus group lasted around 20 minutes. This data collection method was chosen to encourage self-disclosure in the context of dynamic participant interaction, and to focus on shared issues through collective remembering (Kitzinger 1994).

The intention of the college to provide tablets for a relatively brief immersion period was driven by the desire to create a business case for full
Table 1. Research participants.

<table>
<thead>
<tr>
<th>Date of pilot</th>
<th>Student groups and staff interviewed</th>
<th>Field notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2013</td>
<td>L3 Advanced Care Professions (Health)</td>
<td>H1 (8 students), H2 (9 students), H3 (2 staff), H4 (1-1 staff)</td>
</tr>
<tr>
<td>April 2013</td>
<td>L2 Intermediate Sport</td>
<td>S1 (4 students), S2 (5 students), S3 (5 students), S4 (4 students), S5 (3 staff)</td>
</tr>
<tr>
<td>May 2013</td>
<td>L3 Advanced Business</td>
<td>B1 (7 students), B2 (8 students), B3 (2 staff)</td>
</tr>
<tr>
<td>June 2013</td>
<td>L1 Basic Hospitality (Professional Cookery)</td>
<td>PC1 (7 students), PC2 (7 students), PC3 (2 staff)</td>
</tr>
</tbody>
</table>
roll-out to submit to the college governors the following autumn. Although originally planned as a two-week pilot per group, the researcher was able to extend this to three weeks in order to elicit more considered data. This brought the study into alignment with previous studies such as that of Henderson et al. (2013), which reported on participants provided with iPads for a period of three weeks, given basic training in their operation and instructed to use them freely. Their participants completed an online survey and then took part in semi-structured interviews at the end of the loan period – similar to the approach taken at the college in this study.

The digitally-recorded qualitative audio data from the 14 separate focus groups (and as a result of staff availability, the single one-to-one interview) was transcribed by the researcher and an assistant. The five hours of audio file interview data was presented in 15 separate reports, in all totalling 39,000 words. These were initially analysed by the researcher to identify categories emerging from each group, with tentative, early findings of each pilot group’s perceptions discussed in the steering group meetings to establish consensus on the reliability of these emerging themes. Subsequently, findings were re-analysed to explore themes more fully. Coding was arrived at through an inductive framework informed by case study research (Bassey 1995). Indexicality, in which meaning is elicited by categorising from statements shared by participants through grounded theory approaches, allowed key themes to emerge. The themes were then related to aspects of learning identified in the literature. Comments and responses resulting in a degree of interactive discussion, which were therefore shared across more than one informant, were prioritised over single and discrete utterances.

The theoretical framework used to inform the analysis was developed by aligning Fischer et al.’s (2013) distinction between, on the one hand, the learning process (individual and collaborative knowledge actualisation) and, on the other, mobile technologies to support learning activities, with Koole’s (2009) model for mobile learning. While Laurillard’s (2002) conversational framework and Park’s (2011) model were also considered, both were rejected, the former as predicated on learning in HE and the latter on distance education. Koole’s model was chosen because it is sufficiently generic and offers a simple, three-dimensional model within which the device, the learner and the social environment interact.

Findings
Use of the tablets varied greatly across the four pilot groups. Most striking was the disparity between the care profession (health) L3 students, who engaged in a very purposeful way, enjoyed the learning potential of the tablets and expressed real sadness at ‘losing’ them at the end of the three weeks, and the business L3 students who were quite happy to return them, and who saw them at best as irrelevant and at worst as a serious distraction
from learning. Some of this difference is attributable to pre-existing classroom atmosphere, and to teacher attitude. Those in health robustly ‘bought-into’ the teaching innovation; teachers in business, faced with less engaged students, appeared more tentative (although of course many business lessons took place in rooms already equipped with computers). On more practical courses (sports science L2; hospitality L1) there was a more mixed picture, with far less uniformity of use and in attitude on the part of individual students – some of these learners showed a greater commitment to completing assessed work during the period of the pilot, while others remained unimpressed and interested only in the gimmick of being able to listen to music on the bus. This variety of usage and engagement contributed to a significant disparity in perceptions of the impact of the tablets on learning behaviour.

**Key themes: benefits versus barriers**

Analysis of the interview data across the four pilots suggested three key benefits to learning, attributable in some way, to use of the tablets by students, and one benefit to teachers, but these have to be balanced against three barriers. In reporting the qualitative data, I have chosen to represent consensual voices from each group, rather than skew the findings with individual exceptions, unless the individual voice agreed/disagreed with views in the other pilots.

**Improved learner organisation versus technical frustrations**

A number of students felt more organised in their learning as a result of using the tablets. Such students made better use of their time in and out of college and got more done, utilising the tablets to work in breaks and at home. They saw real advantages in not having to carry so much paperwork in big folders, or textbooks, relying instead on memory sticks and the college’s cloud system. Most (but not all) felt their note-making had improved, and some students reported a benefit in having the tablet when teachers presented on the board and moved on too quickly for them to copy it down (as, it was reported, was customary). In addition, students felt their work was neater:

My typing’s a lot quicker than my handwriting; if you’re listening to the tutors you can take notes a lot easier … normally I just listen and try to remember it … you can just copy and paste into an assignment … you can see the book and see your word document so you can just go between the two and have them both open. (H1)

Some students felt better organised as a result of having all their work in one place:
You’re more likely to lose a piece of paper, but if it’s on a tablet you’re not exactly going to lose it … when I went home I printed out the whole PowerPoint and it keeps everything you’ve written on there. (S2)

The tablets enabled students to save time, allowing other work to be done, rather than just copying, and there was no longer a need to ‘squint your eyes and look at the board’. With the tablets, students reported they could highlight or circle anything they didn’t understand, and make notes in Word and underneath the PowerPoint slides. One hospitality student used the tablet at home from the beginning (‘it was just like small and there’), recognising that it helped them to organise themselves properly to learn:

It’s good not writing notes first and then going to type them up … it was productive…. You don’t need a pen, you don’t need paper any more, which a lot of us would often forget. … It’s an effort to actually write [work] out … being on this, it’s quicker. (PC1)

Students were broadly positive about the ‘ease’ of the tablet, and the more technically confident appreciated the potential its learning:

Well, you’re able to drag from left to right on the screen. You can open up a previous page that you had so you’re able to keep your page open on a Word document and then you’re able to have another window open for internet browsers and things like that. So I suppose it’s easier than sitting in front of a pen and paper. (PC2)

A common refrain issued by hospitality students was: ‘You don’t have to go off and print out a recipe, waste ink at home.’

The key barrier to tablets as a successful enhancer of learning organisation during the pilots was technical. Even enthusiastic staff acknowledged the frustration of initial teething problems, describing time wasted at the start of lessons and the negative impact of students being unable to use the tablets to access Moodle (the college’s virtual learning environment): ‘If it’s not working, what’s the point of having them?’ (B2).

For students, it was more frustration with the speed of the tablets:

The tablets were a bit slow … it kept shutting down … we wasted a lot of time … folders wouldn’t open … things wouldn’t open up properly at home on Moodle … halfway through mine shut. I was doing a bit of work whenever I could, got to the end, went to save, it shut down, deleted the whole thing, so I kind of lost faith in it after that. (B2)

Another student observed:

I had my time plans and all my recipes just before my exam (we’re allowed to use them) and it just reset itself – I was pretty screwed. (PC2)
In contrast, some hospitality teachers saw this as a mere consequence of ‘newness’, and had no qualms about persisting. Staff attitude, in the face of learners lacking confidence and resilience, thus appears very important in terms of sustaining a willingness to learn with the tablets.

**Enhancing independent learning versus potential distraction**

Tablet portability lead to a significant shift in the relationship with the teacher for some learners. All students in health, and most in sport, felt themselves to be learning more independently, to be more engaged and purposeful in their learning and to be proactive rather than passive. Some felt a focus on the tablets stopped peers chatting with one another, ‘so you get more work done … and less people are asking for help off the teachers’ (S2).

Students in three of the pilots voiced the advantage of being able to catch-up with work if absent from college as a result of illness via quick access to uploaded slides. Students enjoyed easier one-to-one feedback, with access to the tablet throwing up areas for discussion, and with students driving the discussion and appearing less passive.

Advantages were reiterated in the e-assessment submission. Some students admitted it was helpful not having to decipher teachers’ handwriting, and assessment feedback was quicker. In addition, rapid and personalised feedback from tutors (via Skype) was valuable in supporting them to finish work promptly when away from college (‘You can talk to people about work if you don’t understand it’). Skype was preferred by sports students as offering instant feedback, rather than waiting a day for an email reply or a week for assessment feedback, enabling students to finish earlier and move on to the next unit. In some cases, the tablets did prompt a re-engagement with assessment:

> It helped me a bit because I wasn’t handing in any of my work. … I wasn’t really concentrating much but now I have the tablet I can do all my work and have my assignments in on time … it obviously makes us submit work. (PC1)

Hospitality students appreciated having greater access to their tutor because they could email from anywhere and at any time, rather than relying on ‘office hours’:

> My unit was due in a few weeks ago so I just emailed it to him and then he emailed me back what I needed to change on it and what I needed to do and then I did it and I emailed it back. It’s just easy to do. (PC2)

Hospitality teachers were convinced that students had been motivated to submit work through Moodle (‘a lot of our students don’t [usually] submit
anything’). Others provided examples of how utilising the tablet had supported non-attenders. One student noted:

It makes you enthusiastic to do more work, as you’re doing it by a different method than we used to. (PC1)

Other students liked not having to wait for another lesson in the computer room:

Even if you get a computer, there’s not much room to put a pad down and then write as well so you’ve got to move everything. … You only get 30 minutes at any one time … if you go in and all the computers are being used, at least with the tablet you ain’t restricted. (S3)

Significantly, in terms of independent learning, on one occasion when there was no cover teacher, one health group worked in the atrium rather than just sitting and talking – which they attributed to having the tablets.

With the tablets, sports and hospitality students reported enjoying researching ‘there and then’ in the classroom. The mantra ‘do this for next week was replaced by ‘get it down now’. The tablets also offered the potential for a tighter research focus in lessons: ‘It’s quite hard to research at home – you can’t ask the teacher if that was right or not – now we’ve got them here, we can ask.’ Researching on the tablets and, for some students, incorporating findings into coursework, was appreciated, even if, ‘I worked on the laptop and, next to it, researched on the tablet’ (B1).

In a full hospitality classroom, the challenge presented by wasting time waiting to ask a teacher a question was mitigated by looking it up on the internet and ‘answering your own question’. The struggling students, waiting for attention, were told ‘look that up’ – keeping them occupied (so teachers perceived) in a more constructive way. Interestingly, a difference was identified between sending students off to research something, who when asked had forgotten many of the answers, and students researching on tablets in the classroom, who almost all answered questions correctly.

Presenting to staff was also considered easier:

You can do a slide show of what you’ve done and they can tell you where you’ve gone wrong. … I … liked presenting to my teacher on a tablet instead of printing. (S2)

However, without the tablets, students in health were concerned they would be told to ‘get your phone out’ to undertake research – thus being faced with the temptation of spending time scrutinising Facebook or responding to personal texts. With the tablets, some students asserted ‘you don’t feel the urge to check Facebook’. There was also recognition that ‘not everyone has a smartphone to connect to the internet’.
There was a clear awareness among students of the danger of distraction posed by Facebook and different websites and some thought the tablets were open to abuse by students playing music and games loudly or being distracted by videos:

Most people are getting distracted by them, and the teacher can’t see what you’re up to … you can half screen it – your work and Facebook on the side. (PC1)

While one hospitality teacher recognised this ‘Facebook challenge’, he was adamant it was a ‘policing’ issue, and gave an example of how he walked up to students he knew were off-task and simply closed their screen lids. Students were aware that the novelty of the technology itself became a distraction for some:

It’s quite quiet until someone in the class decides to play music … [although] after a while they just settle down and do the work. (S2)

In the same subject, a student noted:

I think it’s a novelty thing … everyone was chatting ‘Have you found this’. If we had them for longer, people would be concentrating on the tablets rather than talking to their friends. (S1)

The most scathing comments were made by business students:

Lots of people forgot theirs … some people would just play games. They were distractions. It made little difference to classroom learning … it’s taken up time messing around and trying to connect to the internet … they haven’t been able to teach what they’re meant to in the lesson because we’re fiddling around. (B2)

So while some students seized the opportunity to learn independently with the tablets, the potential for distraction was significant for others. Barriers to learning included accessing off-task material and the frustration felt by some already disengaged students if the networking did not work straight away. Teachers (B3) felt these students were not confident about dealing with unfamiliarity, and challenges were presented when a student forgot a tablet or one broke.

Opportunities for purposeful peer collaboration

The benefits of working with peers in groups were mentioned a number of times. Without the tablets, enthusiastic health students were concerned they would revert to being split up and sent to separate places to undertake research in the LRC (where ‘it takes forever to load computers’) or library. This increased peer collaboration links to students feeling they got more
work done in the three-week pilot – ‘because you don’t have to go out to research’. Interestingly, the first appearance of the tablets produced lots of peer support in sport, ‘showing you how to do things’ – facilitating a greater need to collaborate with peers.

It was felt by sports teachers that uploading assignments to Moodle produced more peer interaction, and the use of starter tasks with a regular leader board produced a more inclusive focus, bringing in quieter students and acting as a confidence booster. These activities also minimised the disruption caused by latecomers.

Hospitality students felt that their brighter peers, who previously would have just sat there having completed a task earlier than others, were now helping other, needier students:

People sort out other people who didn’t understand…. (PC2)

Generally, more students were reported as taking notes than usual, and the opportunity to share work on Moodle was seen as an enhancement to learning ‘(they’re teaching each other’). It was duly noted:

The sessions just go so quickly because they are doing so much work, and they’re able to ask me questions … and therefore gaining more understanding … sometimes the room is very, very silent … they’re all concentrating away. (PC3)

However, one student commented that the tablets:

make you more anti-social … just looking at your screen … we don’t work so well in groups … I don’t think it’s a good thing … we are supposed to be together like a team. (PC2)

Staff perceptions were generally positive about the impact of tablets on the classroom atmosphere. Some teachers noticed that some quieter, more passive students became more likely to complete tasks, and felt more engaged in their learning. This collegiality contributed to a paceier lesson:

It kind of makes us skip through our units quicker so that instead of everyone having to sit there and waiting for like ten minutes for him to finish this one slide, everyone can quickly type it up and then we can move on to the next slide. (PC1)

One student liked the chance to ‘do all my coursework at home so I can get ahead’. This aspect was motivating – students finding it easier to learn quickly with the tablets:

I feel more relaxed doing my work, sort of chilled. ..I play music and do work at the same time, I can concentrate more. (S4)
Supporting teacher planning and pedagogy versus too short a timescale

The staff most committed to engaging with the tablets (care, sport, hospitality) felt their own planning had improved (‘I’m not having to produce loads of bits of paper’) and felt more organised (starting to use task list apps, the timer and puzzle function for starter activities). One teacher emphasised that he did not want to return to iPads (‘no Word, couldn’t do PowerPoint slides and make changes’) and felt he could use the tablet ‘easily’ at home.

Hospitality staff felt that putting material up on screen ‘looked more professional’ to the students. Most students recognised their staff had tried to incorporate the tablets as much as possible into their teaching during the pilot. An example was given of sitting hospitality students in a circle with their tablets but without tables, which produced more student talk than usual, especially when passing round and discussing annotated slides. Another use was in start-up activities: ‘Straight onto Moodle, guys. We’ll recap, there’s a start-up questionnaire … once you’ve done it, submit it … which allows me to mark it’ (S5).

Teachers recognised the benefits of students being able to access information uploaded to Moodle ‘immediately’ and were pleased to be able to help their students to a greater extent as they remained in one room. An example was given of the impact of the tablets on assessment:

> It’s been used where students are actually producing food in the kitchens to a timed assessment … we take a photograph and that has been uploaded onto Moodle. (PC3)

Photography was used a lot in hospitality, an example being using the tablet to demonstrate to a student their ‘messiness in the kitchen’. Students also noted: ‘It’s easier to take pictures in the kitchen as we weren’t allowed our phones in the kitchen’ (PC3).

Health staff utilised the more creative possibilities presented by the tablets, for example taking photographs of students in role plays and of display work. Rather than simply taking notes in gym work, sport students filmed one another working on the equipment and then used the film to explain to tutors more coherently what they had learned and to analyse their own performance: ‘You can see how to improve’ (S1).

Tutoring was considered by some staff to have been more efficient with the tablets; Skype and instant messaging enabled tutors to carry out their pastoral role (including recording attendance) more easily.

However, one particular criticism was that Smartbook and SmartNotes for in-class starter activities were not available. It was felt that Moodle needed to be more integrated with the tablets and the absence of a link to student individual learning plans was considered a serious flaw. Staff felt they had received insufficient training to exploit the tablet’s potential, for example to support the use of notes in PowerPoint. Key technical challenges
for staff included: intermittent WiFi and difficulties accessing ProMonitor (the college’s assessment recording system).

Significantly, all staff saw a need to resource a longer and more extensive programme of tablet familiarity for staff, with technical support to increase confidence and expert practitioner mentoring to enhance classroom competence and creativity. The latter is significant in that a majority of students and teachers were able to reflect that the three-week pilot itself was not ideal:

> We didn’t do the project long enough to affect our learning … we were waiting half the time to get one that was working … I think the last three weeks were a curiosity – for me it slows it down a bit. (B1)

They were more optimistic that the experience would have been different had they started their course knowing they would have access to the tablets for the whole year:

> It would have been better at the start of course – midway through the year you want to bring your notebook because you’ve got the stuff in there you need … no point putting too much on the tablet because you lose it when you give it back, almost doubling your work … it’s a critical time of year. (B2)

If students did receive the tablets from day one of their course, they (and their teachers) asserted they would be more likely to embrace its use as an integrated aspect of learning at college.

**Conclusions**

Given the drawbacks inherent in providing the tablets to only selected groups from four curriculum areas (care professions L3; sports science L2; business L3; hospitality L1) for a three-week period in the middle of the academic year, the results from interviews with students and staff show significant but different perceptions of the impact of the tablets on learning behaviour.

At one extreme, a (slight majority) of students responded enthusiastically, and perceived that learning in and outside the classroom had been enhanced as a result of having personal use of a tablet. This perception was confirmed by their tutors. Flexibility resulted from the tablet’s portability. Evidence showed that the tablets empowered some learners to work more purposefully and more collaboratively; simultaneously, teachers noticed significant improvements in behaviour and learning outcomes and a faster pace to lessons. Some technology-confident staff, open to the creative teaching possibilities of mobile technologies, were positive about utilising tablets in the classroom and, as a consequence, their students were more likely to respond positively to learning with tablets. Some students felt rather special
and privileged as a result of being provided with a tablet: ‘I just like to crack it out in the common room. “Boom”, I’ve got one, you haven’t’ (PC3).

At the other extreme, some (a slight minority overall but dominant in one curriculum area) students viewed the tablets as a distraction from learning and were unable to articulate any educational benefit. At worst, the tablets were regarded by these learners as irrelevant gimmicks, perceived as adding nothing to the educational experience, and their teachers saw little value in them. Three weeks piloting the tablets (often less, if broken up by technical issues or college holidays) did not offer some staff or students enough time to familiarise themselves with the tablets’ potential or to gain confidence in their use to aid learning. When teaching staff were more tentative in their engagement, sometimes as a result of IT infrastructural issues, students were likely to either be disappointed or to have had little chance to use the tablets productively in class. The unimpressed, often the most disengaged, students preferred their own tablets/laptops (I’ve barely used the tablet as I have an iPhone – I’m more likely to use that’ (B1).

Given the potential usage identified in some of the literature, insufficient opportunity to incorporate the generation of user content into learning was apparent, although some video features were utilised. Interestingly, one teacher suggested that the specific needs of ESL students in relation to the tablets was an issue, but it was not possible to follow this up in the research window available. Ergonomically, the view that ‘they’re really heavy for carrying round’ was common. Another student stated: ‘I was a bit bored looking at the screen – you don’t get a handout; I prefer writing it down.’

Evidence from the pilot project has, to a limited extent, aligned with some of the recent academic literature on the use of tablets in classrooms. Opportunities to document students’ learning through digital technology (Parnell and Bartlett 2012) were starting to emerge in health, hospitality and sport, especially through photographing practical work. There was some informal evidence of an increase in peer feedback (Mang and Wardley 2012) but not in terms of formative assessment (too little time in the three-week pilots). Greater congruence was demonstrated in shifts to a more collaborative learning environment (Sullivan 2013), with students and teachers in health and sport (although to a lesser extent according to students) reporting more active participation and interaction with peers and teachers. While interpreting this as nascent classroom networks promoting learning might be an exaggeration, such collaboration does hold potential for the more engaged groups.

Some tentative connections could be detected between use of tablets and accessing e-books for assignments (Welham 2012). Indeed, some students were positive about the e-notebook, claiming to be better organised in their studies as a result of using it. There was no evidence of developing problem-based (Gikas and Grant 2013) approaches to learning (again, limitations...
of time). The conundrum reported in the literature regarding the impact on assessment grades (Connelly and Gregory 2012) could not be addressed within the timescale of the pilot project, although one health teacher did comment that ‘the quality of their work is much higher compared to the other group that hasn’t had access to these tablets’.

The conclusion to be drawn from these pilots is that the transformational potential of tablets in classrooms is possible to identify in some areas, but no clear mandate for automatic learning benefits across the four subjects emerged. The teacher role was challenged, but most staff were willing to rise to that challenge; the recognition that ‘it does more than what I’ve used it for’ offers a clear agenda for enhanced training. For some students, the benefits in terms of learning behaviour were clearly described: enhanced learning organisation and greater learner autonomy; better opportunities to research, present and collaborate; a more purposeful learning environment leading to pacier learning and greater task completion; and a more responsive relationship with teachers. However, these benefits did not occur automatically, and for some students in some disciplines the technical frustrations and off-task distractions resulted in no, or even a negative, impact on learning behaviour.

Notes on contributor
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