The place of ICTs in pre-school

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Introduction

Over ten years ago researchers studying ICTs in pre-school settings, especially in the UK, noted there was limited adoption of and staff support for these technologies. In some respects, there is evidence that this has changed with various studies of pre-school practitioners' creative use of ICTs in that setting. This paper, drawing on a recent Australia-UK project called *Toddlers and Tablets*, aims to further our understanding of the processes affecting the extent to which pre-school use of ICTs have changed, ways in which pre-school staff (and children) engage with these technologies, and staff and parent perceptions of the place of ICTs in children's lives more generally and in this setting.

Literature review

The *Toddlers and Tablets* study reported here was specifically investigating touchscreen technologies. Although there is some, but limited, research on smartphones and tablets in pre-school settings (Couse and Chen, D. 2010; Flewitt et al., 2014; Lynch and Redpath, 2014) this paper deals with studies of ICTs more generally in pre-school, since this provides insights into the context in which touchscreen technologies may be adopted.

In addition, it is useful to bear in mind the various ways in which the world has altered since some of the earlier pre-school literature. Not only do children have access to new technologies, like the tablet and smartphone, but the 'digital landscape' more generally that children occupy has changed (Kontovourki et al, 2016). It has been noted that young children grow up in a more media saturated environment, which has led to some more enthusiastic reports asking what happens when digital natives come to pre-school (Zevenbergen, 2007)? But institutional practices have themselves also changed. For example, many UK pre-school studies pre-dated an important Becta report (Aubrey and Dahl, 2008), and when ICTs became part of the curriculum in most UK pre-school settings under the *Early Years Foundation Stage.* The equivalent *Early Years Learning Framework* provides guidelines for pre-school staff in Australia.

Returning to the pre-curriculum era, in the UK there was some opposition to ICT use at all in pre-school, with some regarding it as inappropriate with potentially negative effects for young children (summarised in O'Hara, 2008). Meanwhile in Australia, the other nation participanting in *Toddlers and Tablets*, research from that era point to equivalent outright resistance to ICTs, with initially no funding and no training for pre-school staff (Downes et al 2001).

Turning to teaching about ICTs, in the UK Plowman and Stephen (2005) found that at that time, in practice, most adult intervention in the child's use of ICTs was 'reactive supervision' rather than being proactive– e.g. making sure children took turns to use the technology. There was little 'guided interaction' where the teacher purposefully taught ICT knowledge. At best, teachers gave some basic instructions – e.g. so that the children did not break the equipment. Another, later, study noted how nursery staff rarely encouraged children to use technologies (Wolfe and Flewitt, 2010).That said, in the seven pre-school settings that they studied, Plowman and Stephen (2005) noted that even before ICTs were on the curriculum staff occasionally explained how to use the

software, suggested alternative ICT actions to children, demonstrated how to use a tool, offered remedial help when an error occurred, provided positive feedback on a task completed and moved children to an appropriate level of difficulty.

There were some subsequent studies of nurseries where there were initiatives to promote ICTs, and where staff were more positive about the outcomes (Roberts-Holmes, 2014; Stephen and Plowman, 2008), for example in taking a wider view of learning. The latter study noted that these practitioners reported an improvement in children's *positive learning dispositions* (e.g. confidence, self-esteem, sense of security, perseverance, playing cooperatively, taking turns), in *extending knowledge* (e.g. more competence linking spoken and written language, ability to retell stories, use of language) and in improved *operational knowledge* (e.g. how to log on, mouse control). Meanwhile, a range of studies have shown the different ways in which pre-school practitioners can creatively use ICTs (e.g. summarised in Neumann, M. & Neumann, D., 2017 and Marsh et al., 2018).

Turning to the pre-curriculum era, to ask what factors had a bearing on practitioners' approaches to ICTs, Plowman and Stephen (2005) thought that their limited engagement in part reflected staff's lack of confidence in using ICTs. This lack of confidence was also reported in a Marsh et al., (2005) survey and even more recently in Roberts-Holmes's (2014) small scale study, which noted that many nursery staff referred to the children in such a way as to portray them as 'digital natives'(i.e. competent through having been brought up with ICTs)and, by contrast, the staff felt like 'digital immigrants' (people who had first encountered ICTs later in life)[1].

More specifically, in the UK, Stephen and Plowman (2003) noted that staff in pre-school settings in general did not have a pedagogical understanding of the benefits of ICTs that would frame any intervention – i.e. an understanding of how children could learn through technologies, not just learn about them. In their later empirical study, Plowman and Stephen (2005) found that these staff thought that learning to use a computer was useful for the child's future (for finding a place in an information society) but at that time they did not appreciate that computers could help cognitive development at this stage in the child's life.

Lastly, there are various senses in which practices in pre-school should not be seen in isolation from wider society. The first is that over and above their training and day-to-day experiences, pre-school staff themselves live in a social world encountering discourses about technologies, including moral panics about their adverse effects on children (Plowman, McPake, & Stephen, 2010). Hence, there is a question of the extent to which these practitioners' own specific beliefs in part reflect these wider societal representations. For example, in the particular UK nursery they studied, Wolfe and Flewitt (2010) found the staff were very critical of what they saw as a technology-dominated childhood. The Becta review by Aubrey and Dahl (2008) also noted that while staff were positive about ICTs in general, their concern was about too much use of technologies.

Second, precisely because children are growing up immersed in more mediated environments at home, how much does this have a bearing on the skills and expectations they bring to pre-school? This line of thought prompted one recent review to note: '*young children were portrayed as entering educational settings with specific dispositions as literate beings, that might differ from those identified in the literacy curriculum*' (Kontovourki et al, 2016, pp.11-12). At a general level, the relationship between home and pre-school has occasionally been examined. Various researchers (e.g. Plowman, Stephen &McPake, 2010) have observed that, in general, there is often little continuity between home and pre-school institutions. Children do not have the chance to demonstrate their technological competencies in preschool – so staff do not see these. Practitioners

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[1] These terms come from Prensky (2001). They are cited here because they capture staff's representations of both themselves and children. In fact, these concepts have been criticised (e.g. Stern 2008. Selwyn, 2009)

have a limited knowledge of what children do with their technologies in the home. This was also found in another small-scale study: the staff usually did not know about the children's ICT use at home and, when the parents were asked, the majority said they had never discussed this aspect with the these nursery educators (Aubrey & Dahl, 2014).

The forthcoming exploration of how much things have changed in children's everyday pre-school experiences of ICTs will develop some strands from the above review. That early literature review conveys the sense that there was some variation between different pre-school settings, and the comments of various staff and parents in the study reported here would confirm this. One can also ask whether particular pre-school institutions have policies and priorities (and more or less funds, training and IT support options) that can have a bearing on what teachers within them do to support children's experiences with ICTs. In addition, nowadays, the curriculum in the UK and Australia requires pre-school institutions to promote some understanding of ICTs in principle. But, in practice, to what extent does this influence teacher decisions?

The second set of questions concerns the link between the home and school. What type of knowledge of, but also expectations about, ICTs do these young children bring to pre-school andhow are these managed by staff? How much do staff know about their children's home lives nowadays, how did they build up this picture, and how do they evaluate children's experiences of technology at home? Lastly, there is little research on parents' understanding of what goes on in pre-school, so the article will conclude with some observations about parents' evaluations of ICTs in pre-school and how they interact with nursery staff.

Method

The *Toddlers and Tablets* project had a range of research strands, with only some parts related to pre-school settings. Most of the research involved case studies of families, but those interviews included some discussion with parents about their children's pre-school experiences. In addition, there were focus groups with parents that also touched on pre-school experiences amongst other topics. And in both Australia and the UK there were focus groups with nursery staff, one larger one in Australia, and two smaller ones in the UK, to capture the experiences of two different nurseries (four staff from the Peter Pan Nursery and three from Pemberton Nursery).

Contact with all the families and focus group participants was made via word-of-mouth. The standard ethical assurances (e.g. about anonymity) were given, and all interviews and focus groups were taped and transcribed. The nurseries were given alternative names: if those names are used by other nurseries elsewhere, these studies and insights do not refer to those nurseries or pre-schools.

Findings

Use of ICTs in pre-school

Before looking at nursery staff responses, the parent interviews and focus groups suggested a diverse picture of pre-school institutions' use of ICTs. Some parents were aware of software used in their children's pre-schools (e.g. *Mathletics, Alphablocks*), and reported activities such as singing along to YouTube songs. But others, in both the UK and Australia, reported nurseries where ICTs were rarely used, and the focus groups with pre-school educators confirmed this range of different experiences.

All three nurseries had a tablet in the reception area showing pictures of the activities in which the children were involved for parents to see when they came to drop off and pick up their children. But that was the only tablet belonging to the UK Peter Pan Nursery. Staff there made limited use of ICTs. Some of their equipment (the PC, the iPod) was broken. The nursery had invested in some software for learning numbers, but staff did not use this – they adopted other teaching approaches. However, occasionally staff showed the children things on their own personal laptops (e.g. about the planets, plants in Kew Gardens), which suggests they were not averse to using technology. Ivanka and Maria had been to an exhibition of education software to see what was available for nurseries and subsequently talked about what might make an interesting contribution to the curriculum. But they would need to raise money for the software, so it seemed a long way off. However, at least this showed some of the behind the scenes ('distal') activities related to future ICT adoption (discussed in Plowman, Stephen and McPake, 2010; Stephen, 2010).

Peter Pan staff pointed out that that some wealthier nurseries had tablets that the children could use, whereas (despite getting top grades from the UK regulator, Ofstead) the Peter Pan nursery was financially poor, and the technologies they did have were sometimes secondhand. Despite her reservations about children's use of technology at home, even Bridget, one of the older members of staff who was somewhat critical of ICTs, would have liked more technology for children to use at their nursery. Meanwhile, Ivanka said that she had always wanted a white board, and the staff generally said they would be interested in a *CBeebies* programme[2] where the main character used sign language. These staff had recently decided that they would teach the children to sign, and had already been discussing the fact that they might watch the signing programme.

Sometimes, the staff appreciated not so much what could be done with technology but how, like with non-technology activities, ICTs could stimulate children's imagination. The following is an example of 'playing office':

> Maria (Peter Pan): *We have one broken laptop which didn't work and they (the children) pretend that it's working. And it's much better because it works with their imagination. I don't want them sit in front of the computer here because they do it at home … but they [are] very happily playing office with computers.*

Staff from the Pemberton Nursery reported more ICT use than at Peter Pan, although to put this into perspective all three staff interviewed noted that in the nurseries where they had previously worked they had used even more technology. For example, Carmen's ex-workplace had had a number of tablets with rubber cases so they would bounce if children dropped them on the floor. Sita noted that in her last nursery the regime was different and the children had more free reign to use technologies and they would happily play educational games on their own. However, Carmen reflected from her previous workplace experience that it was also important to have support from IT staff, and that sometimes this does not exist – she had had access to computers and tablets before, but they did not always work. Carmen noted that there is no point on buying ICTs if this support is not in place. In general, she thought staff in nurseries had limited ICT skills, especially older staff, and there was a lack of training when newcomers started in the job. Instead, staff often had to work out how to use the equipment themselves.

The nursery had a visiting teacher once a week who let the children take pictures with a camera. Leo noted that he had tried to get the children to try out a metal detector in the garden but its batteries had failed. And later he remembered that the children had used the microscope to look at things in the garden: they had taken photos of plants, loaded the photos onto a computer and

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[2]Cbeebies is one of the channels offered by the BBC, the UK's public broadcaster.

printed them out. As in the Peter Pan Nursery, Pemberton staff used their own personal ICTs. Leo sometimes plugged his tablet into a boom box for a children's singalong. Carmen let the children look things up on her tablet (e.g. when one child was interested in China), and also showed them the photos and videos that she had taken of the children as part of the on-going assessment of their development. She had demonstrated the special effects options on the tablet to produce images (e.g. infra-red), and had let children use software on her tablet (e.g. matching the images of jungle animals to the sounds they make).

The Perth nursery had 10 tablets, one in reception and three in each of the rooms. They were mainly used as audio-visual aids, for example in a 10-15 minute group session when the children were singing along to a song on the tablet, watching a slideshow display of the pictures they had taken, or watching a short film. One mother had taken pictures of her son on holiday and sent them on to the nursery, so on one occasion the children looked at these on the tablet. And it would be used to look up anything children spontaneously asked about – such as when one wanted to find out something about Singapore because his friend was going there. For this purpose, using the tablet was more convenient than going to the nursery library. Staff had mixed feelings about using the tablet as a talking book – one older member said she always preferred to read a paper book, but another noted the tablet used in this way was more attractive to the children.

> Kate: …*and so I read the book and I said: 'OK, we've finished a book and then we can have a look to see it on the tablet'. Well halfway reading the book ... three or four kids had wandered off and then as soon as I got the tablet they knew the book was finished, got the tablet, they came and sat back down and sat through the whole thing.*

The were some educational apps (e.g. matching things) that staff sometimes used with children but they did not want to overuse the technology, as Dawn explained

> Dawn: *We've got to be very careful with apps. In our industry we can link so much into technologies (…) you do have to minimise that …lots of parents tell us (their children) have a lot of screen time so they do like that minimised here. And children get lots done ... not saying screen time isn't educational but the hands-on learning, old school way …there's so many things you can do with that.*

Staff from all three nurseries raised a similar point about why they only allowed children to use technologies under supervision, rather than simply letting the children play with them (the exception being that Perth staff sometimes allowed the children to take selfies with the tablets):

> Bridget (Peter Pan): *When you've got too many children swiping, swiping, swiping, nothing, it's not ... nothing gets learned like that.*

> Carmen (Pemberton): *I don't let them play (on my tablet) very often 'cause it gets swamped, everybody wants to play it.*

> Ivanka: (Peter Pan) (The children say) *'I want to see Peppa Pig', 'I want that' …Yeah, they will shout at each other like that. 'I want it', 'I want it', 'I want it'. And you say: 'No, no, no'. But it's on us to make it more interesting. 'Come on, I would like to show you something really cool'…*

In the latter example, staff at the nursery wanted to use the computer for different purposes compared with what the children would have liked, preferably linking its use with some activity like creating images on screen, where the children could develop their imagination. Ivanka added that if staff could persuade children to try something out, the children were usually not bothered that they

had not been shown what they originally requested. These three examples suggest some effects of home experiences of ICTs: the children are familiar with and eager to use the technology; they know about practices such as swiping; and they have expectations about what they would like to do with the technology. But then staff have to manage the demand this creates with very limited resources– and hence they chose to only allow supervised access and persuaded the children to try out other activities.

There were other considerations shaping the form of access allowed to children. At Pemberton, the children were given some choices– e.g. about what music was played –but they were not allowed to 'YouTube hop', so that the children did not encounter '*the dark side of YouTube'* (Leo). Time was another issue:

> Ivanka (Peter Pan): *I grab the computer, call a couple of children, two, three older ones and say: 'Would you like to help me type labels or notes for our display?' And they said: 'Yeah'. One by one and each of them types one or two words you know …which takes them ages to find the letters.*

Time issues arose in other ways. The week before the focus group, the Pemberton staff had received training on making animations with the help of ICTs, so they thought there was a clear expectation that they should find ways to use technologies like tablets in a creative way. Leo had even thought about how to role play with the children, video the outcome and edit the video on the tablet and then show it to the children. However, Leo also noted that one barrier to doing more with ICTs is that innovations need staff planning and, once again, time–when time was a '*precious resource*'. In addition, these larger projects with animations need much more planning and sometimes teamwork on the part of the children. Leo observed that if a project takes 20 minutes or more, the children start to lose interest, they cannot concentrate for that long – they like to see instant cause and effect, and receive instant rewards which, he thought, is why gaming was probably more appealing. That said, both Carmen and Leo appreciated that if the children could actually be persuaded to persevere, then they could learn that there is a longer term reward and change their behaviour in the future. Just as they had learnt sharing and turn taking, they could learn to be patient and increase their attention span. In other words, the children could learn new dispositions through their technology use (Plowman, Stephen &McPake, 2010; McPake et al, 2012; Stephen et al, 2013), just as they could learn them through other activities.

Although ICT use was on the curriculum, staff from both UK nurseries did not prioritise teaching children how to use the technologies, reflecting on the fact that the regulator, Ofsted, had new priorities now (e.g. Carman pointed to maths, Ivanka to anti-radicalism). In fact, during their last inspection at Peter Pan, Ofsted staff had not asked any questions about ICTs. A few years previously, when ICTs were more of a priority, the Pemberton nursery staff noted how the nursery had bought various equipment that was now used less: which they lamented. This shows how wider policy, or the implementation of that policy, can have a bearing on practices in nursery schools.

The other factor was that the curriculum 'ICT skill requirements' at different ages were quite low. Carmen, from Pemberton, cited some of the objectives in the focus group meeting, adding that by the time children were in nursery school they could already meet those (very simple) targets because of their experiences at home (also noted by Ivanka from Peter Pan).

> Carmen: *As soon as you sit them at a game on the tablet and they start playing the game then you can say they've achieved 'using ICT hardware to interact with age appropriate' software. So it's quite easy to find evidence.*

That prior experience also contributed to the fact that both sets of nursery staff did not have to invest a great deal of time teaching about how to use ICTs, focusing more on how to teach about other things through using ICTs. Meanwhile, Leo from Pemberton said that he made the assumption that ICTs were already '*covered*' at home – i.e. the children were already experiencing them and learning how to use them at home– so he did not have to make such an effort to teach that skill at the nursery. Of course, that assumes that all children have such experiences at home, but as Perth staff observed:

> Abbey: *Then there's a couple of kids that say 'I don't have an tablet' or 'I don't use Mummy's phone' or whatever … and when you've got the tablet out you can see them just sort of standing watching because it's all a bit new for them and you know that they're just specific families that don't have a lot to do with that technology.*

Lastly, Leo noted that priorities depended on the ethos of different institutions and that Pemberton was very '*outdoor oriented'*. He referred to a study showing that many children lacked outdoor activity – hence, he appreciated the emphasis on engaging the children in activities they encountered more rarely outside the nursery. That reflected a more general desire to expose children to experiences that they had less of at home. This is important because it shows how the general priorities, rather than views on ICTs per se, may lead to a non-ICT focus.

Relationship between home and school

How much staff knew of children's use of technologies in the home varied. As noted previously, the Australian parents sometimes commented on their children's screen time, and staff at the Perth nursery noted how children themselves often told them what they did at home. At the Peter Pan nursery, in both formal and informal meetings, parents and staff mainly talked about what stage the child had reached and what the child was doing in the nursery. So, it appears that these staff had limited knowledge of children's use of ICTs in the home from speaking directly to parents (Plowman et al, 2010), even if they did get some impressions from the ICT competencies that children displayed in the nursery.

Meanwhile, the Pemberton nursery staff described how parents were kept informed about their children's life in the nursery (although this was more general, not specifically referring to ICTs):

> Carmen: *We take lots of photos of the children doing their learning and we upload them to Tapestry and we assess the children against the curriculum and write a description of what they were doing...the parents have a look in, so parents can see images and comments about what the children have been doing, as well as being able to visit there as well, and talk to us.*

> Sita: *When they come to pick children up we usually give them feedback.*

> Leo: *Yeah, see what they might have been doing, who they've been playing with, if they've made any friends …like, if they're just settling and they don't know anyone.*

Some parents asked what their children did in the nursery and they were entitled to come and see and join in – and a few did so occasionally. The parents sometimes added photos to the Tapestry system (e.g. of holidays) so this was one way for staff to know what children were doing at home. Some parents had asked what the children used at the nursery in order to arrange for an equivalent version for the home (e.g. a toy kitchen). But that did not necessarily work out – in this case, the kitchen was less interesting to play with at home, when the child was without peers. Mimicking the nursery in the home was not a straightforward benefit because the setting was different, with

different expectations – e.g. pre-school was a space to play at adult activities, a space to be with peers of the same age (which was different being at home with an older or younger sibling).

As regards ICTs, staff knowledge of children's experiences outside the nursery often came from moments of observation.

> Sita (Pemberton): *And when we go home visit (before the children first comes to the nursery) I've seen most of the children with their own tablet (…) I've been to so many and I've seen all the mums just give them tablet or a phone to keep them quiet.*

> Leo: *I do see some of them when they get collected, they're just like going for their parents' phone, they're like: 'Okay, I'll have this now…You've had it all day, now it's my time.'*

Ivanka and Bridget from Peter Pan had seen the same type of thing and were very critical of parents using ICTs to occupy children. Although Ivanka said she could understand parents doing this under pressure, she was worried that the child would expect to have these technologies all the time. In addition, she was critical of parents who were '*too involved*' in using their technologies themselves rather than interacting with their children.

> Ivanka: *And also the parents do it as well. We've got signs on the door: 'Please do not use your mobile phones during the nursery pickup and drop-off'…. and we've got picture there of a mother typing on the phone and child standing there and crying. Yeah, we don't want those parents to come to the nursery with ... they just came, talking to somebody, didn't even look at the child, didn't even speak to the child and we don't want that.*

The Peter Pan staff had a story about one particular child that illustrated how staff sometimes ask parents about their children's technology use if there is a perceived problem. In this example, they had specific concerns about the child's '*overuse*' of ICTs, but the discussion also reveals some educators' adherence to common views about the potentially anti-social consequences of technologies documented in the literature review.

> Bridget: *We've all had meetings recently asking what the children are currently doing at home. I mean one child in particular spends a lot of time on a tablet and I think it has impacted on his social skills to the extent that he's …*

> Ivanka: *He's a little bit lost. Doesn't speak because nobody talks …*

> Bridget: *Yeah, but his dad says that on the tablet he's very capable.*

> Ivanka: *Oh, I bet he is.*

> Bridget: *So sometimes I think ... well in my opinion, these things can be quite antisocial …and the children are very young.… because it's such isolating thing. It's ... you're not involving ... you're not interacting with other children.*

> Maria: *Definitely.*

> Ivanka: *You know, he will be, maybe, able to complete his programs but he doesn't know how to put his shoes on, he doesn't even like...he will be standing like that [holds out her arms] waiting 'til somebody will dress him*.

Moreover, at least some of these staff, like many commenters, make the assumption that technology use is inevitably isolated. For example, later in the interview Bridget says that '*you can't replace human interaction and you cannot substitute that with machines*', which assumes human

interaction is never taking place when ICT is being used at home. In fact, in other publications from the *Toddlers and Tablets* project this was not the case, and parents were often interacting with their children when they used tablets, for example (Haddon and Holloway, 2018; Stevenson et al., 2019).

Lastly, we have the perspectives of parents, from the individual family interviews, focus groups and in the Australian case, from staff reports of what parents had said. In general, parents were very positive about pre-school (both nurseries and toddlers groups)for a variety of reasons: because they thought they were richer environments, materially and in terms of activities; staff gave their children sensory stimulation; they valued their children being in a structured learning environment; many thought the staff were more aware of learning principles than they were; and pre-school experiences enabled their children to socialise with other children their own age. However, several noted that staff had limited time to interact with parents because they were very busy.

There was a mixed picture as regards the use of ICTs in pre-school. Some UK parents talked of nurseries where they had seen many screens, and where nursery staff encouraged the children to try out things in the home (e.g. using Google map). Other parents reported nurseries where not many ICTs were used, and made the same point as Carmen about the limited qualifications of staff. The parents were themselves ambivalent about technologies, wanting children to be comfortable with ICTs, and appreciating that they sometimes learnt things though using them (e.g. numbers), but parents also had a range of reservations. For example, when the pre-school was encouraging children to try using ICTs in home, Liza noted that the teachers made assumptions about what type of technology was available. She was concerned that a lack of the right level of ICTs might disadvantage some children.

> Liza: *I try not to ask too much, not question the place of technology … so for example when I asked the teacher: What if a child doesn't have …? I said: 'What sort of screen do we need for that?' And she looked at me like … the assumption was … this was an irrelevant question because she hadn't thought of that… and I didn't want to come across as the annoying parent.*

Helen worried that when ICTs were used in nurseries it was because the teachers were being a bit lazy, and then the technologies were too tempting. She and Claire both thought that ICT use at home time created a problem for parents when they went to pick their children up.

> Helen: *I think teachers must also use it as a prop …'cause as soon as they're doing something like with a tablet or computer, they've got that child's attention …because they love absorbing that information, they love seeing it in that format. (Then) at the end of the day when you go to collect them they're always watching Alphablocks … and they're all just there kind of mesmerised by it. As you come to collect them they don't want to leave, they want to carry on watching it even though you're desperate to get home.*

> Claire: *… if they do their music in school, and if they're watching a screen just before you pick them up, and that behaviour change that you* (Helen)*said after they've been removed from the technology …that's actually quite difficult for you then …you've got the whole way home having that removal …*

The other problem for parents occurred at the start of the day when nursery staff used ICTs to distract or occupy children at the point when parents dropped them off at nursery. Parents wondered what type of message this was giving to the children, and whether that could create problems for children and families in the future.

Helen: *When the (children) have trouble with being dropped off or don't want their parents to leave (the staff) will get a tablet out and put on like Fireman Sam or whatever to distract them so that the mum can leave or the dad can drop them. Because they are suddenly occupied by watching something on a tablet …which is really young, straight away, to be like: 'Here you go, here's a treat, watch this, don't worry about your mum leaving'.*

Claire: *Yeah, there should be other sort of tools that they possibly use first... like when I had all the problems dropping off Harry at Jelly Beans, they didn't take very long to distract him with a book or with a pen … but then the problem is if they use the TV then every day (the children) are going to be like: 'If I make a fuss I get to watch TV so I'll make a fuss every day'… it's difficult to know when you're creating a behaviour and solving a behaviour.*

Kate: *If you're distracting children just with a screen, it doesn't kind of quite feel right. If you're like: 'Hi I don't want the teachers doing it, that's my laziness'.* (Other parents laugh, as if knowing what she means) *'Don't you do it as well.'*

To really appreciate the last comment, the parents in this project often had an issue themselves with occupying children with ICTs. They did it because at times it was practical, but they often felt guilty about it, especially in public spaces, wondering what other parents thought of them (Haddon and Holloway, 2018). As a result, when they feel that staff are using the technology in this way parents' evaluations may reflect the fact that this ICT use is problematic in their own home lives.

In fact, there is another issue where parents' concerns about what they should be doing as parents spills over into their reflections on pre-school: screen time. Over the years there has been much advice about how much time, or really how *little* time, young children should be allowed to watch screens of any kind. The Perth nursery staff noted that some parents had, in their eyes, misleading perceptions that the children spent too much time watching the tablet:

Carey: *I did have one time, (when a parent said) 'Are they watching the tablet the whole day?' And I say: 'No, we just started now because I want to get everyone's attention before they go home, I want to prepare: they all go ready for home'. But the parent is thinking we put it on all day 'cause the end of the day ...*

Trisha later clarified how the tablet use was limited and educational:

Trisha: *I think initially you do get the odd families that are just like, they do not want any screen time, but generally by the time they're (the kids are) in this room I think they've understood that what we use them (ICTs) for is for education, it's not babysitting, it's not the TV in the living room and they're not ... go hours and hours and hours of time here…you know, they might get you know, a three or four-minute story, and that might be it for the entire day.*

But sometimes the parents' reaction was more subtle when they became aware of their children using screens at school, as this UK mother explained.

Chloe: *Cole, my son, woke up this morning said: 'Oh Mummy, when I come back from school, I know you don't let me use your phone but Mummy, could I watch something about the Blue Planet? We watched it yesterday at school'. I was just like 'Oh, oh okay, that's fine.' (…) But I was so surprised when he said: 'Mummy, I was on YouTube' and I was like: 'What' ...I'm trying to limit you at home and then they watch ...' I felt so like ...not betrayed but I thought like: 'Oh like I would have like to be informed'… I would have never said 'if you're watching it take Cole out of the class'… I would have never said that… but just to be informed.*

> Claire: *Because if you are limiting how much screen time they have and they've had ...I don't know, for argument's sake, not very long but probably like 20 minutes at school…do you then include that in your allowance of screen time in a day if you are controlling that? I don't know.*

Finally, as Chloe's comment that she would have been liked to have been informed about ICT use in pre-school indicates, parents are concerned about the fact that home and pre-school can be two separate social worlds with limited communication between them, but flow on effects.

> Claire: *There's an assumption that we're all very comfortable with the amount …the technology as a learning tool. There's never been a conversation you know: 'Are we okay with us showing YouTube'.*

Conclusions

Although this is only a small study, covering a few nurseries and pre-schools, this paper provides some idea of variation and also the nuances of ICT use with institutions. Even in the Peter Pan nursery that made more limited use of ICT, staff had some ambitions, and even used their own equipment. The Pemberton nursery staff had used ICTs more in the past, including when it was more in vogue with the regulator, but their prioritisation of out-door activities for children limited time for ICT use, as did time constraints generally when some activities demanded preparation by nursery educators. However, Pemberton staff did do a certain amount with a range of technologies and, like the Peter Pan staff, they used their own equipment sometimes. They had ambitions to do more and, at the end of the focus group, continued to talk amongst themselves about what else they might do. The Perth nursery specifically had more tablets and used them for a wider range of purposes, but they nevertheless limited ICT use.

In these particular settings children did not have free reign to use technologies: ICT use was very much supervised, and this in part reflected the experiences, knowledge and expectations the children brought from home – they would compete for use and try to replicate what they did at home if staff did not persuade them to try new things. This situation looks somewhat different from that described in the older literature reviewed.

Generally, in the examples provided here, staff used ICTs to achieve learning goals, in contrast to earlier studies. For the most part staff still did not prioritise teaching children about using ICTs (although Leo was showing them how to upload and print, and had aspirations to teach video editing). This lack of emphasis on ICT skill-development reflected the knowledge children brought from home, and the ease of demonstrating achievement against the rather low curriculum targets. Further, the ICT section of the curriculum seemed itself to be less prioritised nowadays. Overall, the emphasis was on teaching children through activities that they did not do at home, exposing the children to new experiences and, in this respect, educators seems to believe that ICTs were already 'covered' in the children's home life.

As regards the relations between the home and pre-school, parents and staff did have some communication, staff made gestures to engage with parents and some parents followed this up. But contact is often limited and, in the UK studies, was more general than discussing ICTs. This is in many ways similar to the situation that was reported in older literature reviewed. However, more specific issues now exist, in part reflecting wider discourses, but also based on staff observations about ICT use. Staff were sometimes critical of parents occupying children with technologies, or of the fact that parents were too pre-occupied with ICTsthemselves. Staff were sometimes concerned that children's use of ICTs use outside the pre-school could have a negative effect on their sociability and social skills.

The UK parents' view seemed to be that pre-school was still a separate world. They were in general positive about their children's experiences there, but were sometimes surprised to find out about ICT use in that setting. In part, these parents brought their own concerns about how they as parents should manage their children's ICT use to their evaluations of ICT use in their children's pre-school. This was particularly clearly illustrated in the cases of pre-school educators using ICTs to occupy or distract children at drop off and pick up times, and with respect to the issue of limiting screen time.

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