



A reflective analysis on how to promote a positive learning experience for neurodivergent students¹

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ABSTRACT

With the increasing recognition of the number of neurodivergent students in higher education, it is essential that we understand how to provide an inclusive educational experience that facilitates a positive learning experience. In this reflective analysis we draw upon our position as neurodivergent academics alongside relevant theory and literature to foster understanding and provide practical strategies for those supporting neurodivergent students. We emphasise the importance of questioning normative assumptions around expected student learning behaviours, and the negative impact that these assumptions can have upon neurodivergent students. We then provide several practical strategies that can be used to develop more inclusive practice, drawing upon principles embedded within a Universal Design for Learning approach.

Keywords: neurodiversity, higher education, universal design for learning, inclusive practice

Introduction

If you are reading this article, it is likely that you have an interest in promoting a positive student learning experience. If you are an educator in higher education, you have the ability to make a tangible impact in this area, due to the high level of contact you likely have with students. Similarly, if you are supporting educators, you can impact students via your interactions with both students themselves and educators. We will be writing this with the assumption that you already aim to create a supportive learning environment for students.

When we are designing teaching and learning experiences and environments, or supporting others to do so, we often promote student-focused learning and teaching (Biggs & Tang, 2011) as an approach that creates a more supportive environment for our learners. Ulriksen (2009) posits that in doing so, we imagine a so-called 'implied' student who aligns with our own experiences or the experiences of the people we most commonly encounter as students, who tends to be non-marginalised (i.e. white, middle class, cis, male, etc.), or with societal consciousness over how people learn best. He proposes that this is the student we have in mind when designing and delivering teaching, and as such, that we may unconsciously teach in a way that excludes students who diverge from this profile (Akin & Neumann, 2013), unintentionally disadvantaging marginalised students.

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There have been attempts to facilitate inclusivity for a more diverse body of students through the implementation of Universal Design for Learning (UDL). UDL is an approach to teaching that emphasises the importance of taking a proactive approach that promotes inclusive teaching, rather than only making adjustments in response to a student informing disability services of their diagnoses (Burgstahler, 2015). The practice of inclusive teaching emerged in early years education, with the intention of fostering meaningful classroom participation for disabled students (Moriña, 2017). More recently these practices have been implemented in higher education, with attempts to identify barriers for disabled students, and remedy these to increase inclusivity (Dwyer et al., 2022).

In this article we will consider how the assumptions that we may make as educators can impact on neurodivergent students and their learning experience. We will then introduce a range of strategies to consider when designing and facilitating learning and teaching for (though not limited to) neurodivergent students, drawing upon evidence from the UDL literature. We will do this from a Feminist Standpoint perspective. Feminist Standpoint Theory (Harding, 1992; Pohlhaus, 2002) emphasises the importance of amplifying marginalised voices in knowledge production, and of drawing upon first-hand experience when designing for marginalised populations. We draw upon our positionality as two neurodivergent academics. Elliott works as a Senior Consultant in Equality, Diversity, and Inclusion across the sector, using his experience in psychological research to consider how we can make higher education a place that invites and embraces a diverse student population. In addition to being autistic and ADHD, he is trans and disabled. Amy is an autistic academic based in psychology and her research focuses on neurodivergent wellbeing and relationships.

Neurodiversity

Neurodiversity is an umbrella term used to describe the way in which human brains can vary across a range of domains, including differences in how we process social and sensory information, allocate attention, and plan and execute movement (Bertilsdotter Rosqvist et al., 2020; Singer, 1999). Within the broad spectrum of neurodiversity there are those who are labelled as neurotypical (or NT), or whose way of processing information matches the assumed societal 'majority' or 'norm', and those who are neurodivergent (or ND), whose processing differs from this expected norm. The term neurodivergent encompasses developmental differences such as autism, attention-deficit hyperactivity disorder (ADHD), and dyslexia, as well as acquired forms of neurodiversity such as post-traumatic stress disorder (PTSD), or brain injury. Conceptualisation of these differences as 'diversity' rather than 'disorder' acknowledges the societal context and systems in which they are situated and defined (Bertilsdotter Rosqvist et al., 2020; Walker, 2021), akin to the disability rights movement. Here the social contributions towards what is considered as 'disordered' are questioned (i.e., being able to hold a more limited amount of information in working memory is not disabling if one has access to tools like a Dictaphone). Importantly, the neurodiversity movement questions the assumption that one must conform to standard expectations for flourishing (i.e., developing at the same rate as peers, getting a job, having a romantic relationship) in order to have a fulfilling life (Waltz, in Bertilsdotter Rosqvist et al., 2020). This transgressing of assumptions has important implications for us as educators, and the expectations we might have of what student success looks like if we rely on the idea of the implied student.

Challenging assumptions

Neurodivergent students are likely to learn and behave in ways that deviate from expectations of the implied student, and a 'typical' (or neurotypical) learner. This may not align with your assumptions of how students will experience learning (i.e., appearing focused on you in class), how they will express themselves (i.e., using fluent spoken communication), and what this means (i.e., that they are engaged and capable). These assumptions are inherently 'neuro-normative', shaped by our expectations of what is acceptable (or 'normal') behaviour, and most frequently based on the behaviours of NT people who make up the societal majority. Thus, when someone behaves in a way that we do not expect and we make assumptions about what this means based on a differing set of norms, there can be misunderstandings. This breakdown in communication is termed the 'double empathy problem' (DEP), a term coined by Milton (2012) to refer to the communication difficulties that can occur between autistic and non-autistic people. Milton argues that rather than labelling autistic people as 'impaired' in their social communication with non-autistic people (Constantino, 2011), we should acknowledge that both parties are drawing upon different norms and contextual information, and that the responsibility for mutual misunderstanding lies with both parties given that social communication is bi-directional in nature. This can be likened to going on holiday to a place where you do not speak the language, and trying to ask a native resident for directions. There may be miscommunications, not because either party is 'impaired' in their communication, but because they are quite literally speaking a different language. Empirical support for the DEP comes from recent research which has shown that that peer-to-peer within-neurotype (i.e., autistic to autistic person) communication is more effective than cross-neurotype (i.e., autistic to neurotypical person) communication (Crompton et al., 2020a, 2020b). Research has also shown that judgements made about autistic people by NT people based on 'thin slice' perceptions (i.e., very short clips/interactions) tend to be more negative than judgements made about NT peers by other NTs, and also relate to a lower willingness to interact with that person in future (Sasson et al., 2017). More recently, the DEP has been applied more broadly to other communicative differences (see Jurgens, in Bertilsdotter Rosqvist et al., 2020; Sisskin, 2021).

Thus, applying the DEP more widely to encompass general differences between ND and NT social styles can help us to understand why we might misjudge the behaviour of students, and form negative impressions of them based on a discrepancy between how we expect them to behave, and how they actually appear (or what we interpret those appearances to mean). Taken together, research on the DEP suggests that our wider engagement with students should not be evaluated against a benchmark of 'typical' behaviour. Instead, we should consider variations in expression and processing as equally valid, and adapt our teaching to support these variations.

Repercussions

Failure to take differences in student social communication styles into account is just one barrier to a positive learning journey for ND students, and can have serious repercussions for them and their learning experience. Many ND students enter higher education with a lifetime of negative educational experiences behind them (Anderson et al., 2018). Common experiences include having behaviour mislabelled as 'challenging' due to a lack of understanding of neurodiversity, and lack of insight into how best to support young ND learners in educational settings, leading to difficulty participating fully in the classroom (Brownlow et al., 2021; Moyse, 2021; Roberts & Webster, 2020; Wood, 2019). Many young ND people are enrolled in interventions designed to 'improve' their perceived 'impairments' (Bottema-Beuttal et al.,

2018). One form of intervention widely used with autistic people is Applied Behaviour Analysis (ABA). The core purpose of ABA is to take 'undesirable' behaviours (anything from self-soothing movements like hand flapping or rocking, to lack of eye contact) and use conditioning to eliminate them. As such, ABA is viewed by many as a form of conversion therapy (Gibson & Douglas, 2018; Pyne, 2020). Such interventions are viewed as highly controversial by much of the autistic and neurodivergent community (Leaf et al., 2021), as they conceptualise behaviours that are central to the person's identity as wrong. The impact of negative school experiences and interventions like ABA can have devastating effects. Firstly, the experience of receiving repeated criticism for their behaviour, and having their natural ways of existing and communicating misinterpreted, can lead ND people to learn to 'mask'. Masking is the modification or suppression of aspects of identity and behaviour to fit in with others' expectations, or avoid negative judgements (Hull et al., 2017; Pearson & Rose, 2021; Perry et al., 2021; Schneid & Raz 2020). Masking can result in disconnection from one's identity, exhaustion, and mental distress (Bradley et al., 2021; Cage & Troxell-Whitman, 2019; Pearson & Rose, 2021) and may result in ND people ceasing to listen to their own needs and therefore not employing coping strategies or feeling able to leave overwhelming situations (e.g. a noisy classroom). Secondly, differences in emotional processing might make it more difficult to regulate the emotional impact of perceived challenges. Many ND people struggle with emotional dysregulation (feeling emotions particularly intensely and finding it hard to control them) (Motti, 2019; Webster, 2018), often related to difficulty in recognising their own emotional states (termed alexithymia) (Poquérusse et al., 2018), and the experience of rejection sensitive dysphoria (an intense, fearful reaction to perceived rejection, thought to be common in ADHD) (Webster, 2018). The dropping of coping skills/help-seeking in order to mask may lead to perceived or real academic failure (Clouder et al., 2020), which may create strong negative emotions, leading to an even greater perception of failure, and further fearful emotions, creating a vicious cycle that may be hard for the student to break.

As the neurodiversity and autistic self-advocacy movements have grown, knowledge around neurodiversity has increased and there has been some pushback against the expectation of neuronormativity (Bertilsdotter Rosqvist et al., 2020). However, research suggests that increased knowledge does not always lead to more accepting attitudes or practices (Cage & Troxell-Whitman., 2019; von Below et al., 2021) which places neurodivergent students entering higher education in a vulnerable position, waiting to see whether they will be able to act naturally and be embraced, or whether they will be reprimanded and mis-interpreted (McLeod et al., 2017). Given this background, it is an act of bravery (and sometimes desperation) for a neurodivergent student to be themselves, employ coping strategies, or disclose additional needs to university staff. Every time a student discloses, they are risking the possibility that their attempts at self-advocacy may be misinterpreted, and that they will be rejected, criticised, and shamed (Botha & Frost, 2020). This response may make them doubt themselves and put them in a situation where they are reluctant to try this again, which can have a long-term impact on the learning experience, and academic success.

What can I do?

The recent shift towards the use of Universal Design for Learning (UDL) in higher education could be particularly useful in ameliorating some of the issues discussed above. As previously outlined, one of the core aims of UDL is to reduce the need for disclosure by creating inherently flexible academic environments. In the following sections, we discuss strategies that educators may use in order to create learning environments which can facilitate ND flourishing. In addition, a recent focus on decolonising the

curriculum provides space in which to address assumptions around normative ways of learning and being. Decolonial practice not only brings into focus the need to broaden the perspectives we engage with in academia, but to also embed social justice within our practice (see Hayes et al., 2021) We aim here to integrate knowledge around the needs of ND students with a UDL approach to give some tangible suggestions of what you can do to provide a more inclusive learning environment. Some of the suggestions we make (e.g., changing your mindset) are entirely within the power of the educator, however some may be more reliant on systems and structures external to the educator (e.g., timetabling). Where this is the case, we make suggestions for what an individual educator may do with the more limited power that they possess.

Strategy 1: Do not assume bad intentions on the part of your students, and recognise their strengths

One of the key messages we would like readers to take away from this article is the importance of the DEP, and not making assumptions about the intentions of students based on your interpretations of their behaviour. Making these assumptions can lead to reprimanding a student with the intention of eliminating 'bad' behaviour, which, as previously outlined, can be damaging for neurodivergent students. Research suggests that even educators who rate themselves as knowledgeable about disability do not necessarily readily take an accommodating approach in their interactions with students, demonstrating a gap between attitudes and behaviour (von Below et al., 2021). Thus, it is important that staff work to be aware of their own biases, and how these may manifest when interacting with students.

We suggest that staff recognise the diverse ways in which students may communicate and contribute (for example through verbal engagement with discussion, or through submitting written material via a discussion board) and be open to collaborating with students to find suitable approaches to foster their flourishing. This is consistent with the 'students as partners' (or SaP) approach (Felten et al., 2014). A SaP approach focusses on building a relationship with students which conceptualises them as partners in the learning experience (Cook-Sather et al., 2018, frames the partnership between educators and students as one where both parties can bring differing but relevant expertise to the table in order to enhance the learning experience, and is founded on the basis of mutual respect, reciprocity and shared responsibility. Engaging with SaP may provide opportunities to work with ND students in ways that support their learning. However, a SaP approach is not without challenges, particularly when working with disabled students (de Bie, 2020). de Bie (2020) applies a Mad politics framework to SaP to stress the importance of staff staying attentive to power imbalances within interactions with students, and recognising that prior experiences of ableism/saneism will have an impact on these partnerships and the role that trust/distrust plays within them. Importantly, de Bie emphasises that good intentions alone are not a panacea for structural and systematic barriers that students face, meaning that if we choose to take a SaP approach we must be active in challenging injustice and aim to have a transformative impact beyond the individual (de Bie, 2020).

Strategy 2: Reconceptualise attendance and attention

Although it may be tempting to use attendance and attention as proxies for engagement (MacKay, 2019; Nordmann et al., 2021), there are a variety of reasons an ND student may behave differently in relation to these constructs. Attendance in itself is not a useful measure of engagement because there are many factors that play into whether a student physically attends class. For an ND student, it might be

overwhelming to come to class (especially if they fear being misinterpreted), due to difficulties with the social environment, or the expectation of having to work at a pace or in a way that is uncomfortable or distressing.

Attentional demands can be challenging for all students, but particularly for ND students due to differences in attentional processing. For ADHD students it can be difficult to focus on one thing at a time, and they may require additional mental stimulation to remain focused (Spaeth, 2019). For example, students may doodle or use a laptop to enable their brain to stay receptive to learning. Conversely, autistic students may become highly focused on a particular topic or task due to a more monotropic (singular) attentional style (Murray, 2018; Murray et al., 2005). They may require additional time or notice to switch from one task to another. Here, educators can use signposting at the start of a class to outline the expected structure of activities and give students warning prior to changing or finishing an activity.

Overall, we suggest that educators do not take a lack of physical attendance, or expected attentional cues, as indicative of reduced engagement. Instead, we recommend being open to recognising that students may engage in ways we do not expect and meeting them where they are rather than where we expect them to be. We recommend prioritising the creation of an environment where students feel comfortable to engage. This might involve approaches such as:

- Signalling that you are open to students engaging in different ways (e.g., in one-to-one discussion with you instead of in a group), and giving them ways to get in touch if they have learning needs they would like to share or discuss (Burgstahler, 2015);
- Facilitating discussion in a way that is compassionate towards incorrect or unexpected answers (e.g. misinterpreting a question). Instead, pose questions that help students work in the right direction. This aligns with a constructivist approach (Weidman & Baker, 2015).
- Providing a range of ways for students to participate. For example, instead of only allowing verbal discussion, you can give students the option of contributing via text chat or an online response system. This can be helpful for students who are less confident with speaking for any reason and can provide a way to participate anonymously.

Strategy 3: Be flexible, allow choices

Providing choice and flexibility where plausible is one of the hallmarks of a UDL approach. However, one common concern with flexibility is that it might detract from your intended student learning journey. As student-centred educators, we often craft learning journeys for our students and design activities that we want students to engage with in a certain way, based on our own experiences or relevant literature. This is not a problem unless we enforce this journey rigidly. Learning, even student-centred learning, is not one-size-fits-all.

Allowing a student to engage with learning differently may seem like they are getting a less pedagogically-valid experience. But for a neurodivergent student, doing things your way might be overwhelming, or even impossible. It is important to listen if a student tells you their needs, as ignoring them or shaming them (see Strategy 1) can have a lasting, negative impact.

Providing choice can feel unsettling for lecturers for a variety of reasons, including fear that academic standards will not be maintained or that students will not learn the necessary graduate attributes or

intended learning outcomes (ILOs). The aim of choice is not to reduce the scholarly level, rather to remove barriers that might make the particular type of activity you have designed unnecessarily difficult.

As an example, an assignment might include the expectation that a student will present in front of a class. This might be particularly difficult for some students, for example those who are autistic. You might, as a lecturer, be concerned that giving these students flexibility is problematic: after all, it is important that students learn to (and are assessed on being able to) communicate well. This is the moment to think outside of the box: How else might a student be able to develop and evidence their ability to communicate effectively? They could record a video presentation; they could present to you one-on-one, in dialogue; they could design online materials or write a report. These are all valid ways of communicating, and are likely to be relevant to the workplace, potentially even more so than a traditional presentation.

Lecture capture is also an excellent option for flexibility: it allows a student to go at their own pace and learn in an environment that is suitable for them. Some lecturers have concerns about recording their lectures, such as the fear that doing so will reduce student attendance, and therefore engagement (MacKay, 2019). However, as discussed in Strategy 2, this concern seems to be based on a relatively rigid interpretation of engagement that does not take account of the different ways in which students might experience learning (Nordmann et al., 2021).

In considering what flexibility is possible, we recommend considering what the non-negotiable elements of the learning are. This is likely to be linked to what skills you want students to have developed by the end of the module, and as such aligns well with a 'backwards design' approach (Wiggins & McTigue, 2005). Then, use constructive alignment (which involves designing learning and teaching so the ILOs align with assessment criteria and teaching content/activities) to consider how you can facilitate the development of those skills, and where there might be options for this to be done in more than one way. Building in flexibility in this way allows students to work to their strengths and meet their challenges in a safer and more constructive way.

Strategy 4: Do not use group work as default

Dialogue is a core component of constructivist approaches to learning and teaching, such as active learning, as it can facilitate 'active discovery' of knowledge (Weidman & Baker, 2015). As such, active learning often considered synonymous with group work, and educators may assume that working in groups provides a better learning experience for all students because of the possibility of dialogue.

However, for some people, e.g., neurodivergent students, working in a group can be an overwhelming and therefore ineffective learning environment. This might be because of the need to go at another's pace, because of the need to mask their neurodivergent traits (Cage & Troxell-Whitman, 2019), because of the social interaction, and because of the lack of clear expectations and roles. One way of mitigating the latter challenge is to assign specific roles to each member of the group and ensure that tasks are allocated accordingly. Make it clear what the students should do if a member of the group is not contributing (i.e., should they approach you and let you know) or if interpersonal issues arise. Even better, spend time at the start outlining how students can set their own 'ground rules' and support them in implementing these rules when they collaborate with others.

Importantly, group work is not the only way to facilitate dialogic, active learning. Instead, active learning can be facilitated by providing opportunities for students to consider questions or tasks by themselves, and

by providing opportunities for feedback, and you can make this option available to students who may be uncomfortable working in groups.

Strategy 5: Consider the sensory environment

Differences in sensory processing are a key feature across many forms of neurodiversity (Neufeld et al. 2021). Whilst some people may be hypo-sensitive to particular sensory stimuli (i.e., needing more tactile pressure when touched by another person), others may be hyper-sensitive (i.e., registering sounds that others may not notice, like the electrical hum of a whiteboard), and many people experience aspects of both hyper- and hypo-sensitivity which may fluctuate with time and context. The learning environment is full of sensory information; the lighting in a classroom may be too bright, or the noise levels may be very overwhelming for some students. Open plan learning spaces, and classes in which multiple people are talking at the same time may make a class inaccessible to an ND student, and impact on their learning experience. Importantly, this sensory bombardment may not always be apparent to you as a member of staff. However, being aware that these differences exist can help us to find solutions. This could include trying to schedule teaching in classrooms with natural light, away from areas of campus with heavier footfall. You could allow students to go to a quieter space to work, and either drop in sporadically or use online networking to check in with them throughout the class. Providing these options to all students (and not just those who explicitly communicate sensory needs) may make it possible for students to engage with learning without reaching the point of being overwhelmed in the first place. We are aware that it is often not possible to control the room in which you teach. However, we recommend working with timetabling departments, or estates departments more widely, to explore the possibility of them providing information about the sensory stimuli in teaching rooms and making that information available to students so they can prepare for the sensory environment.

Strategy 6: Make expectations and relevance clear

Setting clear and explicit expectations can facilitate success for your ND students. Many ND students may not understand subtext, unspoken meaning, or implied instructions; thus, it is important to make everything explicit, especially in relation to assessment. In meeting your students, share the expectations you have of them and what they can expect from you, at the beginning of (or before) the first session. A SaP approach may again be useful in working with students to co-create mutual expectations for your relationship. It is important that discussion of expectations is not used to reinforce expectations of neurotypical behaviour. Instead, you may want to make it clear how students can seek help, what your strategy is for replying to them (e.g., how long this might take), and what they can ask you about. You may want to clearly signpost drop-in sessions or office hours and detail the purpose of these sessions. Collaborating with students to find out what they value in their interactions, and in turn communicating values of your own, provides a space for developing mutual understanding,

You can also apply this approach to activity setting. It is vital to explain the relevance of a task, so that your students can relate it to the bigger picture. Constructive alignment is a good starting point, but ideally students should understand how a task relates to the wider learning context. This type of signposting will make it easier for all your students to get the most out of learning. Likewise, you may collaborate with students on designing activities, or discuss the different ways in which a student may address the outcomes of a particular activity you have set. This approach is likely to be particularly helpful for students with

attentional differences like ADHD, who may struggle focusing if a task does not appear interesting or relevant (Spaeth, 2019). You should be explicit about whether a task is optional or mandatory, and why engaging with the task is important. Scaffolding is useful technique, which involves supporting students to learn independently, by starting with high levels of lecturer direction, and gradually reducing the direction and giving students more choice. To provide an example of what this may look like in a module, AP (author 2) uses this approach in a Stage 2 undergraduate module which focusses on 'addressing complex issues in psychology'. Teaching is delivered via workshops, where students are given an outline of the topic and aims of each session, and the overall learning outcomes for the module. However, within each topic they may choose how to work (in groups or alone), the exact focus of their research (i.e., they may choose the specific area within the wider topic), and how they choose to present the work (e.g., as a podcast, blog post, critical essay, etc.). She makes time at the start of the module to share expectations and encourages students to do the same in any groups that they form. From the student perspective, many have reported finding this collaborative approach and flexibility to 'choose their own adventure' to be daunting at the start, fearing that there is a 'wrong way' to approach the module. However, students have also reported that working together to approach each task (and providing formative feedback throughout the module) has impacted positively on their confidence and helped them to develop stronger self-advocacy skills. An important factor here is clarity – even when allowing for flexibility it is essential that students know and understand explicitly the expectations and requirements that you have of them, and that they have 'low stakes' opportunities to try new things.

Finally, when approaching assessment, make it clear to students if you expect this to be approached in a particular way. This will benefit all of your students (not just those who are ND), and will reduce the likelihood of misinterpretation prior to submission. We would also encourage where possible allowing flexible submission formats (e.g., must an essay be written, or could students meet the same learning outcomes by submitting work in a different modality such as annotated mindmaps, or engaging in a verbal discussion). Here students can showcase a diverse range of strengths beyond standard 'academic writing' while still demonstrating their knowledge, consistent with taking a UDL approach to assessment.

Conclusion

In summary, ND students may present in a variety of ways that are not aligned with your usual expectations. Though you may not necessarily feel like an expert in understanding neurodiversity and the needs of ND people, it is possible to provide good support for your students by being open, flexible, and compassionate. Inclusive teaching is an ongoing process, and many educators may feel trepidation at a) developing a new approach or b) trying and getting it wrong. However, making mistakes is an inevitable part of learning, and a willingness to reflect on these mistakes and consider how you can make things better in future is the key to inclusive practice.

Biographies

At the point of submission (2021), *Elliott Spaeth* was working as a Lecturer and Senior Adviser in Academic and Digital Development, He is now a Senior Consultant in Equality, Diversity, and Inclusion (EDI) for Advance HE. He uses his experience in the fields of clinical psychology and pedagogy to explore how we can make Higher Education more inclusive. He is a Fellow of the Higher Education Academy, and is disabled, neurodivergent, and trans.

Amy Pearson is a Senior Lecturer in Psychology with an interest in neurodivergent wellbeing, including masking, stigma, and interpersonal relationships. She is also a Senior Fellow of the Higher Education Academy with a passion for inclusive education and creative academic practice.

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