Do smart devices make smart learners?

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ABSTRACT

This paper follows up a paper presented at the mLearn 2007 conference (Kukulska-Hulme and Pettit, 2007). It reports on interview data gathered to complement the questionnaire findings reported in that earlier paper. Both papers relate to a study of participants who were each lent a smartphone, which they were encouraged to adopt and embed in their working practices as members of staff at The Open University. The interviews were intended to discover the detail of how participants used the new devices, and to explore which factors motivated and de-motivated them personally as they decided whether and how to adopt the device. Some participants already used a smartphone or PDA, and the findings therefore throw light on their willingness to substitute a loan-device for one they already owned. The study gives evidence of some of the participants' highly personal reactions to features of this particular smartphone, and their preferences in terms of which interventions and support were most effective. It also indicates that the wireless infrastructure was widely regarded as a critical factor in influencing adoption of the device. The findings from the interviews are relevant to a range of professional and educational contexts where participants are being encouraged to adopt a new mobile device and/or extend their mobile practices.

Author Keywords

device substitution; interviews; killer application (reverse); mobile device adoption; smartphone; wifi

THE PROJECT AND THE DEVICE

Forty members of staff at The Open University were each lent a Qtek smartphone and encouraged to use it for personal and professional purposes. Questionnaire and interview data were collected on their attitudes to the project design and the support structures, their reactions to the device, and their experiences of using it. The questionnaire data have been reported elsewhere (Kukulska-Hulme and Pettit, 2007). The current paper focuses on key parts of the interview data.

The touch-screen device was a Qtek 9100 from HTC Corporation. It uses Windows Mobile Version 5.0, and includes a range of software and functions such as word-processing (Word Mobile), spreadsheets (Excel Mobile), File Explorer, Internet Explorer, PowerPoint Mobile, games, calendar, contact information and a calculator. It incorporates – in addition to a phone – a camera with various forms of capture including sequences of images ('bursts') and video. It allows three ways of inputting data – typing on the slide-out qwerty keyboard (see Figure 1), using the stylus to tap the on-screen keyboard, and 'handwriting' with the stylus. In addition to its main storage area, the device was supplied to participants with a 1-gigabyte mini-datacard in the expansion slot. A portion of the card contained video recordings of an institutional workshop; project participants were encouraged to view these, and were permitted to load their own files onto the remainder of the card.

The device has wireless connectivity. Where wifi is available – as it was in participants' offices, for example, and at hotspots on campus – this permits users to browse the internet and access their email via Outlook Web Access. The project did not supply a SIM card, though participants were free to insert one and use it at their own expense. The smartphone is supplied with a CD containing software for synchronization: participants were provided with specially written guidance and screenshots to support them in installing this software on their desktop PC. They were encouraged to install it and to synchronize the smartphone and their PC at times of their own choosing.

RECAP: FINDINGS THAT WERE PUBLISHED EARLIER

Two cohorts, each consisting of twenty members of staff from the Institute of Educational Technology where the authors are employed, took part in the project. The first cohort participated for 5–6 months, after which the project design was adjusted before the second cohort started their engagement of 5–6 months. In our earlier paper (Kukulska-Hulme and Pettit, 2007) we discussed the design of the project and its underlying assumptions, and we reported on the questionnaire data gathered from the first cohort. The data indicated that participants learned about the device – in terms of getting ideas about its potential, and finding out how to operate it – from various sources. Sources included casual interaction with fellow participants, a buddy system initiated by the project, scheduled but informal drop-in sessions, and workshops (for which attendance had been stipulated) run by the authors of this paper. We noted that many participants had found it technically difficult, and in some cases impossible, to connect their device with the (free) wifi on campus, perhaps because of infrastructure difficulties.

Some had commented critically on the look and feel of the device. We also noted that '[o]ver the five-month period, our participants did not move much beyond extending existing habits and using familiar facilities such as calendar, email, notes and camera'. However, a few participants 'had continued to explore new uses, for example connecting to wireless networks to pick up email on the move, experimenting with different means of text entry, creating a PhD thesis narrative outline, taking photos in a "do-it-yourself" store to record measurements for projects, and using RSS feeds to read on the move…'

We subsequently reported on the questionnaire data from *both* cohorts. This paper (Kukulska-Hulme and Pettit, 2008) explored in greater depth participants' responses about 'community, interaction and support aspects of their experience', and on the role of the device in their personal and professional development. The data provided greater insight into the positive role of appropriate support structures, the need to give participants more detailed device-specific advice at the start of the project, and the benefits of open discussion of social issues such as whether it was acceptable to use the Qtek in a meeting (and for which purposes). The data also shed light on the factors limiting the collaboration between participants, such as lack of time, individuals' attitudes, and lack of common objectives across staff in different roles.

Figure 1 (left): Windows menus on a smartphone similar to the one in this study. Right (Qtek 9100): the screen reformats into landscape when keyboard is pulled out. (Left: http://qtek-smartphone.handster.com/software.php?id=90&for=Qtek+Smartphone; accessed 10 April 2008. Right: http://www.gsmarena.com/qtek_9100-pictures-1257.php; accessed 14 April 2008)

RATIONALE FOR INTERVIEWS FOR THIS PAPER

The interviews, which were carried out after participants had completed the project, could obviously be expected to yield a richer picture – in comparison with the questionnaire data – of individuals' experience of the devices during the project. More specifically, we wanted to learn more about a range of issues, including the following:

- **The various ways in which participants learned about the device** – how to operate it, and what it was good for. The questionnaire data had indicated the relative importance and perceived value of buddies, informal groups, workshops etc, and had captured brief comments about how we had designed and implemented the project. We now wanted to hear how these events and groups actually engaged, or failed to engage, individuals, so we could learn more about the implications for design of future implementations and projects. What sparked participants' interest, understanding and enthusiasm? And was the learning incremental, or did it have major 'breakthrough moments'?

- **Their personal reactions to the device** – its look and feel. In their questionnaire responses, a number of participants had indicated their concerns in this area. We wanted to find out more: did any general picture emerge, or were the reactions highly individualized? The importance of such factors has been widely reported in the literature, and we had reported on some of these factors in a separate study (Pettit and Kukulska-Hulme, 2007). In that study we examined the highly varying ways in which participants (all of them alumni on our Masters programme) used their own mobile devices in their personal and professional lives; this links to the next bullet point below.

- **Comparisons with participants' existing devices, and new possibilities**. All participants reported they had previously used a mobile phone (cellphone), and we assumed that they owned one. Some reported using a PDA. We wanted to learn more, through the interviews, about how they decided whether to substitute the project smartphone for their existing device. We expected that the choice would not depend simply on whether the new device had

greater functionality than their existing device: the look and feel, mentioned above, would probably play a part, as would the fact that the project phones were merely on loan, and participants would have to return them at the end of the project. Corlett et al. (2005), for example, reported on a 10-month trial in which higher education students were lent a mobile learning organizer. They reported considerable success, but noted that '[o]wnership of the technology is clearly important. While the PDAs are loaned, students are reluctant to invest time and money in personalising and extending them' (p.170). Milrad and Spikol (2007) reached the same conclusion in relation to the smartphones lent to students in their project. We wanted to find out whether a similar factor came into play in our project.

- **The detail of participants' usage, and how this related to their individual context**. 'Context' in this case would include the physical and built environment both on and off campus: participants were encouraged to use the devices in their professional and personal spheres and to carry the device with them off-campus if they wished to. The context would also include individuals' cultural and professional circumstances, such as the type of work and range of tasks that they carried out, whether they worked off-campus and, particularly important for mobile devices, how often if at all they used the device while travelling.

- **Problems related to wifi connectivity**. The questionnaire data had already indicated that these were significant. We wanted to use the interviews to learn more about how individuals were affected. Again, Corlett et al. report on this type of issue, indicating (ibid., p.162) that '[w]ireless connectivity was crucial to the usefulness of the organiser'.

METHOD: INTERVIEWS

For reasons of space, this paper reports on the interviews carried out only with the first cohort. Interviews with the second cohort will be reported in a later paper.

The interviews were carried out with ten of the first cohort of twenty participants. There were various reasons for limiting the number of interviewees to ten. Resources were one factor: one-to-one interviews, each lasting perhaps three-quarters of an hour and with a recording that can take a number of hours to transcribe, obviously demand considerable staff time. Another factor was that not all twenty of the cohort had persisted with the project: a few had stopped using the device in the early stages. Through the questionnaires we had captured some of their reasons for stopping, and we decided that in the interviews we would focus on those who had engaged more fully.

Participants had written their names on the questionnaires, and we were therefore able to use the questionnaire data to select those we would invite for interview. We selected those who seemed, on the basis of their questionnaire responses, to have developed interesting practices with the device and/or to have invested considerable energy in the project. That still left more than ten potential interviewees: we made our final selection on the basis that it should include both academic (faculty) and support staff (administrative and secretarial grades), and both genders. In volunteering for the project, all twenty members of the cohort had stated that they were willing to participate in a recorded interview and that their transcribed words could be quoted anonymously in publications.

The interviews were semi-structured. They included a common set of questions relating to key issues including the five bullet points above; for example, 'when you were learning to use the device, what or who helped you?' But each interview also contained questions where the interviewee was asked to elaborate on points he or she had already made in the questionnaires. These individual questions were agreed between the two authors of the paper and the researcher carrying out the interviews, with the interviewer having discretion to pursue promising areas as they arose in the course of an interview.

The interviews were carried out on an anonymous basis, although it must be recognized that interviewer, interviewees and transcriber were colleagues within a unit of c120 employees and were therefore known to each other and recognizable. Holstein and Gubrium argue that interviews are 'collaborative accomplishments' between interviewer and respondent (2004, p.141), although we are not hypothesizing as to whether this effect is stronger where interviewer and interviewee know each other. In a project of this kind it also seems likely – perhaps inevitable – that individuals' responses in interviews would be affected by the comments that fellow participants had made in workshops, informal meetings, buddy interactions and general 'corridor narrative' about the device and the project.

The interviews took place at the end of the project when the interviewees had already completed three questionnaires and when most of them had returned the loan-device. Interviewees were therefore being asked to provide their insights into a process that they had started at least six months before the interview. There are obvious limitations in retrospective accounts, and there are particular difficulties in researching the use of mobile devices in informal learning: see, for example, Vavoula (2008). Nevertheless we suggest that the interviews, taken in conjunction with the questionnaire data, provide a valuable component in the overall reporting of this study, particularly in their detail of individual uses and reactions.

INTERVIEW FINDINGS

The findings below are grouped according to the five bullet points above (under 'Rationale for interviews for this paper'). The separation is convenient at this point in the paper, although the elements tend to merge in practice. Interviewees are referred to by number – P1, P2 etc – and for the sake of anonymity are not identified by gender.

Learning how to use the device, and discovering what it's good for

Across the 5–6 months of the first cohort's participation, there were informal and leaderless lunchtime 'Qtek Clubs' every few weeks, where participants were free to drop in and share questions, concerns and tips. These rarely attracted more than one-third of the cohort, and often considerably less – although in the questionnaire mid-way through the first cohort's participation, 12 (60 per cent) reported having participated in at least one club meeting. Interviewees who had attended one or more clubs gave insights into how this type of event worked for them. For example, one interviewee (P1) stated that:

> 'The conversation there was quite encouraging and quite good, because you could try out things with your peers…And it was not too intimidating: rather than going to the technical people who know how, with your peers it's not intimidating because they are also talking about the sort of problems that you may have come across.'

P1 said more about the contrast between learning with peers at the clubs on the one hand, and on the other hand consulting the experts in the department's IT support unit. In relation to consulting the experts, s/he said:

> '…sometimes when you deal with people who…know IT, they just press buttons and things work out…and then you take [the device away] with you and it doesn't work again…you don't want to go back again, because it makes you feel that you are not listening when they tell you what to do…'

P8 was disappointed that most people did not attend the clubs – 'just core few, four or five at most'. Nevertheless s/he found that '[the club] was really good, because we each found different features, and so we could sort of try and help one another'. One thing s/he learned was how to make notes with the 'handwriting' function using the stylus. The crucial part of what she learnt, from someone who knew how to do it well, was that 'you have to be precise, you can't just scribble'.

P10 also found the meetings of the Qtek Club to be very useful:

> '…saying "I found out that it does this", and somebody else sharing that, and checking to see if it worked…I probably would have done a lot less than I did, if I didn't have…you know, my interest was sparked by somebody saying "Oh, it does this. Oh, I'll try that".'

P5 recounts how s/he helped a fellow participant to learn at one of the meetings of the club:

> 'She'd been trying to just do some voice recordings and capture the odd memo here and there and couldn't work out how to do it…and we sat and went through, "Right ok, you go to this part, and you can do it directly from the notes or you can set up the button on the side to do it".'

For P5 the overall learning process was incremental, 'not really a Eureka'. And s/he was largely self-taught: 'I'm quite good at fiddling around with things…and figuring them out.' S/he did not rely on the manufacturer's manual, preferring to 'try various things and see what works'. In order to find out how to synchronize to a Mac, s/he used Google to find an online forum. However, s/he did consult someone outside the workplace who was 'technology savvy'. P6 shared insights with a member of the family who had acquired the same device.

P8 deliberately chose, as a 'Qtek buddy', someone who was more technically experienced. Nevertheless P8 felt the learning was not all one-way:

> 'Yet I could help her as well, so it was like an interaction…we were saying, "Well, what do you think about that, and what do you think about that?" And "Let's try this and let's try that". And that's how we progressed.'

For P8 it was essential to have this buddy, 'because it gave me confidence…I think if you've got confidence to use new technology, you will. You will make the most of it.'

Participants' personal reactions: look and feel

Questionnaire data from the first cohort had indicated that eight of the 18 respondents (44 per cent) had not transferred their SIM card to the Qtek. Of the ten who made the transfer, half left it in the Qtek for the project's duration, with the remainder returning the card to their own phone at some point – perhaps after one attempt, perhaps after a few months. One who transferred the card into the Qtek reported in interview that s/he found the device 'clunky' (P8). P9 had a similar reaction:

> 'I found it difficult to use as a phone…it wasn't a very good phone…for hearing people. Certainly if you're in a loud place, partly because it's so big, and getting it positioned correctly on your head…'

For one interviewee it also had the disadvantage that – when used as a phone and held against the cheek – makeup or grease would be transferred from the user's skin to the device's screen. For P9 the device was too big/heavy for the pocket of a light jacket: 'the jacket would be down by your knees by the end of it.' S/he also reported that 'I almost never used the [slide-out] keyboard on my Qtek, which I was surprised by'; s/he used the on-screen keyboard and stylus. The keyboard (see Figure 1) adds to the depth of the device, yet it was redundant for this participant. P8 had a similar reaction: s/he used the on-screen keyboard and found that the slide-out keyboard was too small for his/her fingers. P7 transferred his/her SIM card into the Qtek, but found the latter cumbersome compared with a conventional cellphone. (The device weighs about 170g with battery; it measures about 109 x 60mm, and is about 24mm deep.)

For P4 the size of the device presented a different problem. S/he described an occasion when cycling home in the dark:

> 'I was in the city centre…and I had to call home to say I'd be late or whatever…just where I'd stopped I felt a bit vulnerable taking [out] this…chunky piece of kit…whereas, you know, my [conventional] phone doesn't attract any attention.'

For P10 there was an issue of complexity: s/he transferred the SIM card into the Qtek but was not sure how to use the Qtek as a phone, partly because there were other functions in the device: 'you know, it's so easy to…enable another function while you're just holding it…I think I have taken a photograph of my ear, actually.'

Substitution for a cellphone? For an existing PDA?

Users' reactions to the look and feel of the Qtek were one of the influences on whether they substituted it for their existing phone. Other factors came into play: given the Qtek's wide range of functions, the device could also potentially be a substitute for a participant's camera or PDA, for example. Even though the camera on this model had the relatively low specification of 1.3 megapixels, it appealed to some. P6, for example, while acknowledging its low specification, valued the camera for everyday use because s/he tended to carry the Qtek around for much of the day. The ability to attach 'fun' frames to images appealed to another participant (P8).

We mentioned in the preceding subsection that some participants did not use the keyboard, and that for them it merely added inconvenient weight and bulk. For P5, however, the keyboard gave an advantage in comparison with her/his own PDA, which did not have a keyboard and required stylus-based 'handwriting':

> '…the little keyboard made [the Qtek] so much easier. If I was walking my way to lunch and I suddenly thought, "Oh, I must remember to…", and with one hand it's quite easy to open up the device, type yourself a note…put it away. You don't have to stop and get out a paper and pen. It's…just much easier, and obviously that facility is not on [my existing] PDA, because it hasn't got a keyboard. [With my existing PDA it is] necessary to get the stylus out and almost write as if you're writing a note to yourself…so it's the convenience of having that as well, also made me use [the Qtek] a lot more, I think.'

For P6, too, the slide-out keyboard (though small) gave the Qtek an important advantage over his/her earlier PDA, which used a fold-out keyboard and was 'yet another thing to cart around'. The qwerty design of the Qtek's keyboard also gave an advantage over his/her current PDA:

> '…the one thing about any keyboard on a device that small [as in the Qtek], is that it's inevitably going to be really hard to type on. So you can't touch type. But you can still, at least, you know if the keyboard is in the right order, which it is on the Qtek, you can almost simulate touch typing. You know where…your fingers should go…Whereas the current device I'm using, the iPAQ, the keyboard is even more cramped and the numbers are actually doubled up on some of the letters which is intensely irritating…So for me the Qtek keyboard was about the best I could have imagined on a device that small.'

P5 valued the Qtek's greater memory in comparison with his/her own PDA:

> 'The main difference was that the Qtek had a lot more memory capacity…and I wasn't restricted on what I could put on it and use. So, for example, with the PDA that I've gone back to using now…it doesn't like it particularly if I put big Word documents on there, or anything with complex formatting. It…goes incredibly slow...'

For some, the combination of many functions in one device was off-putting. For P1, for example, the device had 'too many things'. P3 had a similar reaction: s/he had not used a PDA before and was 'overwhelmed' by the number of functions. This seemed to inhibit exploration of the device; the curve was too steep:

> '…because I hadn't used [a] PDA before, I couldn't work out which parts of the application would be useful for what…There were so many things that it could be useful for, that I'd have to do a lot of playing around…I just thought, "Have I got the time to do this today?", and I continually put it off.'

P3 suggested that a simpler PDA might provide a better starting-point:

> '…I wonder if it's because I haven't had a PDA before, but I think…it was a big step going to Qtek, which is the, you know, fancy end of the spectrum…It might be nice to try a more simple version.'

P9 came at this question of simplicity/complexity from a different angle, in a comment that relates to the way in which one device might be substituted for another, or alternatively might dovetail with existing devices. As reported above, s/he found the phone too big and heavy; this was probably largely due to the keyboard. But s/he also commented that 'they are trying to shoehorn everything into one at the moment'. S/he would have preferred something 'more phone-like…what I would like to have is a single device that was calendar/phone/music. But…what I don't need is a replacement for a laptop'.

Finally for this subsection, it is worth a reminder that – in addition to issues about weight and size, slide-out keyboards, and the pros and cons of various functions – confidence in a device's reliability is important when participants are deciding whether to use the device for storing data. P5's confidence 'dissolved' when s/he encountered a technical difficulty and could not access the diary: 'at that point I went out and re-instated my filofax.'

How interviewees used the device

In earlier subsections we've reported some of the ways in which participants used the device: making notes, for example, and taking photographs. The calendar was used by several participants. Some also reported using the Qtek to carry documents and emails: P9, for example, valued the drag-and-drop File Explorer, which was noticeably easier than on a previous PDA, and s/he used it for transferring documents and particularly music from PC to Qtek. This same participant also managed to download emails via wifi, which s/he described as the most valuable and interesting use of the device. S/he then read the emails in a way that exploited the 'any time any place' potential often claimed for mobile devices:

> 'if I was in town, routinely I'd wander into [a location with open wireless], either get a coffee or not, or sometimes just stand in the foyer and download my email; and get on the bus and read my email on the bus coming home. And I found that extraordinarily useful, as sort of making use of these little moments of time. Otherwise I might have read a paper on the bus or something.'

P8 reported taking delivery of emails by synchronizing to the desktop computer, and then taking the device and reading the emails later: for example, 'I could look at them at home and see what was urgent'. P5 used synchronization to send emails; s/he would write them on the Qtek, but tended not to use the wifi connection to send them: 'It seemed to drain the battery a lot if I left it on.' Instead, s/he sent the emails to the Outbox from where they would be sent the next time the device was synchronized with the PC.

Wireless connectivity

Not all participants were as successful as P9 in connecting to the internet for browsing and emailing. Indeed this issue caused great frustration for many: 'it affected the whole thing for me', said one. P5 made a similar point, speaking of the enthusiasm at the first workshop at the beginning of the project where participants were introduced to the device:

> 'the first meeting where everybody had just got their devices and it was quite new and fresh, and not trying to [criticise] it in any way…but a new toy for people to play with…and we were all looking at the capabilities and the potential of them. I think at that stage people hadn't really encountered the technical issues...'

From a separate communication, it is clear that these 'technical issues' included the difficulties of achieving wifi or GPRS connection, and P5 found this issue seriously discouraging: 'that's what really made me think this isn't as wonderful as I'd hoped it would be.' At least three others reported difficulties and frustration with the wifi connection. P10, for example:

> 'I reckon I must have wasted hours trying to get on the internet, you know everything was so slow…It would have been better just to walk to your PC, or a hot desk…and do it that way.'

It is not clear how far the difficulties stemmed from features of the campus infrastructure or from aspects of the device or its settings, although that distinction is of course largely irrelevant for those individuals struggling to get connected. The difficulties prompted P5 to work with two others. One was P5's partner, who struggled to connect to their wireless network at home: 'I think [the Qtek] nearly went across the room a couple of times.' The other was a colleague:

> '[we had] a little session where we wandered up and down the corridor…and said, "[Wifi] works here. No, it doesn't work here". So that was a nice way of…sharing what we'd got.'

DISCUSSION

A number of themes have been presented in the interview data above. Their emergence was not inevitable or 'natural': they surfaced in an iterative process of reading and re-reading transcripts, of creating strands of enquiry, and of identifying

evidence to cluster around those strands. The earlier questionnaire data will inevitably have influenced that reading process as well as shaping the initial set of interview questions. There is a sense – not surprising – in which the process sifted out the themes that the authors of the paper were looking for. Different themes may well emerge if the transcriptions are revisited.

Peer learning in the Qtek Clubs
With those caveats in place, we believe that findings of this kind are valuable in the detail they provide, and in the affective colour they bring – for example, the strength of feeling about the difficulties with wifi connection, or reactions to the Qtek Clubs. On that last point, the questionnaires indicated that most participants did not attend the clubs, whereas the interviews give considerable insight into the value of the clubs for some of those few who attended. For them, as reported above, it was precisely the fact that the peers in the club were not considered experts, and were not from the IT support unit, that was so valuable. The concept of vicarious learning is useful at this point, with its Vygotskian insights into the benefits for learners of observing and listening to others who are at the same point of learning or are just one or two steps ahead (see, for example, Stenning et al., 1999). Conceivably, too, the social and environmental structures were important in these clubs: sitting on chairs in a circle, with each person using a device and no-one acting as formal leader, is a different learning experience from going to consult an IT expert when one 'has a problem' with a device.

Having said that, it is important to stress that most participants did not attend the clubs, and so the implications for the design of future projects are uncertain. The authors of this paper promoted the clubs as voluntary drop-in sessions, and rarely participated; the issues that surfaced were those raised by the participants attending the sessions. Alternative designs could involve advertising a topic in advance, and/or finding a participant willing to prepare some teaching or provide some leadership on that topic. In addition, participants could be encouraged more strongly to attend – quotations from those who attended clubs in the current study, for example, might be persuasive in the future. But it is not obvious that participants would be willing to find the additional time, especially with a relatively loosely structured project of this type. In data not reported above, some participants commented that they would have liked greater structure – more pressure to attend clubs, for example, and printed or online support material providing a sequence of guided exercises. However, we feel it would be fruitful to explore ways of promoting club-type learning while not compromising its essentially participant-led nature. There are numerous user-led online forums for particular devices, and it would be valuable to compare them with the Qtek Clubs.

The reverse killer app?
The above posits the value of peer learning. However, it is also clear that there was an important role for expert input to help participants to connect to the wireless networks. The wifi infrastructure was improved early in the project, and at least one participant received detailed help from the IT support unit. Nevertheless problems remained, for reasons that are not entirely clear but are not necessarily linked to the device's hardware. What is clear is that this difficulty was a major disincentive for some participants, even though they were willing to persist and to ask for help from colleagues and friends/family. For some, it became what we have called a 'reverse killer app': rather than being the winning application that would enable a device or a usage to triumph, it became the failure that would kill at least some of the initial enthusiasm for the device and for the project. The fact that a number of participants persisted and ultimately failed, suggests that they recognized its potential (a potential that P9, reported above, was able to exploit). The interview data provide a particular insight into the profound impact that a failure of this kind can have, even though one can also recognize that some participants developed 'non-wifi' ways of using the device to bring flexibility into their email practices – by synchronizing with their desktop computer.

Choosing a device for a project
The study highlights the difficulty of selecting a device. Given that phones and PDAs have been widely adopted for several years, participants are likely to have pronounced tastes and patterns of usage. Harnessing or breaking into these patterns is likely to be difficult. This applied to many participants in relation to the phone function of the Qtek: over half either decided not to transfer their SIM card into the Qtek or reverted to their existing phone before the project was finished. This was perhaps not surprising. What proved harder to predict were the reactions to the slide-out keyboard (the keyboard had been one reason for buying the device for the project). The keyboard was as attractive to some as it was an encumbrance to others. If we had consulted participants about which device to buy, this would not necessarily have resulted in greater satisfaction.

In terms of encouraging participants to adopt the 'PDA functions' of the device, there is evidence in the interview data that participants who already used a PDA tended to appreciate the capability of the Qtek: some stated that it was an improvement compared with their own existing device. For those who had not used a PDA, there is a suggestion that the relatively high specification of the Qtek at the time was off-putting: there was too much to learn. It is often argued that users of desktop computers exploit a very small percentage of the capability. This may not worry them, but a mobile device wears its functionality more explicitly – and this may therefore be more challenging and intimidating. The proposal from one interviewee was that a simpler device would have been a better place to start – hence the suggestion in the title of the paper that smarter devices may not encourage smarter learning.

Overall the study highlights some of the issues involved in introducing a new loan-device into the lives and work patterns of users who have already made choices – often backed up by spending their own money – about which devices they need and how they will use them. In relation to learning and mobile devices, Jones and Issroff (2007, pp.248–9) emphasize the importance of facets of ownership – 'physical ownership' of the device, for example. This adds complexity to a project of the kind reported here, where the devices were on loan and had been chosen by the researchers.

The characteristics of the Qtek device, not least its look and feel, were also crucial in whether participants adopted it, and for which purposes. While some participants barely engaged with the device after a brief period, some persisted for much or the whole of the project. In addition, across the total of 40 participants from the two cohorts, seven (18 per cent) volunteered to retain the device and to continue to use it for the second phase of the project. That phase will be reported in a later study.

On not categorizing the participants

It will be clear from this paper and earlier reports that we did not attempt to characterize the participants in terms of their attitudes to the adoption of new technologies. For example, we did not use Rogers' typology of 'innovators, 'early adopters' and so on (2003, with many earlier editions), which has influenced much of the literature in this area. Partly this was because of the difficulties of doing so, and partly because of our view that this would not be helpful. Kirkpatrick, for example, has argued (2001, p.175) that 'I believe we must be careful not to generalize about "staff" or to view staff simply as categories such as resisters, disciples or gurus and that we [should] not assume academics to be passive in the process' – a position with which we agreed. Rather the project focused on which elements would enable participants to learn, and what types of support would be valuable if participants were to embed the devices in their lives. If this sounds self-consciously benign in comparison with Rogers – whose typology is sometimes (mis)used to condemn and criticise – then it was also based on a pragmatic approach in a project with limited resources.

CONCLUSIONS

The paper has highlighted the value of interview data in elucidating the factors that influenced whether and how the participants used the smartphone. It has provided evidence of the value of the peer learning that took place in the Qtek Clubs, while acknowledging the paradox for researchers of trying to promote and organize participant-led activity. It has also provided evidence that the difficulties with wifi connectivity were a major source of frustration that threatened the goals of the project. Finally it has illustrated several of the ways in which the device was used.

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