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# TECHNOLOGY FOR SEND IN PRIMARY SCHOOLS

A GUIDE FOR BEST PRACTICE





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# Chapter 1

# MULTISENSORY STORYTELLING

RICHARD HIRSTWOOD

## Introduction

Story-telling is an age-old tradition across human cultures worldwide. The spoken story began it all, retelling significant events, most likely supported with the tales being acted out. This was followed by a drawn version, typified by cave paintings. Sensory stories are therefore nothing new. What is new is the application of the fantastic technologies available to us now.

This chapter, then, will explore how technology is being used to develop narratives and, more especially, make these stories available to an audience whose communication needs are different, whether these differences stem from sensory losses such as vision, hearing or movement, or to those whose cognitive differences mean they require as much support as is available, and to those individuals who need more time and more repetition to grasp the concepts expressed. Indeed, everyone can enjoy and benefit from the impact that technology can bring to sensory stories.

First, what sensory stories are and why they are of benefit to learners with special educational needs and disabilities (SEND) will be briefly considered. The relevance of sensory stories and learning styles will then be explored. How sensory stories can be an even more effective teaching tool when reinforced with the appropriate and relevant use of technology matched to a learner's learning styles will be highlighted. Which environments are most suited to the delivery of sensory stories and why will also be discussed. Throughout this chapter, using case studies, different ways of using sensory stories reinforced by technology with pupils with SEND will be suggested.

## Learning objectives

By the end of this chapter you should be able to:

- differentiate a sensory story appropriately, using a wide range of strategies that enable pupils to be taught effectively;
- create a stimulating learning environment to capture pupils' imagination and engagement in a sensory story;
- understand how technology can reduce/inhibit factors that may cause a barrier to pupils learning and participation in a sensory story;
- match an individual's learning styles to appropriate technology.

## Links to Teachers' Standards

### 1. Set high expectations which inspire, motivate and challenge pupils

- establish a safe and stimulating environment for pupils, rooted in mutual respect;
- set goals that stretch and challenge pupils of all backgrounds, abilities and dispositions.

### 2. Promote good progress and outcomes by pupils

- be accountable for pupils' attainment, progress and outcomes;
- be aware of pupils' capabilities and their prior knowledge, and plan teaching to build on these;
- guide pupils to reflect on the progress they have made and their emerging needs;
- demonstrate knowledge and understanding of how pupils learn and how this impacts on teaching;
- encourage pupils to take a responsible and conscientious attitude to their own work and study.

### 5. Adapt teaching to respond to the strengths and needs of all pupils

- know when and how to differentiate appropriately, using approaches which enable pupils to be taught effectively;
- have a secure understanding of how a range of factors can inhibit pupils' ability to learn, and how best to overcome these;
- demonstrate an awareness of the physical, social and intellectual development of children, and know how to adapt teaching to support pupils' education at different stages of development;
- have a clear understanding of the needs of all pupils, including those with special educational needs; those of high ability; those with English as an additional language; those with disabilities; and be able to use and evaluate distinctive teaching approaches to engage and support them.

### 6. Make accurate and productive use of assessment

- give pupils regular feedback, both orally and through accurate marking, and encourage pupils to respond to the feedback.

## Links to National SENCO Standards

### *National SENCO Standards (DfE, 2015)*

9. **Develop, implement, monitor and evaluate systems to:**  
Record and review the progress of children and young people with SEN and/or disabilities;
4. **Strategies for improving outcomes for pupils with SEN and/or disabilities**  
The potential of new technologies to support communication, teaching and learning for children and young people with SEN and/or disabilities.

### **Part C: Personal and Professional Qualities**

There are high expectations for all children and young people with SEN and/or disabilities.

Person-centred approaches build upon and extend the experiences, interests, skills and knowledge of children and young people with SEN and/or disabilities.

## Links to National Curriculum Programmes of Study (DfE, 2013)

**English:** Children use discussion in order to learn; they should be able to elaborate and explain clearly their understanding and ideas.

**Computing:** Children are responsible, competent, confident and creative users of information and communication technology.

## Case study 1: Sensory stories in the classroom

Fountaindale School deliver their curriculum through play. This approach relies very much on the inventiveness of the practitioner to create sensory learning opportunities which use appropriate mobile technology to reinforce learning. The use of sensory stories as a teaching tool is embedded in everyday classroom activities.

A class of nine semi-formal learners, all wheelchair users with varied levels of cognitive abilities, are taking part in a lesson about volcanoes. All learn better with enhanced multisensory stimulation, with a strong focus on developing communication skills.

Their learning is delivered through the vehicle of an individual and specifically scripted sensory story, which takes place every Monday at 11am and is repeated weekly, in an expanding series of events, building upon the story week by week. It is designed to revisit areas of the curriculum previously taught and to remind the pupils of concepts they have experienced in previous lessons. An interactive learning wall illustrates the concepts taught and provides a focus for pupils to engage with.

The story develops over the term, expanding in length and complexity as the pupils learn more concepts. The script of the sensory story is set and the sequence does not vary,

which enables the pupils to get to know each part of the story and to begin to predict the next part of the sequence. New concepts are introduced within this familiar context.

What are the key features of this approach?

- The sensory story is unique to the specific curriculum elements the class are learning.
- The story is multisensory and is appropriate to meet the varied learning styles of the pupils.
- The sensory story is carefully scripted and follows the same sequence, adding new concepts within this routine.
- The sensory story is represented in the classroom by a multisensory ‘learning wall’.
- Repetition of key concepts within a familiar learning routine reinforces learning for pupils over a greater number of learning opportunities.
- The sensory story is also referred to throughout the week’s lessons and specific parts are revisited on a day-to-day basis.

But how is technology used in the classroom for these curriculum sensory stories?

Gathering around the teacher and the learning wall, the pupils experience the sensory story which is told by the teacher, supported by a team of skilled classroom assistants. The technology used in the sensory story is prepared and within reach before the story begins. Relatively simple technology, such as a microphone to give the pupils a voice, is very effective and creates an enthusiasm in the pupils to participate: ‘who wants to shout it out?’

The key feature of the technology used here is that it is not being used just for the sake of using technology. It is used to enhance the story and reinforce its concepts. It is used to create impact and drama – to be irresistible for pupils to engage with learning.

It does not feel as if it should not be there. Each carefully chosen piece of technology brings an extra dimension or a reinforcing tool not available to the teacher in any other way.

It does not play a central role. If the technology fails, it is not a problem because it is a part of the story, not the key tool or delivery system.

Care is taken to make sure that this is a multisensory story, not just a sound and lighting experience. So, in addition to the visual and sound technological effects, specific experiences have been identified, created and are offered to enhance the pupils’ tactile, gustatory, olfactory, vestibular and proprioceptive sensory skills.

Fountaindale School uses sensory stories as a vehicle for increasing the number of opportunities for pupils to revisit their learning, by the use of repetition of key concepts within a familiar learning routine. The technology used is not the key focus of the story; it is used to reinforce concepts and embed the learning. The technology used is simple and really effective. And, because the technology is kept simple, it works.

## Reflective questions

- Should you adapt books as sensory stories or make them up yourself?
- What will be the result of your intervention with a sensory story?
- How will this shape what and how you deliver your sensory story?
- What technology should be chosen to enhance the pupils' learning experience, and why?

## Case study 2: Solitary or shared stories?

We often think of a sensory story as being a shared experience – one that promotes interaction, communication and engagement between peers. Supporting technology builds on these core skills. But when can a solitary sensory story with very simple technology be of great benefit?

A teenage boy with autism is finding the traditional classroom teaching situation too demanding. Too many different and changing activities in the classroom mean that he exhibits behaviours that staff find challenging to manage and which result in very limited engagement with any presented activities – lasting brief seconds, if at all.

It is decided to take the session into the sensory room, as this environment offers:

- a controllable space;
- reduced visual and sound clutter;
- fewer people to reduce distraction;
- one-to-one attention.

Using one simple stimulus in the sensory room enables the young man to focus on this, rather than having to cope with several different stimuli occurring around the classroom, which is too bombarding.

A simple, repetitive sensory story develops a familiarity to make him at ease in his new environment. Sitting next to the bubble tube, the story 'Many Coloured Days' begins. Coloured switches switch the bubble tube on and off, and control the colours of the bubbles to match those in the story.

No demands to look, listen or be near are made: the calm environment, the bubbles and the storytelling are the attraction for the young man to engage with. The first page is read, then the second. These are repeated, while the bubble tube changes colour, matching the colours in the story. During these first few pages of the story, the young man paces around the room. After repeating these pages several times more,



his interest is aroused and he comes over and joins the storyteller. Still no demands are made. After repeating the same two pages several times more, spontaneously he presses himself up against the bubble tube and listens. This interaction is on his terms once he becomes familiar with the routine of the story and the colour changing bubbles. He engages for a minute before moving away to the other side of the sensory room. After a few moments, he returns to the bubble tube and the story starts again. This happens four or five times before he really begins to engage and interact. He shows pleasure and enjoyment with the shared sensory story, focusing on the storyteller, the bubbles and the story for the next 20 minutes.

Could the session have been developed without the bubble tube? The answer, in this case, is no. The young man needed the experience to be multisensory to be engaging. The technology was used to attract his attention and draw him into the session. His interest was initially in the colour-changing bubbles but, as he became more relaxed and familiar with events, he began to explore more of the aspects of the experience available to him. This creates further opportunities for him to engage – e.g. to control the bubble tube using the switch, as he becomes more and more interested in a broader range of experiences within the sensory space.

For this young man, a solitary sensory story with one multisensory stimulus for focus enabled him to successfully engage with a learning experience.

## Reflective questions

- How can we identify when a shared or solitary sensory story is most appropriate?
- By which means can we assess which elements of an environment provide too much or too little stimulation?

## Case study 3: Sensory stories, iPad apps and 'on-looker' engagement

Occasionally, the beneficiary of the sensory story is not who you had intended. Using iPad apps and projection can create a reason to interact too strong to refuse, even for pupils described as 'in their own world' or 'difficult to reach'.

A small group of mixed-ability learners are taking a 'virtual' roller-coaster ride using the Coaster Physics app, a pico projector and a white pop-up tent. The story of taking the roller-coaster ride is the vehicle for introducing and practising various mathematical concepts of up/down, fast/slow, etc.

One pupil with autism sits away from the group, using 'in ear' headphones to reduce sound 'clutter' and shows little engagement with any aspect of his environment. He finds it difficult to tolerate other people and avoids eye contact.

The group taking the virtual roller-coaster ride are shouting and screaming as they dip and turn, and the initial aim of the session, for the pupil to join the roller-coaster activity, is revised. His 'in ear' headphones reduce the groups' noise, but the large-scale projected image of the roller-coaster remains in his sight.

After several trips around the track, the pupil begins to show a fleeting interest in the visual imagery of the roller-coaster. Maintaining his distance, his gaze is increasingly upon the tent and his level of attention increases.

The group moves on to another activity to explore the mathematical concepts experienced on the roller-coaster. The projected image of the coaster remains on the tent. With a clear space, the boy comes nearer to the tent and the image. The roller-coaster begins with the boy very close to the visual image.

The boy is now very engaged with the roller-coaster experience, secure in the tent environment which is small and which reduces other visual clutter in the space. A classroom assistant moves into the tent, sharing the experience of taking the roller-coaster ride with him. Non-verbal communication strategies reduce the potential bombardment of extra information, which may overload the boy.

For this young boy with autism, who initially could not tolerate a shared activity and was isolated from the group, time and technology proved too engaging for him to ignore. His initial engagement was through technology, but exploration of the story and experiencing the roller-coaster in isolation eventually led to a shared activity and interaction with another individual.

## Reflective questions

- How can we use our knowledge of pupils' sensory skills to identify and record progress towards appropriate targets?
- What strategies can you use to make the learning experience irresistible for your pupils to engage with?

## What is a sensory story?

A sensory story is one that is brought to life by presenting the narrative using powerful multisensory experiences. In other words, highlighting the visual, auditory, tactile, gustatory, olfactory, vestibular and proprioceptive aspects of the story. Presented in this manner, a

sensory story will have greater meaning to a learner who has a sensory loss or multisensory impairment. A strong, but simple story narrative reinforces these sensory elements.

## Sensory stories and learning styles

Learning styles, as described by Howard Gardner (1983), support the idea of delivering stories in a multisensory fashion, to ensure the inclusion of learners with a variety of learning styles. As learners may have a combination of different learning styles, a sensory story ensures that learning is delivered via multiple accessible channels rather than a single one, which may or may not be accessible for that specific learner at that specific time. Later, we will explore in more detail the relevance of learning styles to sensory stories, matched with appropriate technology.

## Who benefits from a sensory story?

For all learners, with or without SEND, sensory stories can be much more meaningful than stories read in the traditional manner. A learner with a hearing impairment is given the opportunity to experience the story using their stronger/other sensory skills – i.e. ‘feeling’ and ‘seeing’ the story, rather than experiencing the story only via their impaired sensory skill – their hearing. Multisensory presentation of a story ‘scaffolds’ weaker/impaired sensory skills using a learner’s more dominant/stronger sensory skills. For learners with autism, a sensory story can have the predictability required to help them become familiar with a specific learning experience or routine. Repetition and familiarity reduce anxiety and confusion, enabling the learner with autism to engage more easily in their learning. However, sensory stories are also of benefit to individuals with communication impairments, social, emotional and mental health issues, and dementia – not just learners with complex learning needs.

## Sensory stories and repetition, repetition, repetition

One of the strengths of a sensory story is that it is often repeated many times over, as indeed it should be. We saw from the case study of Fountaindale School how they use repetition to strengthen learning for their pupils. Preece and Zhao’s (2015) sensory storytelling strategy noted the importance of consistency and structure. The learning experience becomes embedded and meaningful, helping a learner to develop communication skills, as well as other skills such as prediction and concept formation.

Neuroscience also supports this premise. The brain needs to practise to develop. In brief, the cells in the brain communicate via chemicals linking cells to cells. When this process is repeated many times, the chemical, or message, becomes more adept at travelling between the two neurons. Repetition of this process embeds the skill to the point where it becomes easier and, sometimes, almost automatic. This is summed up by the phrase *Cells that fire together, wire together* (Hebbian theory) outlined by Siegrid Löwel (1949).

## When is technology appropriate for a sensory story?

Technology should enhance a sensory story, empower learners to engage with the experience and bring an extra dimension not possible in another way. It should be used so that the learners have access to a broader, more appropriate, method of story delivery.

Our technological toolkit should be appropriate and empowering. So, use an iPad because the content is more engaging for a visual learner; use a bubble tube because the learner can feel the experience as well as see it; or use a switch to enable the learner to make a meaningful contribution, or to take a turn, in the sequence of the story.

Technology is not appropriate for a sensory story when its impact/effect is not understood by the practitioner; when the practitioner is unfamiliar with how to operate it; when it is not relevant or its meaning within the story has not been fully considered; when it is not accessible to the learners or its justification in the story toolkit is because it is 'new'.

## Differentiation of the sensory story

Technology can really enhance a sensory story by delivering strong sensory stimuli. However, different learners access the sensory information in the sensory story at different levels, irrespective of how it is presented to them. These levels are described below.

### *Level one: experiential learners*

Learners begin to show an awareness to sensory input. These sensory experiences reinforce the brain's response to an action or a 'unique event' (as described by Norman Doidge), developing a recognition of consistently presented sensory experiences.

At this level of interaction, the learner will experience:

- vision: light/dark/colour/form/shape;
- hearing: frequency, soft/loud, fast/slow, stationary, directional, motion;
- touch: soft/hard/smooth/rough/stationary/motion;
- taste: bitter/sweet/salt/sour/related;
- smell: pleasant/unpleasant/related.

### *Level two: understanding elements*

A learner may experience and understand key elements or concepts of the theme or session in isolation, but not generalise it to other related concepts/themes.

### *Level three: fully engaged with learning*

Learners working at this level understand the sequence of the story, and the concepts and outcomes contained within it.

## Matching technology to learning styles in a sensory story

The work of such people as Howard Gardner (1983) and Barbara Prashnig (1998) has raised the profile of individual learning styles or, as Clive Smith describes them, 'learning strengths' (Hirstwood and Smith, 2012).

Yet, there is little reference to the concept of individual learning styles in the education of pupils with SEND. Where reference is made, it all almost universally focuses upon the visual learning style, as promoted by and reinforced by the work of Temple Grandin (1995) in *Thinking in Pictures*.

So, does the concept of learning styles have any further positive contribution to make to our teaching style when working with learners with SEND?

Much of the technology employed in sensory stories is visual and practitioners need to ensure that technology is also employed to support the development of the other senses. We need to create and deliver sensory stories that meet an individual's multiple learning styles, utilising the most appropriate technology available to us.

However, a word of caution. While it is useful to offer multiple ways of accessing learning, it may not be as useful to identify an individual as only a particular type of learner – i.e. only a visual learner etc. Hood *et al.* (2017) offer a different viewpoint on evidence supporting the existence of learning styles.

Below, we look at the various learning styles, as described by Howard Gardner, and offer suggestions as to how technology can be matched to these and incorporated into an individual's learning experiences during a sensory story.

## Portable technology

iPads, android devices and portable laptops are wonderful tools and are increasingly available to use within your sensory story. In a digital world where content is king, a good internet connection and an account with Apple's App Store or the Android Play Store will mean that you have access to a massive number of apps, covering some subjects you know and those you may never have heard of. However, beware. Steve Jobs famously said: 'There's an app for that', a phrase that is now trademarked by Apple, and he was right. Too many apps are not necessarily a good thing.

Evaluate each app in terms of its value and effectiveness for its role in the story.

- Is it relevant?
- Is it motivating?
- What skills will it target?

- Can you individualise the content?
- What feedback will it give to the learner?

Think of an app as a tool. What will it enable you to do that you cannot do now? Can you break down the app into manageable parts so you do not overwhelm the learner with too much information?

‘Epic Citadel’, mentioned later in this chapter, is the backdrop for Infinity Blade. A medieval kingdom, it provides the ability for the learner to explore each part of the citadel. It is not a story as such, but it is a blank canvas for you to create your sensory story against.

Mobile technology also gives the practitioner the ability to connect to a projector, creating a large-scale or small image as required (see Visual Learning Styles for further information about projectors). Additional props, such as tents, umbrellas, mosquito nets and sheets bring the visual imagery to life, while reducing other visual distractions – i.e. glare from the windows.

## Immersive rooms and sensory stories

What is an immersive room? A sensory room could be described as an immersive room, as could a tent or a cardboard box. In many schools, immersive rooms are what some people term ‘digital environments’ or ‘visual digital environments’. The term ‘immersive room’ is used in this context to describe a blank canvas, where all walls can be covered in projected still or moving imagery.

Immersive rooms with interactive hot-spots can give the learners a chance to interact in a way with a story or experience, which is not achievable in a traditional sensory room or other environment. Learners may explore the scenario independently, creating their own contribution to the story. However, some learners may find the increased stimuli the vestibular and proprioceptive systems are exposed to in an immersive environment too unbalancing and unnerving to engage with learning.

As the technology in immersive environments continues to develop, we may find a greater reliability and controllability of these systems, which will be easier for the practitioner to use.

Many bespoke immersive systems seen in schools today lack the content required to meet the needs of an ever-changing group of learners. New content may not be easy to generate for the practitioner, who then relies on pre-loaded content to contribute to the story or scenario.

We must also be mindful that immersive rooms should not just be a digital visual environment for a sensory story. A true sensory story should also focus on and support the learner’s other sensory systems.

## Sensory stories in multisensory rooms

A multisensory room offers practitioners a controlled space to focus on the development of a learner's visual, auditory, tactile, gustatory, olfactory, vestibular and proprioceptive senses – the whole sensory system. Unlike other spaces, such as a classroom, practitioners have a high degree of control over the sensory stimulus presented. Professor Paul Pagliano (2012) reminds us that a well-designed sensory room is a place where we can *increase or decrease a stimulus and use it in isolation or in combination*. In other words, custom design the space and sensory stimuli for optimal learning for an individual.

The multisensory room is often jam-packed full of technology. Some systems are based on PC software and may be difficult to program and therefore control. Complex control systems often mean that the sensory room may be underused or focus mostly on visual and auditory effects.

Here's where the 'AAA' principles of a multisensory room fit in – availability, appropriateness and achievability. Your multisensory tools and equipment need to be available when you need them and to work first time. Does your multisensory room really suit all the learning styles and needs of the learners who use it? For example, a visually cluttered room certainly will not suit the learning style of those with autism. Does the design of your multisensory room mean that it allows all practitioners to use the equipment without a vast technical knowledge? Simplicity is often the best way forward. Why have lots of complicated equipment (that no one will use) when you can have a few easy to operate and effective multisensory tools that will be in continuous use?

In terms of their sensory system, what can the learner experience in a multisensory room? Here, the potential is only limited by the practitioners' imagination. From the more obvious visual awareness/fixation/tracking to reducing light sensitivity; from auditory discrimination to auditory sequencing; from awareness, responding and initiation to awareness of others; exploring 'self' or turn-taking with another – the learning opportunities are endless. Bozic (1997) comments that *educational technology cannot be evaluated in isolation from the educational practices within which it is situated*. In other words, the technology itself is only as important as the way in which the practitioner uses it.

Each piece of equipment or technology in the sensory space should be regarded as a tool – a means to an end, delivered via the vehicle of a sensory story. How will using a bubble tube enable the learner to develop sound location skills? For learners who need to establish joint attention, how will using small-scale projected images facilitate this?

So, the sensory room provides an ideal environment to combine strong sensory stimuli with the simple narrative of a story. Learners may engage on a variety

of levels, from simple experiential to more fully immersive. The multisensory approach offers potential for learners to become involved with the narrative content through a range of sensory routes, resulting in a higher level of interactivity.

### Summary and Key Points

This chapter has explored the many ways in which technology has a role to play in sensory storytelling. From specific technology and apps to more 'low-tech' interventions, we have seen how these tools can contribute to the creation of an engaging and irresistible learning experience within a sensory story. We have explored how technology can support or detract from a learning opportunity, which is often dependent on the practitioner's skill in using the specific technology. Never forget, however, that the most engaging, multisensory experience in a learner's world is you.

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## Apps and tools for multisensory storytelling

App or tool	What it does	Type
<b>Sound and music</b>		
Roland VT3 Voice Transformer	Change the tone/pitch/frequency of the storyteller's voice Enable learners to contribute a vocalisation to the story Turn a voice into a musical instrument and sing with harmonies	Hardware
Songify by Smule	Automatically turns speech into music.	iOs and Android
CSTR Physics	Design and ride your very own realistic roller coaster, and see how variables like speed, acceleration, energy and g-force change as you ride along the track.	iOS
Can be used with: Car Dash by Andy Pidcock	Car dash is music which stops and starts, providing the learner with the opportunity to start/stop the roller coaster in the CSTR Physics App. <a href="https://youtu.be/hS826kzMn5c">https://youtu.be/hS826kzMn5c</a>	YouTube
Thumbjam	An iPad synth which realistically re-creates the sound of many instruments like violins and pianos.	iOS
Bloom by Brian Eno	Allows you to create elaborate patterns and unique melodies by simply tapping the screen.	iOS
Can be used with: WoWee	A portable gel speaker which turns any surface into a subwoofer, emitting strong vibrations making sound accessible for those with a hearing loss. <a href="http://www.woweeone.com/">http://www.woweeone.com/</a>	Hardware
Pretorian Applicator	A bluetooth device which acts as a switch interface between a switch and an iOS or Android device. <a href="http://www.pretorianuk.com/applicator">http://www.pretorianuk.com/applicator</a>	Hardware
Can be used with: Drawing with Stars by L'Escapadou and with: Sensory Sound Box by Cognable	An app, which can be switch controlled, and allows you to draw with animated stars.  This is a developmental touch skills app, with the capacity for switch control. It was made for children with complex learning needs including autism and visual impairment.	iOS  iOS
Sensory Light Box by Cognable	Light Box uses abstract animation and sound to introduce basic touch skills and awareness.	iOS
Little Fox Music Box by Fox and Sheep GmbH	An interactive sing-along book, with the ability to record your own songs.	iOS
Sources of music to accompany your Sensory Story include:	SoundCloud – <a href="https://soundcloud.com/">https://soundcloud.com/</a> Spotify – <a href="https://www.spotify.com/uk/">https://www.spotify.com/uk/</a> Amazon Music – <a href="https://www.amazon.co.uk/gp/dmusic/promotions/PrimeMusic">https://www.amazon.co.uk/gp/dmusic/promotions/PrimeMusic</a> Apple Music – <a href="http://www.apple.com/uk/music/">http://www.apple.com/uk/music/</a> Andy Pidcock – <a href="http://www.andypidcock.com/">http://www.andypidcock.com/</a>	Web Tools

App or tool	What it does	Type
Noise cancelling headphones	For some learners, particularly those with autism, noise-cancelling headphones give them the ability to modulate/regulate sensory stimuli around them. A transition from these to bone conduction headphones would maintain the ability to self-modulate whilst developing awareness to background sounds within their environment.	Hardware
Bone conduction headphones	<a href="https://aftershokz.co.uk/">https://aftershokz.co.uk/</a>	Hardware
<b><i>Kinaesthetic apps</i></b>		
Xbox Playstation	Gesture controlled technology enables learners to interact with their learning, but is rarely seen in special schools. However, these platforms do offer games and experiences relevant to our learners.	Hardware
Sound Beam	A touch free device which uses sensor technology to translate body movement into music and sound. <a href="http://www.soundbeam.co.uk/">http://www.soundbeam.co.uk/</a>	Hardware
Omi Vista by OMI	A projection system that responds to gesture and movement, creating dynamic images on any surface. <a href="http://omi.uk/omivista-interactive-floor/">http://omi.uk/omivista-interactive-floor/</a>	Hardware
Magic Carpet by Sensory Guru	A dynamic projection system, creating dynamic imagery. <a href="http://www.sensoryguru.com/product/mobile-magic-carpet/">http://www.sensoryguru.com/product/mobile-magic-carpet/</a>	Hardware
Epic Citadel by Unreal Engine	Allows players to explore a medieval landscape and to navigate through a fictional castle realm with various areas such as a circus bazaar, a river and a cathedral.	iOS and Android
Color Band	Create a picture or draw simple shapes on the iPad, each picture will create a sound when triggered by a hand/arm/body movement which is seen by the camera.	iOS
Can be used with: Many Coloured Days by Dr Seuss	A story exploring a variety of different moods linked to a colour.	Book
<b><i>Intra-personal learning</i></b>		
Pico Projector	A palm sized LED projector, with 80 to 200 lumens depending on the model chosen. Used to project images/apps/movies into a white tent or onto a white umbrella, to create an individual learning environment. <a href="http://www.personalprojector.co.uk/">http://www.personalprojector.co.uk/</a>	Hardware
Sphero BB8	An app enabled droid. Controlled by one individual, but perhaps negotiating an evolving obstacle course created by others. <a href="http://www.sphero.com/starwars/bb8">http://www.sphero.com/starwars/bb8</a>	Hardware and iOS and Android App
Camera	Taking photographs can be an individual/group activity – for example capturing the story clues on camera during a team treasure hunt activity.	iOS or Android
<b><i>Inter-personal learning: Technology and apps to support group experiences</i></b>		
The Adventures of TinTin by Moulinsart	An app depicting the story of TinTin, which presents choices to be made by the group experiencing the story.	iOS and Android

App or tool	What it does	Type
<b>Visual learning experiences</b>		
Opti LED Sensory Projector by Optikinetics	This projector gives users the ability to switch effects on/off and to start/stop the effects wheel using switches. <a href="http://optikinetics.co.uk/product-category/projectors/">http://optikinetics.co.uk/product-category/projectors/</a>	Hardware
<b>eBooks:</b> Many books have been re-created in apps, which gives us the ability to use large/small scale projection of images during a sensory story.		
Winnie the Pooh	<a href="https://itunes.apple.com/gb/app/classic-winnie-the-pooh/id647809786?mt=8">https://itunes.apple.com/gb/app/classic-winnie-the-pooh/id647809786?mt=8</a>	iOS
Nighty Night	<a href="https://itunes.apple.com/gb/app/nighty-night-the-bedtime-story-app/id428492588?mt=8">https://itunes.apple.com/gb/app/nighty-night-the-bedtime-story-app/id428492588?mt=8</a>	iOS
The Game in the Dark by Herve Tullet	A story about a trip into space. We should not rush to always use complex technology in our sensory stories. It is easy to overlook the impact that magical photoluminescent materials make when lit by an ultra violet torch. Herve Tullet has authored several books, which 'glow in the dark'. On first glance the pages, which also have no words, look blank. Shine an ultra violet torch onto the pages and the story vividly comes to life! <a href="https://www.amazon.co.uk/Game-Dark-Tullet/dp/0714864854">https://www.amazon.co.uk/Game-Dark-Tullet/dp/0714864854</a>	Book
The Game of Mirrors by Herve Tullet	Another 'low tech' friendly sensory story. Each page is a reflective, but not perfect, mirror. Simply shine a bright white torch onto the pages to see your reflection. <a href="https://www.amazon.co.uk/d/Books/Game-Mirrors-Phaidon/0714866873">https://www.amazon.co.uk/d/Books/Game-Mirrors-Phaidon/0714866873</a>	Book
The Game of Light by Herve Tullet	<a href="https://www.amazon.co.uk/Game-Light-Phaidon/dp/0714861898">https://www.amazon.co.uk/Game-Light-Phaidon/dp/0714861898</a>	Book
Torches	Storytelling with torches would also be enhanced by the use of a white umbrella or tent, to create a small space, with reduced visual and auditory clutter to create a greater focus on the story and its effects.	Hardware
Photoluminescent board	Continuing with the 'glow in the dark' theme, another useful addition to your low-tech toolkit would be a photoluminescent board to create sensory stories. This is the same material which is used to make fire exit signs. Essentially the board stores light, when used with a bright white or ultra violet torch allowing shadows/shapes and outlines to be created on the surface. These are stored briefly, allowing new marks to be made and another strand of the story to be created within moments.	Hardware