iPads and other tablet devices

This fact sheet will help answer some of the questions that teachers and parents have about using iPads and other tablet devices in the classroom and at home for students with autism.

There is increasing interest in the use of tablet devices with school age children. Some schools are already using them, many parents are interested in accessing them and early intervention services are recommending them for some children. There has been media coverage of the topic and the internet provides many recommendations about devices and applications (apps) that may be useful for students with an autism spectrum disorder (ASD).

While it is clear that iPads and other tablets are attractive to many children, not just those with autism, it is important that the role and use of tablets and other devices is clearly considered. This is particularly important when tablets are being recommended as communication and teaching devices.

What is a tablet? What is an 'app'?

A tablet device is an all-in-one computer that is accessed via a touchscreen operated by the user's finger tapping on or swiping the screen. There are a number of different types of tablet, one of which is the iPad by Apple. Tablets are used to access the internet and as a platform for pieces of software known as 'applications' or 'apps'. Tablets may be easier for many people to access because of the touchscreen (rather than using a mouse or a key board) and because they are highly portable.

A simple search of the Apple 'app store' using the word *autism* gives more than 1200 different options related to autism.

Tablets as communication devices

Traditional voice output communication devices have, for many years, provided specialised augmentative communication options for students with autism and other disabilities. These devices are often highly individualised and robust. They are generally supported with training from a range of professionals. They can, however, have drawbacks including lack of portability, weight and cost (AAC-RERC, undated).

One of the important uses of tablets and smart phones (which, although smaller, can be used in the same way as tablets) has been as communication devices for people with complex communication disorders. Using specialised apps, users are able to select words or build sentences by tapping on pictures that are then spoken by an electronic voice, providing a means of communication.

For some students, tablets can provide an economical, flexible and socially acceptable means of communication that have multiple functions extending beyond augmentative communication (Sennot & Bowker, 2009; AAC-RERC, undated). The devices are often lightweight and highly portable, making them appealing to many students, easy to operate and providing a high degree of 'normalisation' of augmentative communication. In addition, features of the iPad and other tablets, such as the ability to take photos and videos, mean that communication can be highly personalised and relatively quickly

modified. Direct touch access (rather than mouse, switch or keyboard) makes the devices highly accessible. The visual displays are also often highly appealing and motivating for students with autism.

It is important to note, however, challenges such as access, glare, fragility and sound quality may impact on usage. In addition, because the systems are so easy to buy and use, they may not be specially designed or supported for the person using the device in the same way as a traditional device.

What does the evidence say?

The ability of students with ASD to use traditional speech generating devices, and the positive impact this can have on communication and other skills is well established (Ganz et al., 2012).

There is widespread and encouraging anecdotal information about students with autism learning to use tablet devices to communicate; however, there is still limited scientific research. Recent reviews have confirmed that students with autism and other developmental disabilities can be taught to use a range of speech generating devices (van der Meer et al., 2011) but only a small number studies have looked at using tablet devices specifically.

One such study, by van der Meer and colleagues (2011), taught three students to use a small hand held device (iPod Touch, a phone-sized device that can access apps, games and the internet) to respond to a verbal cue ('Let me know if you want a snack/toy'). A trainer initially physical prompted the students to touch the device and access the appropriate symbol. Two of the three students became proficient at using the device although it is important to note that systematic and relatively intensive training was required. There was no information about whether the students learned to use the device to request in everyday contexts. The third student, who had the most limited communication skills prior to the study, did not learn to use the device even after 40 training sessions, indicating that there are likely to be some baseline skills required to learn to use these types of systems.

A follow up to this study (Achmadi et al. 2012) looked at teaching two students more advanced operations such as turning on the device and following multiple steps to make a request. Both students learned to unlock the device and access multiple pages to make requests but, as in the earlier study, there was no discussion of spontaneous use beyond the training sessions in which communication partner had indicated they could make a request ('Let me know if you want something').

Other recent studies have compared speech generating devices (iPods and iPads) with signing and picture exchange (van der Meer, 2012a; van der Meer, 2012b). This research found that students preferred different modes and that their preference was related to how quickly they learned to use the communication system. For most students, the iPod was the most preferred and most easily learned option but the authors made a note that there was not a single system that was suitable for all students.

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Tablets to support features of autism

The number of apps that have been developed with the aim of supporting features of autism is enormous. Some of the purposes of these apps include:

Communication:
- Creating visual supports
- Creating schedules and timetables
- Sharing information between home and school
- Functioning as a speech generating device

Social interaction
- Providing a platform for social stories and video modelling
- Social sharing and turn taking
- Social skills modelling (facial recognition, emotions)
- Programs that purport to teach eye contact

Behaviour support
- Tracking and monitoring patterns of behaviour
- Providing behaviour supports such as reward charts
- Diaries, journals (using alternate mediums)

Sensory processing support
- Visually stimulating apps
- Calming and self-regulation

There are a number of lists of apps that are in circulation. See the end of this article for further information.

What does the evidence say?

There is currently limited scientific research that has looked at the impact of tablets and other devices on these features of autism. There are certainly many anecdotes about how effective the apps can be and there has been a great deal of media attention, including television reports on the program *60 Minutes* in both the US and Australia. Using iPads and other tablets as speech generating devices for communication now has an evidence base as described above; however, there appears to be limited literature at this point in time that has specifically evaluated the effect of any other social, visual communication or behaviour support functions (Kagoraha et al, 2012).

One study that has tried to address this gap is a recent, as yet unpublished, study that has looked at the effect of iPad use on the rate of goal attainment in communication, behaviour and social skills in 34 students with an ASD in autism-specific education settings (Logan, Angus & Smith, 2013). This research found that the trial was followed by a substantial increase in goal attainment in communication and behavioural areas, while there was more limited data on social skills goals. Overall, the authors concluded that the majority of the participants had greatly benefited from the trial, but they caution that further analysis is required to evaluate the effectiveness of particular selected applications and their impact on ASD related skills.

In general, because apps targeting the core features of autism are so numerous, so popular and so widely recommended in a variety of forums, it is important that teachers and parents carefully evaluate the needs of individual students, the most appropriate app available and the potential benefit for each student.

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Tablets to support learning and classroom functioning

Tablets are already being widely used in both specialist and mainstream education settings to provide new or alternative ways of learning a range of skills. Apps have been developed that provide learning platforms for any number of curriculum activities across the age range. These activities include phonics, sight words, spelling, letter and number recognition, vocabulary development and maths activities for younger students as well as science, geography, history and language for older students. Tablets are also used as e-readers, video and slide show tools, and to access the internet for research and other purposes.

What does the evidence say?

A large scale trial of iPads by the Victorian Department of Education and Early Childhood Development (DEECD) in 2011 looked at the impact on learning of iPads in the classroom, in both mainstream and special education settings. The study aimed to investigate the iPad's capacity to increase independent learning and motivation, to improve teachers' capacity to plan for and meet individual needs, to extend learning beyond the classroom and improved parental engagement. Positive outcomes were found for all these aims but the researchers noted that that quality teaching was the factor which enables the iPad to be used effectively to improve student motivation, engagement and learning outcomes. Importantly, teachers found that the iPad was especially valuable for students in special education settings, due to 'its design features, multi-functionality and access to specific purpose apps'.

A number of small studies have looked at the use of iPads in video self-modelling for teaching students with autism new skills. One study found a positive impact of using the iPad for video self-modelling on responding in class (Hart & Whalon, 2012),while others have found similarly positive outcomes on tasks including checking spelling (Kagoraha, Sigafoos et al., 2012) and teaching numeracy skills (Jowett, Moore & Anderson, 2012).

Practical considerations

While anecdotal reports and the media have suggested that iPads and other tablet devices are a 'godsend' (Hardawar, 2013), a 'miracle device' (Johnson, 2011) and capable of 'in a sense, curing the disorder' (Brandon, 2011), it is clear from research that iPads require support, teaching and careful planning if they are to be useful for students with autism.

One framework to consider when assessing the suitability of an iPad for an individual student is the SETT framework (Student, Environment, Tasks, Tools) developed by Joy Zabala (2005). In this framework, the student's skills and needs are considered along with the environment the students learn and live in, and the specific tasks they are expected to do. It is only once these three elements have been thoroughly considered by the team working with the student, that tools to help the student are considered. Tools in this framework may include services, strategies, training, accommodations and modifications as well as technological tools and devices. Considering students' needs in this way means that iPads and other devices are only seen as part of any solution to a particular need, rather than as a 'cure-all'.

It is clear from the research described above that successful implementation of these devices requires significant support and training for all involved, including teachers and parents, and that practical aspects, such as durability, glare and volume must be given some thought when considering the use of a tablet. It is also important that other options for communication and curriculum access are developed and supported for times when the iPad or tablet is not available, such as when undertaking a water-based activity or when damage or technical issues occur.

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Overall, tablet devices, such as iPads, appear to hold promise for students with autism in terms of communication, supporting features of autism and in curriculum access when their use is individualised. It is important to note, however, that there is limited empirical evidence at this point and that research to date clearly indicates that *'it is quality teaching and support that makes (positive outcomes) possible, not just the device'* (DEECD, 2011).

Recommended further reading and websites

Spectronics blog: www.spectronicsinoz.com/blog/wp-content/uploads/2012/09/Successfully-using-iPads-to-support-Students-with-Autism-LINKS.pdf

The learning app guide: www.learningappguide.com/

iTunes U course, including the Apps for ASD wheel developed by Mark Coppin:
https://itunesu.itunes.apple.com/audit/COH3CQR8H2

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