Neurodiversity

THE FUTURE OF SPECIAL EDUCATION?

If we want to use the most effective approaches with kids—and draw on new research about the brain—special education needs to change its approach.

Thomas Armstrong

Special education needs to change. For too long it has traveled on its own track parallel with the regular education track, carting along its own tests, programs, and terminology. For too long it's been weighed down by a history emphasizing deficit, disorder, and dysfunction, ranging all the way from Henry Goddard's creation of the "moron" in 1910 (Gould, 1996) to current formulations such as *disruptive mood dysregulation disorder* (now included in the DSM-5) and a proposed variation on an ADHD diagnosis called *sluggish cognitive tempo* (not yet added). Even as regular education has opened up to new ways of thinking about brain-based learning, neuroplasticity, a growth mindset, and other innovations, special education has too often remained insular, holding fast to its diagnostic categories, instructional objectives, proprietary learning systems, and remedial and corrective methods.

At some point, the field of special education needs to rid itself of its negative baggage and embrace a more progressive way of educating students who learn differently. The concept of neurodiversity provides the catalyst for such a change.

The Neurodiversity Revolution

Coined in the early 1990s by journalist Harvey Blume and Australian autism activist Judy Singer, the term *neurodiversity* can be defined as an understanding that neurological differences are to be honored and respected just like any other human variation, including diversity in race, ethnicity, gender identity, religion, sexual orientation, and so on. In the past 10 years, neurodiversity has emerged into international prominence through university programs such as the College of William & Mary's Neurodiversity Initiative and the London

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School of Economics's Dyslexia and Neurodiversity program, which seek to provide broader acceptance of neurodiversity on campus and to support neurodiverse students in creating positive niches for themselves at school. There have also been efforts to integrate neurodiversity into the workplace through conferences (such as one sponsored by Microsoft on Neurodiversity in the High Tech Workplace) and job initiatives to bring more people diagnosed with autism spectrum disorder and other diversities into the computer industry (Higgenbottom, 2016). Neurodiversity is popping up in media coverage in such venues as *The New York Times*, PBS, and *Wired* and in many academic papers, books, and projects. Although many neurodiversity advocates focus their efforts specifically on autism spectrum disorder (ASD), increasingly the concept is being applied to other disability categories, including learning disabilities, ADD/ADHD, intellectual disability, and social and emotional disorders (Armstrong, 2011, 2012).

How Neurodiversity Differs from Current Special Ed Approaches

A neurodiversity-based approach to special education differs in many ways from the special education system currently operating in most schools. Figure 1 summarizes these differences—some theoretical and some more practical. Let's look at a few of the differences that have the most powerful implications.

Theoretical Foundations

Conventional special education views disability categories—such as ADHD, dyslexia, and autism—as having an organic basis, usually involving some combination of biological, neurological, and genetic causes. This orientation draws from theories related to genetics and neurobiology.

Neurodiversity advocates, on the other hand, offer a more nuanced and complex approach to the origins of these conditions, focusing, for example, on the evolutionary advantages of particular disability categories as a way of explaining why the genes for certain diagnoses are still in the gene pool (for instance, see Harpending & Cochran, 2002, on how ADHD symptoms might have been adaptive to hunting and gathering societies).

Neurodiversity also places greater emphasis on the social and ecological dimensions of diagnostic labels by examining how a person may be disabled in certain contexts but not in others. For example, a person with autism spectrum disorder may function at a level surpassing a typically developing individual when working at a job that capitalizes on the ability to discover tiny errors in computer code, as has happened with employees at the Danish software company Specialisterne (Henry, 2015).

A practical outcome of this perspective is that the role of the neurodiversity-oriented special educator becomes less one of correcting errors, remediating deficits, and teaching instructional objectives and more one of creating environments within which neurodiverse students can thrive. I've termed this process *positive niche construction* (Armstrong, 2012).

A Focus on Strengths versus Deficits

The biggest practical difference between special education as it's currently practiced and the neurodiversity-based approach is the way in which educators emphasize either deficits or strengths. Although special educators are certainly taught to look for students' strengths, the actual infrastructure of special education doesn't provide them with much in the way of formal or informal instruments, methods, protocols, or procedures for assessing their students' strengths. The one place in special education that *has* done a relatively good job of this is the field of gifted and talented education, but I can't emphasize enough that these procedures need to be available for *all* students with special needs.

The diagnostic instruments used in most special education systems today are designed primarily to diagnose disabilities and pinpoint ways of remediating student deficits. The neurodiversity-based approach, by contrast, aims to make use of the emerging literature on the strengths of special education populations (see, for example, Mottron, 2011; Diehl et al., 2014) and focuses primarily on assessing strengths, talents, abilities, and interests.

FIGURE 1. A Tale of Two Special Education Paradigms

	Elements of Deficit-Based Special Education	Elements of Strengths-Based Special Education (Grounded in Neurodiversity)
Focus	Disability	Diversity
Assessment methods	Testing to detect deficits, disorders, and dysfunctions	Assessing strengths and challenges
Instructional approaches	Remediating weaknesses	Building on strengths and using them to overcome challenges
Theoretical foundations	Genetics, neurobiology	Evolutionary psychobiology, social and ecological theory
View of the brains of students with special needs	In many cases, the brain is seen as damaged, dysfunctional, or disordered	Part of the natural human variation of all human brains
Program goals	Meeting instructional objectives	Developing human potential
Student goal	Learning to live with your disability	Learning to maximize your strengths and minimize your weaknesses
Student self-awareness	Explaining students' disabilities to them using machine-based metaphors	Helping students value their diverse brains using growth mindset, neuroplasticity, and "brain forest" metaphors

Along with the typical deficit-focused diagnostic assessments, a neurodiversity-trained special educator must be familiar with a wide range of strength-based approaches to discovering abilities in their students. For example, a teacher might use assessments associated with asset models like the VIA Character Strengths and Virtues, Dunn and Dunn Learning Style Assessments, Search Institute's 40 Developmental Assets, Gallup's StrengthsFinder, the Torrance Test of Creative Thinking, the Multiple Intelligences Diagnostic Assessment Scales, or the Baron-Welsh Art Scale. He or she might tap informal assessment methods to gain additional information about student strengths, including rough-and-ready inventories such as my 165-item Neurodiversity Strengths Checklist (Armstrong, 2012), "strengths chats," (Epstein, 2008), and motivational interviewing (Sheldon, 2010).

A neurodiversity-oriented approach would focus more attention on using the information gained from such assessments to help build on learners' strengths and to help students use their assets to tackle their social, emotional, cognitive, and academic challenges. Whereas traditional special educators often seek to teach students how to "live with their disability," both the theory and practice of a neurodiversity-based approach would emphasize helping students learn to maximize their strengths and minimize their weaknesses.

For example, an educator might encourage a student diagnosed with autism spectrum disorder who has an intense interest in a particular topic (a feature common to many individuals diagnosed with ASD) to develop that interest through project-based learning, group sharing, and other experiential approaches (Kluth & Schwarz, 2008).

The Role of Workarounds

A key strategic component of this new approach is what I call *workarounds*, ways in which students can manage assignments and other academic and nonacademic challenges without letting their disabilities get in the way. For example, special educators could guide students who have trouble getting their ideas down on the page because of handwriting difficulties, dysorthographia, or dysgraphia to use speech-to-text software like Dragon

NaturallySpeaking or Windows Speech Recognition. Similarly, wheelchair users can use virtual reality applications such as Google Cardboard and Oculus Rift to gain access to experiences that might otherwise be closed to them (like exploring the inside of a cave or examining underwater coral sea life). Students diagnosed with ADHD who have difficulty concentrating on their work but do better when they can move around and fidget would be able to use ergonomic "wiggle furniture," such as stability balls, bouncy bands, or standing desks.

These strategies and tools are already employed in some special education programs, but their use in this new neurodiversity-based approach to special education would be expanded and seen as fundamental to most students' Individualized Education Plans.

How We Talk to Kids: Machines or "Brain Forests"?

Similarly, rather than "teaching students about their disorders," a neurodiversity-based approach would teach them about the value of human variation and neurological diversity. Educators would teach students about how the human brain—and their brain—works, how the environment shapes brain structure and function (neuroplasticity), how brain power can be used to its maximum, and how a growth mindset improves performance. Students would be given tools and tips to help them actualize their brain's fullest potential.

An emerging theory about the brain that's particularly appropriate in helping students understand their neurological differences is Nobel Prize-winning biologist Gerald Edelman's model of the brain as an ecosystem (1994). I like to use the term *brain forest* as a metaphor students will understand and appreciate more readily than many of the machine-based metaphors used in conventional special education materials. (For example, in Galvin, 2001, the ADHD student's brain is compared to the engine of a car that runs too fast.) The problem with using "machine" metaphors to talk about the brain is that it's easy to fall into a dichotomy of "it's either working or it's broken." This practice is not too far away from cultural insults like "his elevator doesn't go to the top floor." A brain-forest metaphor, on the other hand, allows us to speak to students about the beauty of diversity, about how nutrients grow plants in the brain forest, and about the resilience of the brain forest to regrow itself even after suffering substantial damage.[1]

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Benefits of Transformation

There are clear benefits to moving ahead with a neurodiversity-based approach to special education as opposed to staying with our current model. Perhaps the most important outcome would be a change in the expectations of those involved in the special education system—most important, the expectations of students themselves, but also those of teachers, administrators, support personnel, and family members. The literature on expectations and the influence of words and labels on our attitudes and behaviors show clearly that positive expectations improve academic outcomes (see, for example, Rubie-Davies & Rosenthal, 2016). Similarly, students are less likely to be bullied in school if they're perceived in a more positive way by their peers (Swearer, et al., 2010). In addition, the seamless inclusion of neurodiverse students into regular classrooms is more likely to succeed if regular classroom teachers see students entering their classes as assets rather than burdens.

I also believe that a system that regards students with special needs primarily in terms of their assets and contributions is more in tune with 21st-century views of respecting diversity and giving all students a chance to contribute something of value to society. Such a system aligns more closely with society's emphasis on equity and with not singling some students out on the basis of their weaknesses, but rather giving them the same opportunities to succeed as anyone else.

Potential Roadblocks

Formidable challenges stand in the way of implementing this forward-looking approach to special education. Perhaps the most fundamental obstacle is the fear by many special educators and parents that portraying a student with special needs primarily in a positive light rather than in terms of that student's "disability" would threaten the very foundations of special education itself. Special educators—and parents—have fought with great energy and courage over the past several decades to ensure that the needs of their kids are recognized

and served. The focus on disability has functioned as a rallying cry for many advocacy organizations. So to suddenly stop and say, "These kids should be seen primarily in terms of their strengths and abilities" risks a reaction from legislators and the heads of funding organizations, who might think, "So why do these kids need special services?"

This is a legitimate concern. The answer lies in establishing clear boundaries between actions designed to protect the availability of special services for students with special needs (essentially using disability categories as a *means* for obtaining services) and actions designed to provide neurodiverse students with cutting-edge approaches to learning and human development (strength-based learning, inclusion, and other innovations) that will help them develop their full potential. In other words, use the disability laws to get them services, but then discard the "disability mindset" and use strength-based learning and other positive innovations. This latter goal should be seen as both the theoretical and pragmatic core of special education practices.

A second potential roadblock to this approach is the concern of many parents and educators that without the constant push of traditional special education programs to remediate weaknesses, students with special needs would fail to meet the increasingly rigorous academic demands of today's accountability-focused educational realities. People who care about these students worry that they would be at risk of falling far behind their typically developing peers.

This fear of "falling behind" is really an indictment of the "one-size-fits-all" mentality plaguing our current educational climate, but is nevertheless a real concern. One practical response to this problem lies in what I'd like to call *guerilla special education*. This

describes the process of using the letter of the law to justify using practices that will lead to optimal learning for neurodiverse kids—practices that are in the spirit of truly educating them with strength-based approaches.

For example, Common Core State Standard W.4.3, a writing objective for 4th graders, states, "Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences." Neurodiversity/strength-based special educators would be trained to help students meet this standard using their gifts and interests. An educator might allow a boy who draws beautifully to create a comic strip, encourage a girl with a gift for dramatics to write a short play, or have a student with strong oral skills but weak writing ability use speech-to-text software to craft his story.

Similarly, in writing IEPs, neurodiversity-based educators would be trained to incorporate strengths into each objective. For example, if Jason has highly developed three-dimensional thinking abilities and some difficulty with reading, instead of his IEP reading "By March, when discussing a story, Jason will answer 4 out of 10 'why' and 'how' questions in a mixed question probe," it might be written in a more strength-based manner: "By March, when discussing a story, Jason will answer 4 out of 10 'why' and 'how' questions in reference to a preferred activity or product, such as a three-dimensional structure he has built."

Setting Change in Motion

Finally, there is the question of how to practically bring about this type of neurodiversity revolution in special education. There are several positive initial steps we might take.

First, school districts that have existing programs, departments, or offices devoted to inclusion, diversity,

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or equity (such as the Springfield Public Schools in Missouri and the Clark County School System in Nevada) can begin to liaise with their departments of special education to integrate the values of neurodiversity in helping students with special needs succeed. One way to begin might involve setting up a schoolwide "Neurodiversity Fair," where both typically developing kids and kids with various learning differences would showcase their gifts and strengths through art, plays, musical performances, sports, and other creative channels. Another strategy might be to create a classroom curriculum on the importance of diversity (in general) and neurodiversity (in particular) for creating positive changes in the world.

In addition, districts can create a "neurodiversity coordinator" role within their departments of special education. Ideally, the coordinator would be someone who has completed a thesis or dissertation on the strengths of people with a specific learning difference or on some aspect of neurodiversity.[2] The coordinator should be familiar with the strength-based literature on kids with special needs (see notes sections of Armstrong 2011, 2012 for a good start) and competent in administering strength-based assessments. This person could advise regular and special education teachers on how to create strength-based instructional strategies for neurodiverse students and provide professional development to the district's teachers.

Finally, special educators themselves could establish study groups, conduct action research, and do individualized study of neurodiversity using the growing body of information available in the field, effecting change from the grassroots up.

Although there would be significant challenges involved in bringing about this change, the benefits would be many. We owe it to our neurodiverse students to give them the best, most innovative ideas education has to offer. EL

[1]An excellent children's book on neuroplasticity is *Your Fantastic Elastic Brain* by JoAnn Deak (Little Pickle Press, 2010).

[2]My own doctoral dissertation, published in 1987, was on the strengths of children diagnosed with learning disabilities, and is available through University Microfilms International in Ann Arbor, Michigan, 48(08A).

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