

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 (e.g. confidence, self-esteem, sense of security, perseverance, playing cooperatively, taking turns), in (e.g. more competence linking spoken and written language, ability to retell stories, use of language) and in improved (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

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, Ofsted) 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 programme² 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):

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

printed them out. As in the

had not been shown what they originally requested. These

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 ' ' 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:

Lastly, Leo noted that priorities depended on the ethos of different institutions and that Pemberton was very ' '. 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.

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, i

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):

Leo:

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 ' ' in using their technologies themselves rather than interacting with their children.

Ivanka:

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 ' ' 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:

Ivanka:

Bridget:

Ivanka:

Bridget:

Maria:

Ivanka:

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 ' ' , which assumes human

interaction is never taking place when ICT is being used at home. In fact, in other publications from the 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

Helen:

Claire:

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:

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