

# Teaching and learning issues

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## Teaching for Neurodiversity

*This article is written by City Lit's Specific Learning Difficulties Specialist.*

The five strategies within this article make education more student-centred and accessible to all by empowering learners to explore different ways of thinking for themselves.

### These are my five top tips for neuroinclusion:

1. Get to know the individual student
2. Teach metacognition
3. Encourage a growth mindset
4. Present the 'big picture'
5. Use multi-sensory techniques

#### 1. Get to know the individual student

The neuroinclusive approach requires you to establish the strengths and needs of each student through initial assessment, learner profiling, tutorials and open-minded conversations with students. It is essential to adapt your teaching in response to student feedback, so you can put strategies in place to develop the unique strengths and meet the needs of neurodiverse individuals. It is important to monitor students' responses frequently in your sessions, ask them for feedback, share feedback with students and be transparent about the action resulting from their feedback. Try using polls, surveys and questionnaires and establish ways students can ask you questions when they are working independently. Additionally use private chat or email for their questions, and check-in on them at an agreed time. Be flexible and responsive to different ways of thinking and try simply asking students what works best for them.



Neurodiversity is concerned with the difference in brain function and behavioural traits between individuals as part of the normal variation in the human population. Over the past 20 years the term neurodiversity has been used to refer to autism spectrum condition (ASC). More recently this term has been extended to other neurodevelopmental conditions, such as dyslexia and attention deficit hyperactivity disorder (ADHD). The movement of neurodiversity is about uncovering the strengths of neurodiverse individuals and utilizing their talents to increase the innovation and productivity of our society as a whole.

The neuroinclusive approach requires tutors to see beyond labels and towards a neurodiverse norm when meeting the diverse range of students' talents and learning needs. The labels, such as dyslexia can be extremely misleading as two people with dyslexia tend to have very different challenges, skills and abilities. A neurodiversity approach to pedagogy proposes teaching to the differing individual strengths and challenges of each student in order to view each learner holistically, including those with and without a diagnostic label. The neuroinclusive approach involves designing courses that have the flexibility built in to offer students choice in how they access information and demonstrate their knowledge.

## 2. Teach metacognition

Metacognition is knowledge about our own ways of thinking and learning. It often does not occur instinctively in students so helping students develop this awareness is essential. All learners need to understand how they process information to facilitate their own learning.

It is a good idea to try using a non-judgmental approach to explore a variety of methods and techniques. Additionally, you can set students open questions to facilitate self-reflection and set learning targets that enable them to find their own strategies for learning with the self-awareness necessary to put these strategies into practice - see diagram below.

It is important for students to know their own preferred learning style, strengths and weaknesses so they can take personal responsibility for making use of their learning strengths. This should give students greater self-awareness and a positive academic self-concept/image of themselves as learners (Mortimore, 2003).

## 3. Encourage a growth mindset

Neurodiverse individuals may start their schooling with challenges in accessing learning and can become

alienated by the education system. It is clear that good quality teaching and personal effort are required to find their own way of learning and overcome barriers within education. It is important that neurodiverse students are motivated to continue to explore how to learn new things despite any previous failures.

A growth mindset enables students to understand that *'with practice, training and above all, method, we manage to increase our attention, our memory, our judgment and literally to become more intelligent than we were before.'* (Dweck, 2006:5)

It is essential to encourage students to accept mistakes as part of the learning process and to make explicit reference to the effort required to learn new skills. Try marking students' work largely based on effort and ideas and provide feedback that acknowledges the process of learning and inspires action. Use activities designed to identify students' mindsets, such as that in Figure 2 from Dweck (2012).

Another idea is to try activities that explore how students can change their mindsets, such as in the example in Figure 3 also from Dweck (2012).

A recent study used the growth mindset (as opposed to the fixed mindset) framework to teach adolescents with learning difficulties. It encouraged students "to see

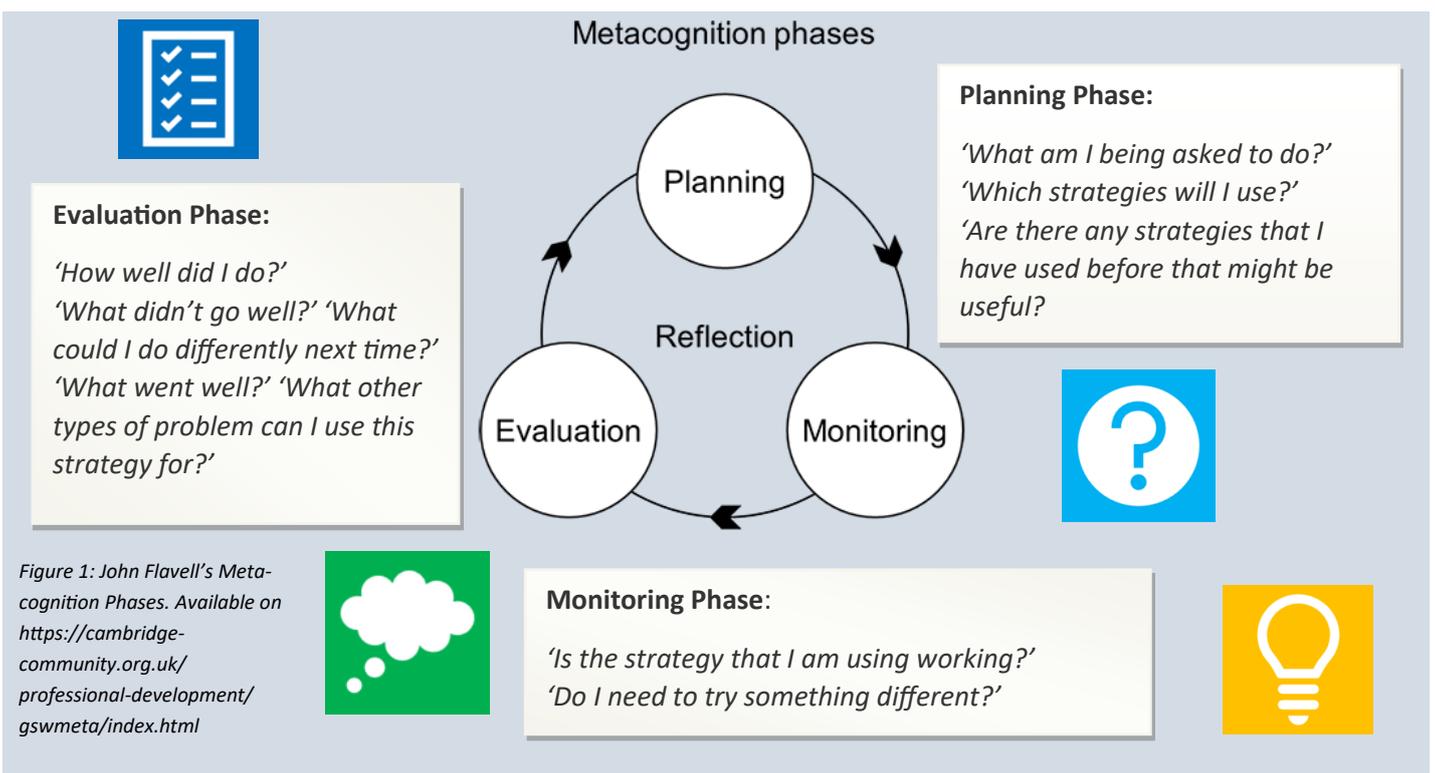


Figure 2: What is your mindset?

**Grow Your Mindset**

Which mindset do you have? Answer these questions about intelligence. Read each statement and decide whether you mostly agree with it or disagree with it.

1. Your intelligence is something very basic about you that you can't change very much.
2. You can learn new things, but you can't really change how intelligent you are.
3. No matter how much intelligence you have, you can always change it quite a bit.
4. You can always substantially change how intelligent you are.

Questions 1 and 2 are the fixed-mindset questions. Questions 3 and 4 reflect the growth mindset. Which mindset did you agree with more? You can be a mixture, but most people lean toward one or the other.

You also have beliefs about other abilities. You could substitute "artistic talent," "sports ability," or "business skill" for "intelligence." Try it.

Figure 3: Growth Mindset Exercise

- Okay, now imagine you've decided to learn a new language and you've signed up for a class. A few sessions into the course, the instructor calls you to the front of the room and starts throwing questions at you one after another.  
Put yourself in a fixed mindset. Your ability is on the line. Can you feel everyone's eyes on you? Can you see the instructor's face evaluating you? Feel the tension, feel your ego bristle and waver. What else are you thinking and feeling?  
Now put yourself in a growth mindset. You're a novice—that's why you're here. You're here to learn. The teacher is a resource for learning. Feel the tension leave you; feel your mind open up.  
The message is: You can change your mindset.

*intellectual abilities not as fixed but as capable of growth in response to dedicated effort, trying, new strategies and seeking help when appropriate"* (Yeagar et al, 2019).

The 'National Study of Learning Mindsets' involved 12,500 children from 134 US schools. It concluded that: *'A short (less than one hour), online growth mindset intervention which teaches that intellectual abilities can be developed improved grades among lower-achieving students and increased overall enrolment to advanced mathematics courses in a nationally representative sample of students in secondary education in the United States'* (Yeagar et al, 2019). The extraordinary results of the study indicate the power of positive interventions to overcome a history of difficulties with learning through developing a growth mindset.

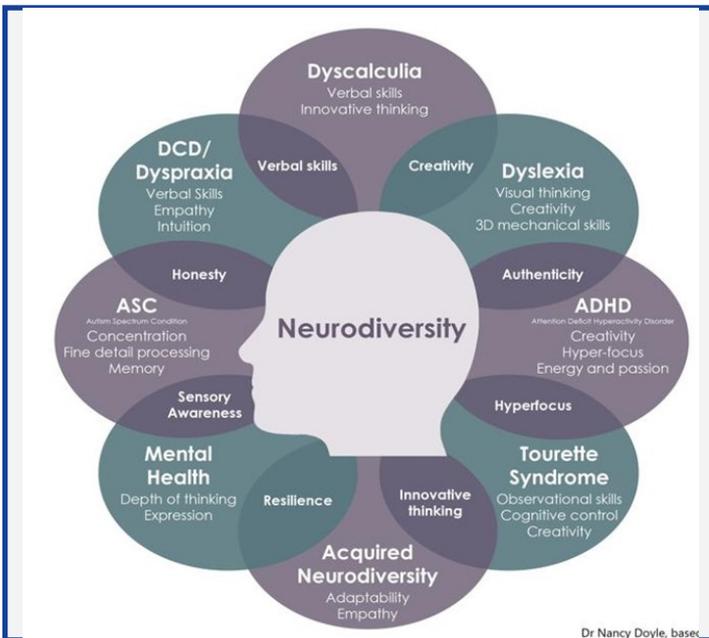
#### 4. Present the 'big picture'

It is essential to adapt your teaching to the differing individual strengths and talents rather than focusing on the challenges and needs of neurodiverse individuals. *Interconnected Reasoning*, the ability to make connections and understand relationships is a strength associated with dyslexia (Eide & Eide 2011). This means that dyslexic students tend to be good at noticing relationships between information within a larger context, such as systems, patterns, metaphors and analogies. Try different ways of presenting information that draw upon the strengths of neurodiverse minds such as developing students' abilities to 'see the big picture'.

It is also important to explain the relevance of learning activities as most students learn more effectively when they can see the purpose of what they are doing. Try using a 'top down' rather than a 'bottom up' approach to presenting information in your sessions. For example, introduce a new project, exhibition or drama production by starting with the end in mind and planning each stage with mini deadlines. You might introduce a drama production by describing what students need to do on the opening night, then working backwards through the stages they need to complete by when, so that students know what they need to do at the dress rehearsal. The next steps would be to explain when students need to start rehearsing the whole play as a group, when they will be blocking and rehearsing separate scenes, learning the lines, improvising and developing their characters and casting the actors. It is useful to provide an overview of the process by starting with the opening night and working backwards, to ensure students have a clear picture of how each stage of the rehearsal process fits into the 'big picture'.

*"School was a struggle for me, people just thought I was thick. I really needed someone to help me understand my strengths".*

- **Jamie Oliver**



knowledge. Try planning multiple ways that students can show what they know by including a variety of assessment methods and ways to complete assignments. For example, students could choose the format for a section of their assignment, such as video, slideshow presentation or essay style.

It is essential for all students to be empowered to work at their own pace. Some neurodiverse students will need extra time to process information and formulate responses particularly when reading. It is important to always present information in a well-structured, cumulative fashion by ‘signposting’, building on, recapping and reinforcing existing knowledge. It can be useful to break tasks down into small manageable ‘chunks’ of information. For online courses, ensure that chat is properly managed. It is a good idea to summarise the comments and questions from the chat and send out the questions and answers after the session. Additionally, try overlearning by repeating key content and recapping information using different methods. Finally, it is essential to provide frequent opportunities for students to practise knowledge and explore their own learning styles in a safe supportive learning environment.

### 5. Use multi-sensory techniques

Multi-sensory learning involves the integration of visual, auditory, tactile or kinaesthetic perceptual pathways which are proven to strengthen memory. When presenting new information, try engaging more than one sense at a time. Include multiple modes of representation by presenting information in several formats including text, graphics, audio and video. Likewise, ensure handouts are well designed by breaking large sections of text down into bullet points and use visuals and diagrams to make information more memorable. Additionally, you can provide students with electronic reading materials, preferably in advance, so they can reformat the text and use text-to-speech software to make the material more accessible.

It is a good idea to encourage learning by experience rather than being told, and to provide sources of information in a range of mediums, such as web sites, YouTube videos, illustrations, graphs, diagrams, online talks, interviews, articles, research papers, radio and television programmes, audiobooks and course textbooks. It is worth using student-led discussions in small groups, or breakout rooms in Zoom, so that learners who need to talk through their ideas get an opportunity to verbalise them without interrupting others.

The neuroinclusive approach requires teachers to design courses that can be adjusted for every student’s individual strengths and challenges. This can be achieved by building in flexible ways that learners can access information and flexible ways they can demonstrate their

| Good practice indicators for neuroinclusion |  |
|---|--|
| Learning resources                          | Early availability<br>Well-structured ‘signposting’<br>Accessible and modifiable format  |
| Teaching delivery                           | Multiple modes of representation<br>Paced/adjusted to meet student needs<br>Repetition, especially of key content<br>Employs frequent recaps |
| Feedback on teaching                        | Feedback sought frequently<br>Feedback shared with students<br>Action resulting from feedback shared   |
| Practise                                    | Opportunities to practise knowledge<br>Safe supportive learning environment<br>Experimentation encouraged                                    |
| Assessment                                  | Multiple ways students can demonstrate knowledge<br>Various methods used to assess learning<br>Multiple ways to complete assignments         |