# Neurodiversity: A strengths-based approach to teaching diverse learners

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School resources

**Neurodiversity is a term used to describe neurological differences in the human brain. From this perspective, the diverse spectrum of neurological difference is viewed as a range of natural variations in the human brain rather than as a deficit in individuals. These differences are often diagnosed as neurological conditions such as acquired illness or brain injury, Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD), dyscalculia, dyslexia, dyspraxia, intellectual disability, mental health, and Tourette syndrome. For a detailed overview of the neurodiversity approach to disability, see our research guide** Neurodiversity: An overview**.**

The concept of neurodiversity embodies a **strengths-based model** that shifts the focus away from the challenges of students with neurological differences in favour of finding ways to work with the strengths of the student to enable them to participate and experience educational success. In this model, the strengths and interests of the student are the starting point for curriculum design, teacher pedagogy, and the design of the learning environment.

This resource provides strategies and information for working with students with diverse learning needs. The strategies and information discussed in this resource are intended to provide a starting point for teachers and highlights important things to consider when working with neurodiverse students. All students have individual learning needs, which means that any strategies suggested in this resource will need to be adapted to suit the needs of the student.

## Curriculum design

In order to apply a strengths-based model, it is important to know how to identify a student's strengths and how to use those strengths when designing learning activities and learning goals. It may also be necessary to differentiate and adapt the curriculum for neurodiverse students.

### Identifying strengths

There are two kinds of strengths that can be identified – strengths that the teacher recognises in the student, and strengths that the student recognises in themselves. These two may not always align, so it is important to consider each kind of strength when designing learning goals and activities.  For example, a student in Year 6 may have a strong interest or self-perceived strength in reading but be reading books that are below the expected Year 6 level, while the teacher may identify that that same student has an above average ability in statistics but little enthusiasm to engage with or complete work in this topic. The challenge for this teacher and all teachers of neurodiverse students is to find motivating topics that will engage the student while also allowing them to experience success in their learning. One way to do this is by creatively drawing on other strengths or interests to engage the student in the less favoured topic: for example, the teacher in the case above might leverage the student's enthusiasm for reading to help engage and extend them in statistics.

### Curriculum differentiation and adaptation

Differentiation and adaptation are strategies that acknowledge that the curriculum is not a one-size-fits-all model. However, the curriculum can and should be for all students. Differentiation or adaptation of the curriculum may be necessary in order to ensure that all students are able to access what is being taught

and participate fully in learning activities. From a neurodiversity perspective, curriculum differentiation is a strategy that will allow all students to learn the same information in ways that best suit their learning needs. Where students are learning below or above the level of their peers, curriculum adaptation can be used to pitch the learning at a level appropriate to the student or students. The table below provides an example of differentiation and adaptation in practice.

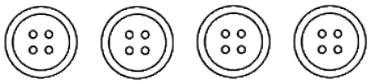
| LEARNING ACTIVITY | DIFFERENTIATED ACTIVITY | ADAPTED ACTIVITY |
|---|---|---|
| Students are completing subtraction sentence problems for numbers up to 10.<br><br>For example:<br><br>9 minus ___ equals five? | Images are used as a visual representation of the word problem.<br><br>3-D objects are used as a visual representation of the word problem.<br><br>The teacher reads the question aloud so students can take notes, doodle, or attempt to answer the question verbally.<br><br>The problem is acted out physically using students in the class. | Simplified - Students are learning how to subtract with pictures and objects for numbers up to 5.<br><br>  <br><br>Extended - Students are writing and solving their own subtraction sentence problems for numbers up to 20. |

Table 1: Example of differentiation and adaptation in practice

In some cases, curriculum adaptation and differentiation may already occur in your learning setting, for example, through use of multiple learning stations where the same task is presented and can be performed in a number of ways. You may also want to consider how curriculum differentiation may benefit the learning of all students, not just those for whom you are intentionally differentiating content.

## Teacher pedagogy

Stop to think about how you teach. In order to meet the needs of diverse learners, teachers often need to think of creative and innovative ways to present information. How you teach needs to be considered alongside learning objectives.

### Differentiated instruction

Differentiated instruction involves thinking and being flexible about how you teach. Do you always teach certain subjects in a specific way? You may need to think about how to teach the same things differently. Differentiated instruction, alongside a differentiated or adapted curriculum, allows students to process information in a mode and at a pace that works for them. For example, some students may struggle to process information in large groups and need small group instruction, 1:1 follow up, or to work with a peer in order to process and understand the information that is being presented. Some students may have trouble listening to you talking and moving at the same time, while others may be the opposite and tune out when you are talking while sitting still.

It is important to know the students in your classroom and be aware of any characteristics of potential underlying neurological differences that may affect how they process information when it is taught in specific ways. The characteristics of common neurological differences that have implications for teacher instruction can be broken down into the following categories: cognition, social and emotional needs, and sensory needs. The following considerations may help you differentiate instruction in order to respond to the differing needs of neurodiverse students. In all cases, it is important to communicate responsively with students and, where appropriate, ask them what they need support with.

### Cognition

These strategies will help you attend to the needs of children with specific cognitive needs to do with information processing, memory, and organisation:

- Have a clear outline and learning objective for each lesson and communicate this to your class both verbally and visually
- End each lesson by reviewing the learning objective and allow students to evaluate their own progress
- Have shorter fast paced and interactive learning activities for students who are active in body and mind
- Be flexible about the time you allocate to completing a task for students who require longer processing time or worry about getting things right
- Use colour coding to organise information
- Use a clear sans serif font that is 12pt or above and black or blue markers that are easy for students to read

### Social and emotional needs

These strategies will support students who find social interaction challenging or who have specific emotional needs:

- Encourage and facilitate social interaction between learners
- If a student struggles with social interaction, consider letting them choose who they sit next to or engage in group work with
- Implement a buddy system for students who require prolonged social support
- Talk about and provide opportunities for students to practise appropriate social skills
- Provide safe opportunities for students to request help
- Communicate clear expectations
- Provide exemplars of work that is not perfect
- Be aware of signs that may indicate a student is becoming overwhelmed and respond with reassurance and compassion

### Sensory needs

These strategies are designed to help meet the needs of students with specific sensory needs such as a sensitivity to noise or certain textures, or the need to be physically active:

- Be aware that some students may be particularly sensitive to some sensory information such as sound, sight, touch, taste, balance, and body awareness (temperature or pain)

- Acknowledge that some students find it difficult to process information when there is either too much or not enough noise in the room
- Consider allowing students to wear headphones or earplugs while they work, or create a quiet space for students who prefer to work in quiet
- Be aware of your own volume when speaking as well as the level of background noise in the environment
- Provide movement breaks for students who benefit from being physically active or find it hard to stay still for long periods of time.
- If a learning task is particularly messy or involves certain textures that may cause discomfort for some students, consider alternative tasks that will allow the student to participate and achieve the learning objective

### The learning environment

Differentiation in both curriculum design and teacher pedagogy are more likely to be effective when the learning environment is designed to support the implementation of differentiation. It is important to consider how assistive technology and the physical learning space or place where learning is occurring can be used to support neurodiverse learners.

### Assistive technology

Some students may have assistive technology funded through the Ministry of Education to help them participate and learn. Alternatively, you may work in a BYOD school, or your school may have tablets and computers available as part of its digital literacy programme. Assistive technology is a tool that can be used to remove barriers to learning for individual students. When integrated into the learning environment, assistive technology is something that may benefit the learning of all students. For example, students can read a book on a device or in print either individually or as part of a group activity. There are also options to listen to the book, with each word highlighted as it is being read allowing students to visually track what they are listening to. Follow up activities allow students to test their comprehension and practise what they have just learnt. There are many applications and websites that can be accessed for free and utilised in the learning environment to address diverse learning needs, such as Sunshine Online, Clicker, talk-to-text or text-to-speech, Math Ref Free, and IXL (mathematics and literacy).

### Physical learning space

The physical learning space can be adapted to suit the needs of diverse learners through, for example, the layout of furniture, labelling the environment and resources, and the proximity of seating to other students or windows and doors which may provide distractions. Try to provide a classroom environment that is clear visually and in physical layout to help diverse learners navigate movement from one area to the next. For example, you can colour code and label different areas of the classroom and match colours and labels to resources intended for use in those areas. You may also want to consider providing choice for where students work. Not all students like to work at tables or desks, and some students prefer to work on the floor. In addition to this, some students may benefit from learning in other environments, such as in the library, gym, or outdoors. With some modifications and creative thinking, most learning activities can be taught outside of the classroom. Consider how you may use other areas of your school as places for learning.

## References

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