

# **A Review of the Literature Relating to the Use of Digital Storytelling (DS) on an iPad to Support Narrative Skill Development of a Child with Autism Spectrum Disorder (ASD)**

**This review examines the specific language difficulties that children with ASD encounter whilst they attempt to engage with language within the curriculum. Whilst primarily focusing on oral narrative difficulties, the review explores effective strategies that could be employed to support narrative skill development for children with ASD whilst also assessing the extent to which iPads could be used as a support tool for oral narrative construction.**

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## **INTRODUCTION**

Language plays a crucial role in the primary school curriculum serving as a medium to support all thinking and learning (Gross, 2013). Children must master several components within language and Owens (as cited in Shiel, Cregan, McGough and Archer, 2012, p.112) asserts that “the area of most dramatic language growth during the school years is language use.” Language use addresses how we adopt appropriate styles and conventions concomitant with our setting or conversation (Gross) and accordingly the development of these skills, whether focusing on narrative or pragmatic capabilities is of paramount importance for all children, but especially for children with special educational needs (SEN). Although narrative and pragmatic language skills frequently overlap, this review will focus on the benefits of developing narrative skills for children with SEN, with and without the use of technology.

The first author is teaching in a large, vertical boys' school where learning support is provided predominantly on a withdrawal basis from the mainstream classroom

for children with SEN. The school is currently piloting maths and literacy stations with different class groupings, aiming to foster a more collaborative support structure. This literature review emerged from a desire to research evidence-informed practice for a third class student, Peter (pseudonym) with ASD who also has a specific language delay. This student has difficulty with engaging the listener, retelling personal news and sequentially recapping a story. A teaching intervention was subsequently designed for this pupil based on findings from this review.

Research by McCabe and Marshall (as cited in Petersen et al., 2014) suggests that improved narrative skills leads to increased opportunities to practice language thus potentially improving social competence. Using technology may contribute to Peter's narrative skill development as he tends to favourably respond to computer-based tasks, while using digital storytelling (DS) software on the iPad offers excellent potential to develop sequencing skills (Kieler, 2010).

## LITERATURE REVIEW

Research linked to this subject is relatively limited and accordingly this investigation required focused analysis of certain keywords including: *iPad*, *digital storytelling*, *narrative*, *autism spectrum disorder (ASD)*, *language intervention*, *pragmatics* and *communication skills*. Using these keywords as a guide enabled specific research on online education databases and in significant education journals such as the *British Journal of Special Education*, *REACH Journal of Special Needs Education in Ireland* and the *Journal of Autism and Developmental Disorders*. It was also important to research seminal authors and studies connected with SEN, communication and language and ASD.

This review aims to:

- define oral narratives and discuss language difficulties experienced by some children with ASD.
- present a succinct analysis and critique of researched language interventions.
- analyse how DS can promote increased competence and confidence in language usage for children with ASD.

### **Narratives: A Definition**

A narrative is defined as “oral or written discourse where the purpose is to tell a story or narrate an event or a sequence of events” (National Council for Curriculum and Assessment (NCCA), 2015, p.109). This demands “control over particular linguistic features including specific vocabulary and inter-sentence

cohesion” (Beals and Snow as cited in Shiel et al., 2012, p. 114). By developing narrative skills teachers are helping children with language difficulties to organise ideas, develop vocabulary and evoke imaginative thoughts (McLachlan and Elks, 2012; Peterson et al. 2014; Stadler and Cuming Ward, 2005). Using pictorial records to encourage children with language difficulties to “reminisce” about shared school events, Gross (2013) noted that by continually revisiting stories, considerable improvement was noted in children’s narrative language skills, including reinforced vocabulary and correct past tense verb usage.

Within narratives, the narrator “maintains a social monologue throughout, producing language relevant to the overall narrative while presupposing the information needed by the listener” (Owens as cited in Shiel et al., 2012, p. 166). Effective communicators engage the listener and show sensitivity to their needs (Diehl, Bennetto and Young, 2006; Parke and Gauvain, 2009; Stadler and Cuming Ward, 2005) by demonstrating extremely clear pronoun usage and using explicit vocabulary and appropriate connective language (Stadler and Cuming Ward).

Most national curricula include objectives around narratives (Petersen et al., 2014). In Ireland, the English Language Curriculum (NCCA, 1999, p.11) shared a broad objective that children could “identify and evaluate the key points, issues and central meaning of a text or oral presentation and organise efficiently the information gained.” This expectation has been specifically elaborated upon within the new Primary Language Curriculum with children expected to “tell and retell stories and personal and procedural narratives of increasing complexity to familiar and unfamiliar audiences using appropriate sequencing, tense and oral vocabulary” (NCCA, 2015, p. 51). Interestingly, Grove (2014) argues that the teaching of and emphasis on developing oral narrative skills seems to halt after the early years as teachers presume that most children have mastered the skill by that stage. This viewpoint perhaps stimulated the Department of Education and Skills to incorporate this expected learning outcome within the new curriculum.

### **Language Difficulties of Children with ASD**

The Autism Society of America (as cited in Xin, 2014) recognises that children with ASD tend to present with difficulties in oral communication. This impacts severely on a child’s expressive ability due to a lack of brainstorming ideas, limited imaginative development and inherent literal thinking (Pennington and Delano, 2012). Regarding oral narratives, children with ASD can find storytelling arduous as it involves an awareness of social context and requires refined linguistic expertise (Loveland, McEvoy and Tunali, 1990). These narrative difficulties emerge as children with ASD struggle with selecting, organising and sharing

information in a chronological manner (Loveland et al.; Diehl et al., 2006; Losh and Gordon, 2014).

Children with ASD may also lack awareness of connectedness within a story whilst engaging in narrative retelling, tending to treat characters as objects and struggling to link narratives to meaningful, real life events (Petersen et al., 2014). Consequently, they often show literal understanding and react to the surface meaning of what they read or hear (Shields, 2004). Diehl et al. (2006) support this argument stating that children with ASD rely on more superficial conclusions and connections. These difficulties result in the child with ASD being less likely to use the essence of a story to later link it together to form a coherent narrative (Diehl et al.).

### **Language Interventions**

Interventions for children with ASD should stimulate cognitive development, facilitate language acquisition and promote social interaction (Westwood, 2011) whilst offering enough flexibility to support the uniqueness and heterogeneity of each child (Hayes et al., 2010; Petersen et al., 2014; Whitehead, 2010). They should also address the importance of promoting the generalisation of learned language across the curriculum (Ramdoss et al., 2010). Interventions for children with SEN should incorporate an increase in task complexity whilst gradually reducing structured support (Carnahan, 2006; Petersen et al.).

Children with ASD also require repetitive and predictable methodologies with the use of visual supports (Petersen et al., 2014). Carnahan (2006) concurs with this, proposing the use of photographic visuals which incorporate topics of interest to the child. McLachlan and Elks (2012) recommend introducing the language of sequencing or connectives between each story stage to support improved story comprehension. The child with ASD needs to understand and correctly use connectives (Corden, 2000) and providing children with story frames supports this (Corden; McLachlan and Elks). McLachlan and Elks further suggest using photographs to sequence events in both personal or story narratives. Using pictures and visual supports for children with ASD will improve their sequencing skills (Petersen et al.) whilst also reducing the occurrence of off-topic remarks in their narratives compared with when visual supports are not present (Losh and Gordon, 2014).

Petersen et al. (2014) engaged in an individualised experimental approach targeting repeated modelling of narrative retelling. Working with three six to eight year old boys, they explored how visual and verbal prompts enhance the

narrative skills of children with ASD. This investigation involved working with each child for 12 sessions over a three week period where independent personal narratives were analysed for successful use of targeted grammatical and linguistic features. Even though this intervention was implemented by clinicians, it could also be implemented in schools due to its uncomplicated nature, as is suggested by Petersen et al. This study targeted a large number of language features in a short timeframe and this could be more effective if fewer language features were focused on repetitively over a similar timescale. It could also be beneficial to introduce a collaborative element with elicited input from the student, class teacher and the speech and language therapist (SLT).

### **Digital Storytelling on an iPad**

One technological element that could be used to promote the narrative skill development is digital storytelling (DS) where children create, produce and present (Niemi and Multisilta, 2015) personal and procedural narratives using a combination of voice, images, music and text with digital media (Lambert, 2013; Meadows, 2003). DS motivates students in a novel way, helping to develop their organisational skills (Kieler, 2010). Kieler used DS with a small group of gifted fifth grade students who were encouraged to analyse and synthesise information from a story and create personal digital presentations reporting that her students “became active learners through this type of interaction ... creating memorable learning experiences” (p. 52). Children within Kieler’s study were academically gifted and therefore it may be necessary for some teachers to adopt a more gradual approach when using DS. Students could engage in rehearsal strategies to consolidate story comprehension before progressing onto using the iPad for digital narrative creation.

Promoting talk plays a major role in narrative development (Gross, 2013) and DS accordingly encourages children to orally retell story events, talk about their presentations and continually evaluate their work (Monaghan, 2001). Editing and listening back to their digital creations teaches children about the organisation and features of language within their work (Grainger, 2001). Consistent with Monaghan’s assertion, Xin (2014) favours using digital stories to support children with ASD in creating narratives, albeit placing a greater emphasis on structured writing. During Xin’s research, four middle school students were encouraged to create written narratives after observing explicit teacher modelling.

Xin (2014) outlines four stages of digital story creation. First, students *plan* a narrative by selecting an idea and organising it using pictures. Second, a *draft* is created where students put the story information into their own words. The students

then *revise* what has been written by reading back over their work. During the final stage students *publish* their work by presenting the digital story to their peers or by reading it aloud. Xin's study demonstrates how sequencing visual pictures positively impacts on children with ASD, highlighting notable improvements in organisational skills and language usage. Xin asserts that students should progress smoothly through the various stages. This may not be the case for students with specific language difficulties such as Peter, who struggle with applying logical sequences in narratives. For these children it would be imperative to devote sufficient time to initial planning and drafting before progressing onto revision and publication. The aim is to eventually progress to the latter stages where children can develop expressive communication skills through positive sharing of personal news and interests using digital media at a later date (Call Scotland, 2014).

### **iPad Applications**

iPads are a supportive tool for children with ASD who present with communication and language difficulties (Kucirkova, Messer, Critten and Harwood, 2014). Using the *Our Story* application to create digital stories benefits the student with ASD. Combining pictures, sound and text enriches literary experience and bridges the gap between book and oral recount (Kucirkova et al.). Subsequently it increases student engagement and motivation to complete tasks, which can be difficult for children with SEN who tend to have lower intrinsic motivation (Pakulski, as cited in Kucirkova et al.). Kucirkova et al. also noted that children with ASD were attracted to the visual display of photo-stories, stayed on task for longer and over time used improved expression and more extended sentences.

Another application, *iMovie* can also be used to develop DS and promote oral narrative recount whilst also supporting literacy instruction and encouraging children to demonstrate creative ways of responding to text (Hutchinson, Beschorner and Smith-Crawford, 2012). Using the recording and playback functions helps to develop "a sense of audience" (Gross, 2013, p. 61) thus holding more meaning for children with SEN. Hutchinson et al. explored the use of iPads for literacy development with a group of 23 fourth grade students who worked in small groups to digitally complete reading response exercises. They advocate using digital learning tools for reading, writing and language and attribute an increased occurrence of on-topic spontaneous conversations within their collaborative sessions to "digital technology reciprocal teaching" (p. 22). This could prove effective for learners with ASD by positively impacting students' instructional language usage and also improving overall social competence. Children within the study by Hutchinson et al. also uploaded their completed digital work to the teacher's server, although it might be more fruitful to enhance this task by

encouraging greater use of oral presentations to further develop oral narrative skills (Grainger, 2001; Petersen et al., 2014). Two other applications worth noting for DS are *Toontastic* and *Puppet Pals* and these are both available on iTunes.

### **Limitations of Using iPads**

Some limitations have been associated with using iPads. Kucirkova et al. (2014) suggest that some teachers might excessively use the iPad for narrative development. Powell (as cited in Ramdoss et al., 2010) argues that overuse of the iPad could trigger obsessive compulsive-type behaviours, whilst Ramdoss et al. express concern that using iPads might exacerbate existing problems associated with ASD such as increased social isolation and reduced opportunity to practice social interaction. Cummins, Brown and Sayers (2007) further highlight a negative over-dependency on technology in the United States of America arguing that mass expenditure on technology has failed to impact on overall education attainment. They advise teachers that technology is only one component in a complex ecology of language and learning.

## **IMPLICATIONS FOR LANGUAGE TEACHING AND LEARNING**

Hutchinson et al. (2012) affirm the belief that teachers must outline their purpose for using technology by determining learning goals and selecting pedagogical approaches that best serve their students. When teaching narrative skills, teachers of children with ASD should ensure that the children fully understand a set of events in a meaningful way in order for them to effectively grasp the connectedness of events within the narrative (Loveland et al., 1990). It is equally imperative that teachers are fully aware of how narratives systematically develop in order to better equip themselves to support narrative skill development (Stadler and Cuming Ward, 2005). Strategies for teaching narrative skills should go beyond experience, encouraging children to use language for a wide range of purposes including identifying central themes, speculating about outcomes and reconstructing narratives for different audiences (Shiel et al., 2012). Incorporating a collaborative element to language tasks for children with ASD will assist in developing turn-taking skills and hopefully improve social communication (Hayes et al., 2010).

Key features include giving children repeated opportunities to produce and listen to their narrative creations (Grainger, 2001) whilst using a gradual release of responsibility within a series of lessons (Petersen et al., 2014). Accordingly, the use of visual supports during teaching assists children with ASD who would normally have difficulty processing ordinarily presented auditory information (Mechling,

Gast and Seid, 2009) and helps them to make “abstract concepts concrete” (Xin, 2014, p. 2). Common approaches currently used in schools consist of using visual images and story boards (Carnahan, 2006; Grainger, 2001; McLachlan and Elks, 2012) to assist students in forming narratives in sequential order and DS could be seen as a modern extension of this methodology. Kieler (2010) suggests using a student buy-in or topic of interest to provide a stimulus for initial student engagement.

When designing and producing DS within schools, it is of paramount importance that the learning support teacher maintains a collaborative link with the parents, class teacher and SLT thus ensuring that the child is not overloaded with new information and also to encourage similar language usage across different settings such as at home, in school and within speech therapy (Petersen et al., 2014; Westwood, 2011). In terms of technology, teachers should be mindful that children generally associate iPads with fun games at home thus it may be difficult to change their attitude in school (Kucirkova et al., 2014). Further to this, DS should only be used as a tool to support teaching and learning and teachers should always maintain the curricular focus and the child’s best interests during teaching. It is also important to note that with any intervention involving children with ASD and especially due to the deep social link inherent in narrative formation, there is the possibility that the child will not be willing to attend to or engage with it (Warren, Fey and Yoder as cited in Petersen et al.).

It is apparent that DS can play an important role in supporting the narrative development of children with ASD. Though research in this area is very limited, there are numerous studies focused on promoting pragmatic and narrative language development. By linking these studies with research related to the use of iPads in schools it is clear that there are many positive implications for both teaching and learning.

## **CONCLUSION**

From the outset the first author sought to review the literature with a view to researching activities which would stimulate Peter’s cognitive and linguistic development whilst also hoping to positively improve his social competence (Westwood, 2011). With ongoing evaluation, this intervention could evolve to meet the language needs of other students within the school. DS approaches could be used for collaborative teaching with the inclusion of oral language development and/or reading comprehension tasks in station-teaching. Mainstream classroom



teachers could also apply an adapted version of DS within the whole class setting focusing on the higher order outcomes outlined in the research by both Kieler (2010) and Xin (2014).

Reflecting on life's existing demands, it is difficult to make time for communication at home or in a busy classroom but "however busy we are, we need to carve out time to talk" (Gross, 2013, p. 17). Creating time to talk offers all students, but especially those with SEN endless opportunities to regularly hear and practice oral narratives. As Shields (2004, p.26) concludes, "Language is not only learned: it grows" and it is the role of all partners in education to foster this growth on a daily basis.

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