



MODULE CODE: ECAD5011

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AI Acknowledgement

I acknowledge the use of ChatGPT (<https://chatgpt.com/>) on 17th February 2025 to highlight my key points into submission format using the prompt(s):

1. Please use the following points to organize my plan.
2. Could you break down the idea of 'Sensory Intergrated Learning', Is there much literature to support how it affects learning used as an intervention?

I confirm that I have not presented any AI generated text as my own work. I confirm that I have copies of my drafts, notes, and other resources I used before, and after the use of AI tools which I may be asked to provide in evidence.

Targets from my previous assignment

Target	How I have addressed it in this work.
When proof reading, make sure you are checking each of your references to make sure they have been formatted correctly.	I believe my academic presentation and writing overall has improved dramatically, I feel so much more confident even more so after getting guidance from the study skills department.
Proofread for your use of commas and hyphens, which are not always use correctly. You can find a guide on hyphen use here	I have proofread the whole document to ensure that my work does not overuse hyphens or use in the wrong context. The layout of this assignment is much better than the BA1's
Carefully plan your work into paragraphs, opening each one with a clear topic sentence. This will help the flow of ideas from one to the next and help the reader from getting lost.	After reading, I feel my writing flow from one point to another rather than someone needing to go back and fore between points.

Choose an intervention that supports the learning and development of a pupil / group of pupils.

Reflect critically on its potential and the possible challenges that may arise. (2,750 words)

Throughout this assignment I aim to evaluate the development of the 'Sensory Intergration Theory' (Ayers, J 1972), looking deeper into the use of 'Sensory Circuits' (Horwood, J 2009) within Primary Education, and more specifically Key Stage 2 (KS2). Throughout my 1st placement (PTE1), my school allowed me to partake in a course which went in depth into the benefits of this theory in Primary education. It focused on the impacts of neurodiverse children's cognitive and behavioural development. (Katherine E. Guardado; Shane R. Sergent, Updated 2023, page 1) The aim of sensory circuits is to enhance self-regulation and readiness for learning through structured physical activities. (Schaaf & Mailloux, 2015), This assignment has given me a good opportunity to build on knowledge and passion made in PTE1, seeing how the same exercise takes place in a different school with different years is beneficial to my professional development and is building my confidence in ALN within my classrooms.

Looking at the assignment, there will be a focus on how 'Sensory circuits' can assist a pupil in my class, Additionally, it will examine how sensory circuits support the Welsh Curriculum, pedagogical approaches, and the UNCRC rights of the child, ensuring an inclusive learning experience. For terms of anonymity (BERA 2024), we will call the child 'Rio'. Rio is a 10-year-old child who is a part of my Year 6 class in an English Medium Primary school. Rio is an active pupil within my class, who often participates in tasks which interests them, however, often goes into their shell and relies on support from teachers around them when they are completing Language, Literacy and Communication (LLC) and Mathematics and Numeracy (M&N). Rio is identified as a pupil who is 'Neurodiverse.' Neurodiversity includes a range of neurological conditions such as autism spectrum condition (ASC) and attention deficit hyperactivity disorder (ADHD), each of which presents unique sensory processing challenges (Dunn, 1997). Rio has been diagnosed with ASC. They rarely participate in class and small group discussions unless it is a physical task which involves movement, this is where they are most engaged. Rio's class teacher has identified that they enter school disengaged and struggle mostly with the transition back into the school routine. It is noted by teachers throughout the school that Rio often struggles to form and maintain friendships and regulate emotions.

So, is intervention the real answer to helping Rio engage more within school life? Sensory circuits are unlike the more well known idea of the 'sensory corner' in a classroom which is surrounded by over stimulating fidget toys, colours and a 'quiet corner, they are active and structured, designed to stimulate the vestibular system (ASC pupils often self-comfort through stimming, this relates to the idea of spinning, jumping rocking.) and proprioceptive systems (pushing, pulling and deep pressure movements) (Schaaf & Mailloux, 2015, page 5) . By drawing a particular interest into this intervention with contemporary views and theories, I will be able to provide an overall perspective on whether Sensory circuits is a viable short-term intervention or something Rio could input into for the long term with clear affect to his overall holistic wellbeing in a school setting.

As said above, it was identified by the class teacher that Rio's needs had changed during the school day, this was evident by his low engagement and often disruptive behaviour during morning registration. Our aim as teachers is to align with the Welsh Curriculum. It promotes a child-centred approach that prioritizes well-being and readiness to learn, by using sensory circuits it creates an optimal state for learning (Welsh Government, 2022). Sensory circuits are in place to help Rio transition effectively into the school day, improving his ability to engage with structured learning tasks, in accordance with the pedagogical idea of inclusion and personalized learning (Donaldson, 2015). From a rights perspective, the United Nations Convention on the Rights of the Child (UNCRC, 1989) states that all children have the right to an education that meets their individual needs (Article 28) and the right to relax, play, and participate in cultural life (Article 31). By adding sensory circuits into Rio's school routine, the intervention supports his right to a learning environment that accommodates his neurodiverse needs, ensuring that education is accessible and inclusive for all therefore aligning with the four purposes of the Welsh curriculum (Welsh government, 2020)

Looking deeper into Dunn's sensory processing model, the model itself categorizes individuals into four sensory profiles. (Dunn 1997) If we use this model to identify what profiles Rio could fit under it would be 'sensory seeking'. Rio actively looks for sensory input, benefits from structured, high-intensity

movement activities, making sensory circuits an appropriate intervention (Dunn, 1997). Rio joined the class for swimming lessons, it was apparent that they loved the intense sensory input from the experience. The school always saw Rio as a sensory avoider (withdraws and rejects any sensory input), they removed themselves from noisy classrooms, refused to be a part of whole school assembly, it's clear that this misunderstanding is a stereotypical 'noise' characteristic of ASC 'Between 90 and 95% of children with autism are estimated to have sensory processing differences' (Katherine E, updated 2023 P1) However, the school had identified that Rio was not thriving with the interventions in place. (Miller 2012). They believed this was down to Rio's sensory profile being incorrect, which meant the sensory avoiding sessions they were attending for intervention were often making them more emotional than overstimulation.

Sensory processing refers to "how the nervous system receives, organizes, and responds to sensory information from the environment and the body".(KPTKids,2023) Neurodiverse children, particularly those with autism spectrum disorder (ASD), often experience sensory processing challenges. These challenges are broadly categorized into hypersensitivity (over-responsiveness) and hyposensitivity (under-responsiveness) (Dunn, 1997, Miller, 2007).

Hypersensitivity: Children with hypersensitivity may experience sensory inputs as overwhelming or distressing. For example, bright lights, loud noises, or the texture of certain fabrics can trigger anxiety, meltdowns, or avoidance behaviours. These children might struggle with crowded classrooms, unexpected noises, or being touched, impacting their ability to focus and participate in school activities.

Hyposensitivity: In contrast, some children exhibit reduced responses to sensory input, seeking stronger stimuli. They may engage in repetitive behaviours such as spinning, jumping, or touching objects excessively. This sensory-seeking behaviour can affect their ability to sit still, follow instructions, or engage in social interactions.

While we look at Rio, as a sensory seeker we can safely say that they are hyposensitive. They often look for strong squeezes, intense pressure. They are comfortable in big classrooms and enjoys rocking and spinning. Sensory difficulties influence behaviour, learning, and social interactions. (Tomchek, S. D., & Dunn, W. 2007) A child who is hypersensitive to sound might struggle to concentrate in a noisy classroom, while a child with hyposensitivity may need constant movement to stay engaged (Pfeiffer, 2011, Ayer, 1972). These challenges can lead to frustration, emotional dysregulation, and difficulties forming relationships. One approach to addressing sensory processing challenges is sensory integration therapy (Ayres, 1972; Watling & Hauer, 2015). This is where Jane Harwood (2008) created the tools and idea for sensory circuits. This therapy focuses on structured exposure to sensory activities to improve regulation and responses. Sensory circuits, which incorporate structured movement-based exercises, are grounded in this framework and designed to support children with sensory processing difficulties.

Sensory circuits follow a three-step structure "alerting, organising, and calming" (Firefly, 2023). The alerting phase includes fast, dynamic movements to stimulate arousal, the organising phase involves balancing and sequencing activities to enhance focus, and the calming phase uses deep pressure input to regulate emotions (NHS, 2023). These circuits target the "vestibular and proprioceptive systems,"

improving motor skills, self-regulation, and attention (Schaaf & Mailloux, 2015) As such, allowing these children who are neurodiverse the opportunity to be Tailoring activities to individual needs ensures effectiveness, making sensory circuits a valuable intervention for neurodiverse learners.

Sensory circuits can be a game-changer for autistic children, particularly those who struggle with sensory processing and attention. Many children with Autism Spectrum Condition (ASC) have difficulties filtering sensory information, which can make classrooms overwhelming and lead to disengagement (Orefice, 2016). Rio seeks movement in their learning. They enjoy partaking activities that are physical, like Pictionary and word anagram games. They particularly love word vs definition where there is the element of competitiveness too. Sensory circuits help by providing structured, predictable activities that target sensory regulation input (Ayres, 1972). These movements, such as balancing, jumping, or deep-pressure activities, help children with sensory-seeking behaviours get the input they crave, which in turn can improve focus and emotional regulation (Pfeiffer, 2011). We have already highlighted Rio's love for constant sensory feedback from their surroundings, it feels that this intervention would regulate them ready for the day.

Routine is also key for autistic children, as predictability reduces anxiety and improves transitions between tasks (National Autistic Society, 2022). Sensory circuits establish a structured start to the school day, reinforcing a calming and engaging routine (Firestone et al., 2020). This supports theories like Bronfenbrenner's Ecological Systems Theory (1979), which suggests that a child's immediate environment significantly impacts their learning and development. Which is why sensory circuits could be beneficial to a childlike Rio who seeks that sensory feedback every day. Another advantage of sensory circuits is how they help with transitions, which can be particularly difficult for Rio, and having a predictable, structured routine can ease anxiety and make transitions between play and work smoother, creating a more positive school experience, By integrating sensory circuits into daily practice, schools provide a supportive framework that accommodates neurodiverse needs and fosters engagement. Relating this to the Welsh Government, it aligns with the Curriculum for Wales (2022), which prioritises well-being, inclusivity, and personalised learning. We are putting the child's needs first which is imperative while being a teacher.

Research also highlights how sensory circuits enhance attention and learning readiness. Bahrack and Lickliter (2000) argue that multisensory processing helps with attentional selectivity, meaning structured interventions like sensory circuits can help autistic children focus by filtering out unnecessary stimuli. Dunn's Sensory Processing Framework (1997) further supports this, showing that children who struggle with sensory modulation often display difficulties with attention in class. By incorporating sensory circuits, educators can create an inclusive and engaging learning space that meets sensory needs while improving participation, focus, and emotional stability. Therefore, as educators in Wales we are hitting the Welsh Government's emphasis on equity in education means schools must adapt their practices to support neurodiverse learners (Welsh Government, 2022). Allowing Rio to have the same schedule every day means he is always ready and knows what is expected of him. Routine and knowing the "now, next" idea has really helped Rio develop since foundation phase. I believe that sensory circuits will only help him develop further.

Now we will look at the potential barriers of 'sensory circuits,'. While sensory circuits offers plenty of clear benefits for children, they are not without limitations. One key concern is overstimulation, where some children may find the sensory input overwhelming rather than regulating (Baranek, 2019). Sensory circuits typically involve activities that stimulate the child's mind, but for children with sensory sensitivities, these exercises could heighten stress rather than promote engagement (Miller, 2007). This contradicts the Welsh Government's (2022) focus on well-being and inclusive learning, as an intervention that causes distress may reduce, rather than improve, participation in the classroom. For Rio, this could be the school not setting out the correct equipment to suit Rio's needs. Non-stimulating equipment could leave him bored, and in turn become unengaged and return to his disruptive behaviour. There are plenty of ways to avoid this, such as setting out what Rio likes through one-page profiles, with the use of a 'what Rio likes' box. Using visuals for Rio, to let them have a dictation over what they want their sensory circuits to look, also then giving them an element of independence to their learning. So, we are still following a child-centred approach by allowing them to decide on their circuit. (Welsh Government, 2022)

Another drawback is the risk of dependency on external regulation. Sensory circuits are designed to help children self-regulate, yet some research suggests that over-reliance on structured sensory input may limit the development of internal self-regulation skills (Baranek, 2019). From a pedagogical standpoint, Vygotsky's Sociocultural Theory (1978) argues that children should gradually internalise strategies to manage their own emotions and behaviour. If sensory circuits become a crutch rather than a stepping stone, they may contradict the Curriculum for Wales' (2022) emphasis on developing independent learners. Above we have covered how dependent Rio is on adults, so it could be a worry that they would depend on adults around them, then regressing their overall social skills.

Practical challenges also arise, including time constraints within the school day. Teachers already face pressure to cover the curriculum, and dedicating time to sensory circuits could reduce time available for structured learning (Diamond & Lee, 2011). Additionally, staff training is crucial for effective implementation, yet many educators lack formal training in sensory integration (Schaaf & Mailloux, 2015). Without the necessary expertise, sensory circuits may be used inconsistently or ineffectively, limiting their benefits. This aligns with the Welsh Government's emphasis on professional learning (Welsh Government, 2022), highlighting the need for better teacher training in neurodiverse interventions. However, within Rio's school; there is trained staff who are not part of a class, they only run the interventions. As such it's rare that such a problem would arise.

Finally, cost and resource availability present a challenge. Sensory equipment, such as balance boards and weighted items, can be expensive, making it difficult for schools with limited budgets to implement high-quality circuits (SSM Health, 2023). The Welsh Government's commitment to equitable education (Welsh Government, 2022) suggests that interventions should be accessible to all, yet financial constraints may prevent widespread implementation, exacerbating disparities in provision.

Overall, while sensory circuits can be highly beneficial which is highlighted in the above paragraphs, they must be carefully adapted to avoid overstimulation, dependency, and logistical challenges. Addressing

these drawbacks requires thoughtful implementation, teacher training, and alignment with pedagogical principles to ensure that all neurodiverse children receive appropriate, sustainable support.

Moving onto educational theorists' perspectives - Vygotsky's theory looks at social interaction and scaffolding, suggesting that learning occurs through guided support (Vygotsky, 1978). Sensory circuits serve as scaffolds, helping children regulate sensory input and behaviour with the assistance of teachers, therapists, or peers. However, there is arguments that reliance on external sensory input may hinder the development of independent self-regulation (Baranek, 2019) - Something that Rio already needs to work on is independence. They often look for an adult in a situation where they are nervous, or anxious. Sensory circuits are set up in the school hall where all classes are connected to, there is 2 members of staff to 15 children, often the children are relied on to ensure they complete the circuit independently, this could be a fantastic opportunity for Rio to gain social skills when working in sensory group as well as some independence around the school.

There is also Piaget's theory of stages of development highlighting the role of sensory experiences in cognitive growth, particularly during the sensorimotor and preoperational stages (Piaget, 1952). These activities help children adapt to sensory input and build coping strategies (Dunn, 1997). However, Piaget's theory does not fully address the individualized nature of sensory needs, meaning not all children may benefit equally from sensory circuits (Watling & Hauer, 2015). This is down to Piaget's of idea of ages in the stages. When we relate this to Rio according to Piaget, Rio should be able to think logically, however Rio struggles to think logically in maths. Simple addition and subtraction are deemed difficult. Due to Rio's lack of interest and poor communication with those around them, Rio has little problem-solving skills and often sees problems as there are and without resolution.

Overall, what you can interpret from these contemporary theorists are a balanced approach integrating sensory-motor activities with cognitive training ensures neurodiverse learners develop both sensory regulation and executive function skills, supporting long-term success.

To conclude and summarise the assignment, the intervention has clear benefits, particularly in fostering self-regulation, emotional well-being, and cognitive engagement (Schaaf, 2014). Studies suggest that structured sensory input can enhance concentration and reduce anxiety (Ashburner et al., 2008), which aligns with the Welsh Government's Four Purposes of ensuring that learners become healthy, confident individuals (Welsh Government, 2020). Sensory circuits offer an inclusive approach, benefiting not only Rio but also other pupils who experience sensory processing challenges, reinforcing an ethos of inclusivity (Welsh Government, 2020).

However, despite the strong theoretical short-term backing, the effectiveness of sensory circuits as a long-term intervention requires ongoing evaluation. There is not enough evidence by theory to support this as a long-term intervention. While short-term benefits such as increased focus and improved mood are well-documented (Pfeiffer, 2011), some research raises concerns about sustainability, staff training, and logistical constraints (Parham, 2007). Ensuring consistency, staff expertise, and appropriate adaptations to meet Rio's individual sensory profile will be crucial in maximizing its impact.

Going forward, it will be essential to integrate sensory circuits into a holistic support plan that includes educational psychology guidance, collaboration with occupational therapists, and parental involvement in the short term, however long term this needs to be reviewed (Welsh Government, 2021). Monitoring Rio's responses through regular assessments and feedback will determine whether the intervention remains effective or if adjustments are required. Additionally, expanding sensory-based strategies across the school could support a wider range of neurodiverse learners, ensuring a more inclusive and accessible educational environment.

While sensory circuits provide a valuable tool for enhancing Rio's engagement and well-being, they should not be seen as a standalone solution but rather as one component of a broader, individualized learning support strategy that evolves alongside Rio's developmental and educational needs. Rio should continue his afternoon intervention for the other aspects of his needs, but as a short-term solution, it could be said that this intervention is affective in allowing Rio the opportunity to develop engagement within school life.

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