



Neurodiversity in the Classroom

**Strength-Based Strategies to Help Students with
Special Needs Achieve Success in School and Life**

**Thomas Armstrong, Ph.D.
www.institute4learning.com**

2019 Adam Morgan Foundation National Conference

St. Louis, Missouri

April 24, 2019

Neurodiversity



An idea which asserts that atypical (neurodivergent) neurological development is a normal human difference that is to be recognized and respected as any other human variation.

Positive Niche Construction



- Helping to ensure the thriving of a child by directly modifying the environment in such a way that it enhances that child's chances for success.

Principles of Neurodiversity



- The Brain is a Rain Forest
- Cultural Values Dictate Disorders
- Success = Adapting to the Environment
- Success = Changing the Environment
- Niche Construction Modifies the Brain

Positive Niche Construction



- Strength Awareness
- Positive Role Models
- Strength-Based Learning Strategies
- Enhanced Social Network
- Affirmative Career Aspirations
- Positive Environmental Modifications
- Assistive Technologies/Universal Design for Learning
- Internal Self Resources

5 Types of Diversities



- Autism Spectrum Disorder
- Learning Disabilities (Dyslexia)
- ADD/ADHD
- Intellectual Disabilities
- Emotional and Behavioral Disorders

Strengths of Autism

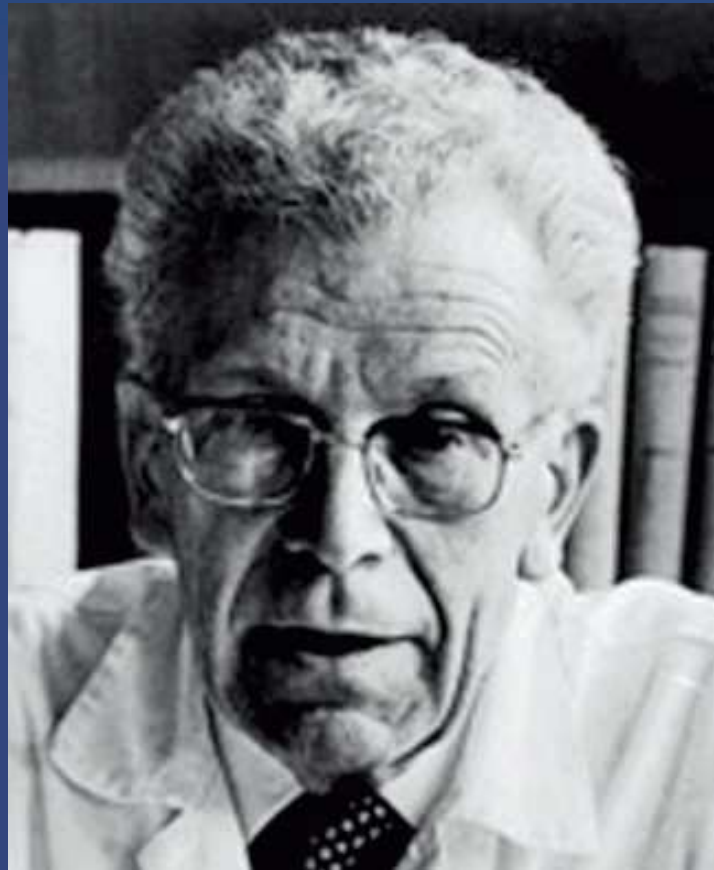


- Gift for detail
- Enhanced perceptual functioning
- Scores higher on Raven's Progressive Matrices
- Systemizers rather than empathizers
- Savant abilities (10% of all with ASD)
- Special Interests

Special Interests



- WWII propeller planes
- Toilet brushes
- Waist measurements
- Rommel's desert wars
- Paper bags
- Globes and maps
- Oil paintings of trains
- Light and darkness
- Industrial fans
- Photocopiers
- Yellow pencils
- Deep fat fryers
- Tarantulas
- Robots
- Bus timetables
- Garage doors



“...we can see in the autistic person, far more clearly than with any normal child, a predestination for a particular profession from earliest youth. A particular line of work often grows naturally out of his or her special abilities.”

- Hans Asperger (1944)

Strengths of Dyslexia



- Often strong in spatial intelligence
- Many are 3-D thinkers
- Entrepreneurial proclivities
- Holistic thinkers
- Mechanical aptitude

Strengths of ADHD



- Hunters in a farmer's world
- Learn by moving around
- Warning signs are actually creative traits
- Excel at novelty-seeking
- Have neotenous characteristics important for evolution (such as playfulness)

Evolutionary Advantages of ADHD

Hunter	Child with ADHD
Constantly on the move	Hyperactivity
Attention is on many things	Distractibility
Responds quickly to input from environment	Impulsivity

ADHD or Creative?

ADHD (deficit)	Creative (asset)
Hyperactivity	Vitality
Distractibility	Divergent Mind
Impulsivity	Spontaneity
Hyper-Focus	Passion
Poor Executive Function	Creative Imagination



Neoteny: retention of juvenile characteristics in the adults of a species

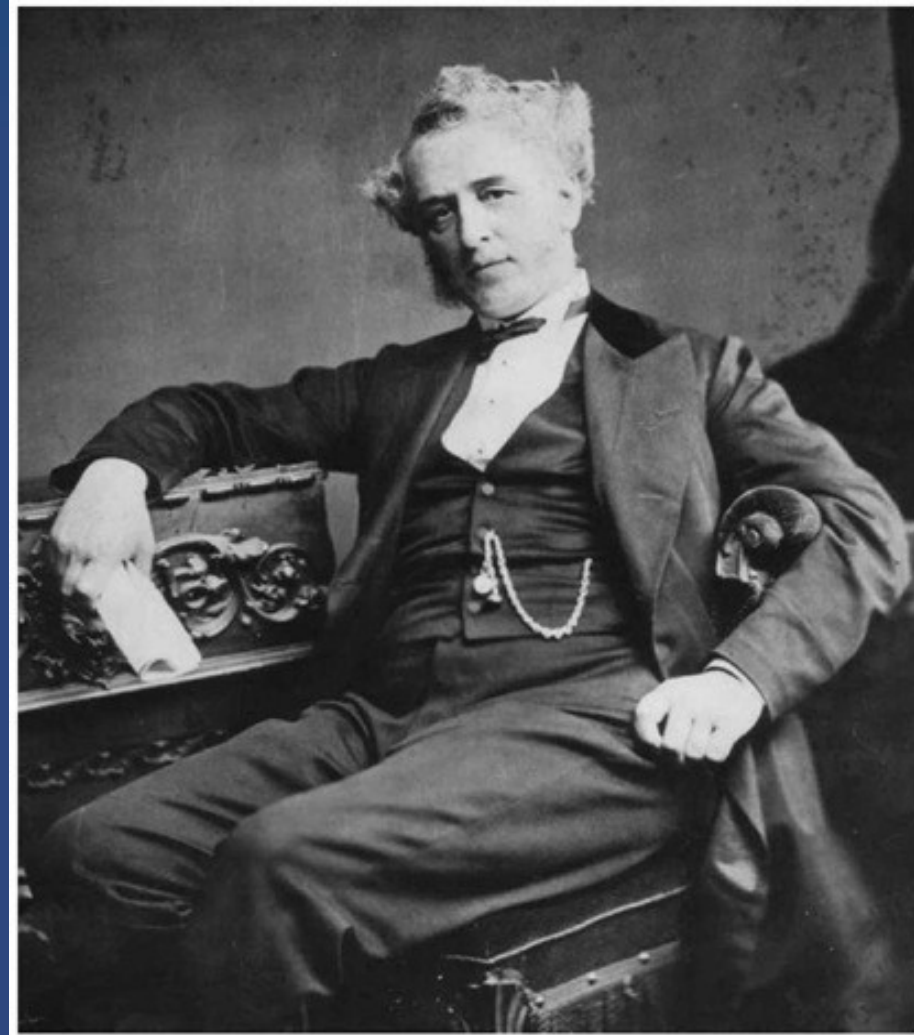
“a major evolutionary trend in Social beings” is ‘greater prolongation of childhood and retardation of maturity.’“

J.B.S. Haldane

Strengths of Intellectual Disabilities



- Capacity for dramatic expression (Down)
- Emotional warmth (Down, Williams, Fragile X, Prader-Willi)
- Specific capacities such as:
 - Musical intelligence (Williams)
 - Verbal capacity (Williams)
 - Caring for others (Prader-Willi)
 - Hands-on abilities (Fetal Alcohol Syndrome etc.)



“[Children with Down syndrome] have considerable power of imitation, even bordering on being mimics. They are humorous, and a lively sense of the ridiculous often colours their mimicry. This faculty of imitation may be cultivated to a very great extent, and a practical direction given to the results obtained.”

- John Langdon Down (1866)

Strengths of Emotional and Behavioral Disorders



- Emotional sensitivity
- Scores higher on creative thinking test (bipolar)
- Artistic capabilities (art, drama, music)
- Reflective capacities
- Greatness/Schizophrenia Link

Neurodiversity Strengths Checklist



Personal Strengths

- ☐ Enjoys working independently
- ☐ Has a good sense of his/her personal strengths and weaknesses
- ☐ Learns from past mistakes
- ☐ Has persistence in carrying out assignments or activities
- ☐ Is courageous in dealing with adversity and/or the unknown
- ☐ Keeps a personal diary or journal
- ☐ Has a good sense of humor
- ☐ Possesses a sense of responsibility
- ☐ Has strong opinions about controversial topics
- ☐ Marches to the beat of a different drummer
- ☐ Handles stressful events well (e.g. is resilient)
- ☐ Has good character (e.g. honesty, integrity, fairness)
- ☐ Has the ability to set realistic goals for him/herself
- ☐ Has a sense of confidence or high self-esteem
- ☐ Has good self-discipline
- ☐ Has personal ambitions in life
- ☐ Displays good common sense
- ☐ Possesses personal vitality, vigor, or energy

Communication Strengths

- ☐ Explains ideas or concepts well to others
- ☐ Asks good questions
- ☐ Is a good storyteller
- ☐ Is a good joke teller
- ☐ Has good listening skills
- ☐ Handles verbal feedback (especially negative feedback) well
- ☐ Has good articulation ability
- ☐ Is able to effectively use non-verbal cues to communicate with others
- ☐ Is persuasive in getting someone to do something
- ☐ Has good assertive skills without being pushy

Emotional Strengths

- ☐ Is emotionally sensitive to perceiving the world around him/her
- ☐ Has an optimistic attitude toward life
- ☐ Can tell how he/she is feeling at any given moment
- ☐ Can easily pick up on the emotional state of another person
- ☐ Is able to handle strong internal feelings in a constructive manner
- ☐ Receives gut feelings about things

From: Thomas Armstrong, Neurodiversity in the Classroom: Strength-Based Strategies to Help Students with Special Needs Succeed in School and Life. Alexandria, VA: ASCD, 2012.

"Reproduced with permission. Learn more about ASCD at www.ascd.org."

Neurodiversity Strengths Checklist



Social Strengths

- ☐ Has leadership ability
- ☐ Has a good sense of empathy for others
- ☐ Enjoys socializing with others
- ☐ Is good at helping others
- ☐ Is kind or affectionate towards others
- ☐ Has at least one good friend
- ☐ Prefers working with others
- ☐ Likes to play board games and/or card games with others
- ☐ Has skill in refereeing disputes conflicts between classmates
- ☐ Is polite and has good manners
- ☐ Is able to work out his/her own conflicts with others
- ☐ Works well in groups
- ☐ Volunteers his/her time in some worthy cause
- ☐ Belongs to at least one club or social group (e.g. Scouts.)
- ☐ Has a good relationship with at least one family member
- ☐ Is friendly to others
- ☐ Is good at sharing with others
- ☐ Follows class rules
- ☐ Has a good relationship with at least one teacher in the school
- ☐ Has good personal hygiene
- ☐ Trusts others without being taken in
- ☐ Is liked by his peers

Cognitive Strengths

- ☐ Has good organizational skills
- ☐ Has good study skills
- ☐ Is able to use cognitive strategies (e.g. self-talk) in solving problems
- ☐ Is able to pay close attention to details
- ☐ Has a good short-term and/or long-term memory
- ☐ Is able to think ahead
- ☐ Is able to become totally absorbed in an activity
- ☐ Can easily divide his attention between two or more activities

Cultural Strengths

- ☐ Has traveled to other countries
- ☐ Speaks more than one language
- ☐ Is tolerant of others who have cultural, ethnic, or racial differences
- ☐ Has pride in his/her own cultural, ethnic, or racial background
- ☐ Likes to find out about historical events around the world
- ☐ Enjoys learning about different cultural traditions

Neurodiversity Strengths Checklist



Literacy Strengths

- ☐ Enjoys reading books
- ☐ Has good reading comprehension
- ☐ Enjoys doing word puzzles or playing word games
- ☐ Is a good writer in one or more genres (e.g. poetry, stories, reports, letters)
- ☐ Is a good speller
- ☐ Has a large vocabulary
- ☐ Enjoys listening to audio books or to someone telling a story or reading out loud

Logical Strengths

- ☐ Does well in science class
- ☐ Can estimate things easily
- ☐ Enjoys working with numbers and/or statistics
- ☐ Is good at solving math problems
- ☐ Has a chemistry set or other science kit that he/she works with at home
- ☐ Has an interest in astronomy, chemistry, physics, or biology
- ☐ Enjoys logical or number games or puzzles like Rubik's cube or Sudoku
- ☐ Can easily calculate numbers in his/her head

Visual-Spatial Strengths

- ☐ Has an aptitude for fixing machines
- ☐ Likes to create three-dimensional structures with building materials
- ☐ Is good at doing jigsaw puzzles or other visual puzzles
- ☐ Is able to read maps well
- ☐ Reports being able to visualize images clearly
- ☐ Gets information more easily through pictures than words
- ☐ Is sensitive to the visual world around him/her

Physical Strengths

- ☐ Has a good sense of balance
- ☐ Learns material best when moving around
- ☐ Likes to ride his/her bike, skateboard, and/or other self-powered personal vehicle
- ☐ Is good at playing team sports like baseball, soccer, basketball, or football
- ☐ Is good at playing individual sports like tennis, swimming, gymnastics, or golf
- ☐ Is in good physical health
- ☐ Likes to dance
- ☐ Is physically strong
- ☐ Is a fast runner or has other athletic abilities
- ☐ Likes to exercise (e.g. weights, aerobics, jogging, treadmill)
- ☐ Has good physical endurance
- ☐ Has good physical flexibility

From: Thomas Armstrong, Neurodiversity in the Classroom: Strength-Based Strategies to Help Students with Special Needs Succeed in School and Life. Alexandria, VA: ASCD, 2012.

"Reproduced with permission. Learn more about ASCD at www.ascd.org."

Neurodiversity Strengths Checklist



Dexterity Strengths

- ___ Has a hobby building model cars, planes, ships or other similar projects
- ___ Displays good handwriting
- ___ Likes to juggle or do magic tricks
- ___ Enjoys hand crafts like knitting, crocheting, embroidery, or needlepoint
- ___ Likes to make things with his/her hands
- ___ Has good tactile ability
- ___ Enjoys arts and crafts like origami, collage, and/or paper maché
- ___ Enjoys woodworking, carpentry, carving, and/or metal work
- ___ Has good eye-hand coordination

Nature Strengths

- ___ Has good rapport with animals
- ___ Is good at taking care of plants in the classroom or at home
- ___ Is sensitive to weather patterns
- ___ Takes care of a pet at home or at school
- ___ Is concerned about the welfare of the planet (e.g. is ecologically-minded)
- ___ Likes to go hiking and/or camping in nature
- ___ Enjoys studying nature (e.g. insects, plants, birds, rocks, and/or animals)
- ___ Likes to hunt or fish
- ___ Has a good sense of direction

Musical Strengths

- ___ Is sensitive to the rhythms of music
- ___ Enjoys playing a musical instrument
- ___ Knows the music and lyrics of many songs
- ___ Has a particular interest in one or more musical genres (e.g. rock, classical, jazz)
- ___ Enjoys listening to music
- ___ Has a good sense of hearing auditory acuity
- ___ Has a good sense of pitch
- ___ Has a good singing voice
- ___ Makes up his/her own tunes or melodies with or without/lyrics

High Tech Strengths

- ___ Likes to spend time using a computer, tablet, or smart phone
- ___ Has a facility for playing video games
- ___ Likes to surf the Internet
- ___ Knows how to set up audio-visual or computer equipment
- ___ Likes to text on the phone
- ___ Enjoys social networking (e.g. blog, website, Facebook)
- ___ Enjoys using a still camera or video camera to record events or express him/herself
- ___ Has several his/her own favorite movies or TV shows that he/she likes to talk about
- ___ Understands at least one computer language

Neurodiversity Strengths Checklist



Creative Strengths

- ___ Expresses him/herself dramatically
- ___ Has a good imagination
- ___ Enjoys doodling, drawing, and/or painting
- ___ Likes to act in plays and skits
- ___ Works well with clay or other forms of sculpture
- ___ Demonstrates creativity in one or more school assignments
- ___ Possesses a love of beautiful things
- ___ Has ideas for futuristic or fantastic projects
- ___ Comes up with ideas that nobody else has thought of

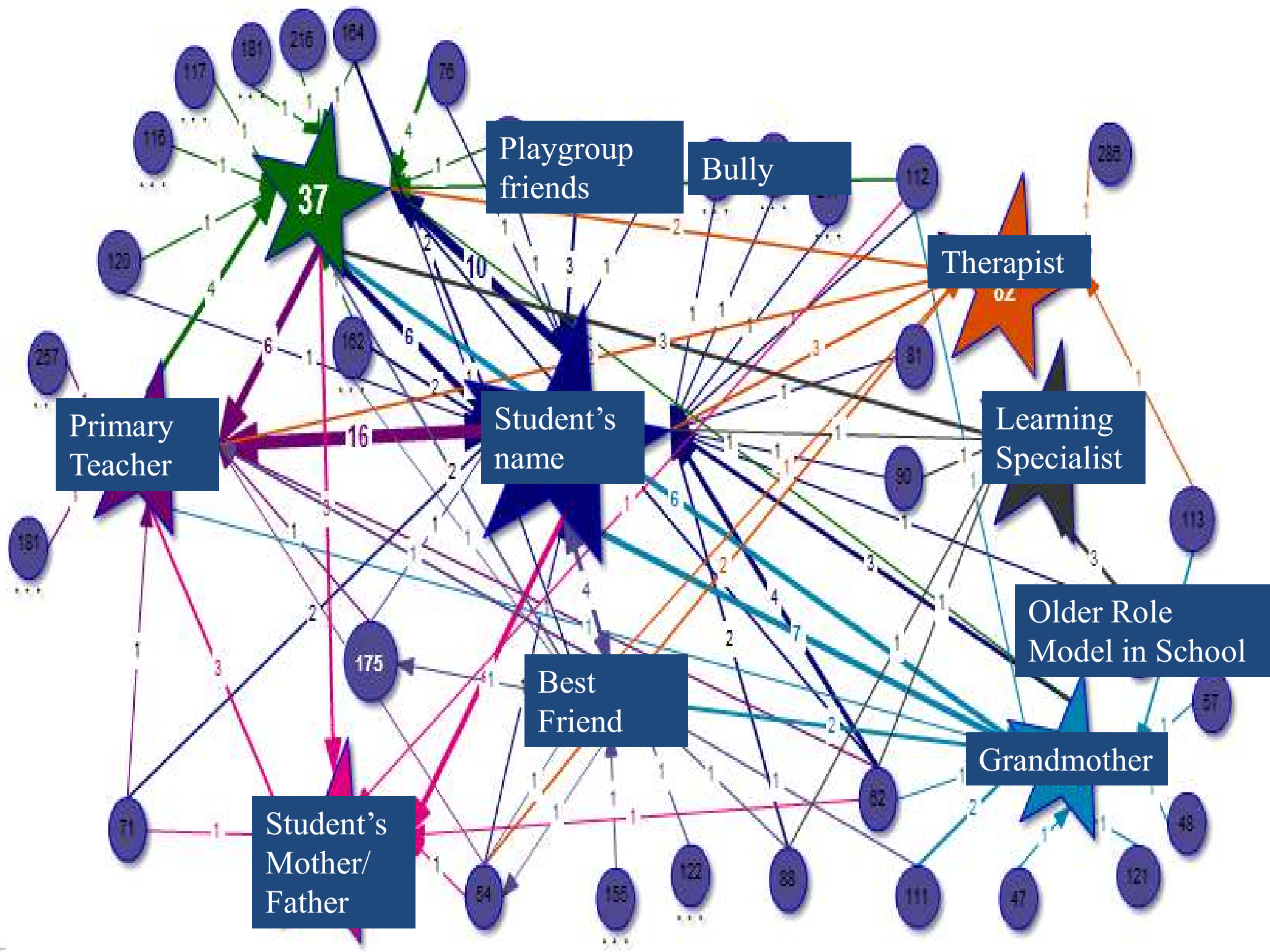
Spiritual Strengths

- ___ Enjoys meditation, yoga, or some other form of contemplation
- ___ Asks big life questions (e.g. what is the purpose of life?)
- ___ Has a deep sense of wisdom
- ___ Participates in religious or other spiritual events
- ___ Has a philosophical attitude toward life
- ___ Has a strong faith in something higher than him/herself

Miscellaneous Strengths

- ___ Likes collecting things (e.g. stamps, coins, buttons)
- ___ Loves to cook
- ___ Has a love of learning new things
- ___ Is a good test taker
- ___ Possesses a good memory for nighttime dreams
- ___ Is curious about the world around him/her
- ___ Has a good sense of time
- ___ Manages money well
- ___ Has good fashion sense in the clothes he/she wears
- ___ Has good entrepreneurial skills (e.g. has started own business) started his/her own business

Other Strengths (write in other strengths not mentioned elsewhere in checklist):





A Venn diagram consisting of two overlapping circles. The left circle is labeled 'Assistive Technologies' and the right circle is labeled 'UDL'. The circles overlap in the center, creating a shared area. The entire diagram is enclosed in a rectangular frame. The background of the slide features a dark blue gradient with a pattern of interlocking puzzle pieces on the left side.

Assistive
Technologies

UDL

[illegible]

- Learning About Personal Strengths
- Developing a Growth Mindset
- Understanding How Their Brain Works
- Self-Regulation Strategies
- Mindfulness Practices

References p. 1



- Armstrong, Thomas. Multiple Intelligences in the Classroom, 3rd ed. Alexandria, VA: ASCD, 2009.
- Armstrong, Thomas. The Power of Neurodiversity: Unleashing the Advantages of Your Differently Wired Brain. Cambridge, MA: DaCapo Lifelong, 2010.
- Armstrong, Thomas. Neurodiversity in the Classroom: Strength-Based Strategies to Help Students with Special Needs Succeed in School and Life. Alexandria, VA: ASCD, 2012.
- Armstrong, Thomas. “Leonardo da Vinci’s IEP Meeting,”
<http://institute4learning.com/blog/2013/02/19/leonardo-da-vincis-iep-meeting/>
- Bachel, Beverly K. What Do You Really Want?: How to Set a Goal and Go for It! A Guide for Teens, Minneapolis, MN: Free Spirit, 2016.
- Baron-Cohen, Simon. The Essential Difference: The Truth About the Male and Female Brain. New York: Basic, 2003.
- Blume, Harvey. “Neurodiversity,” The Atlantic, September 30, 1998.
<http://www.theatlantic.com/magazine/archive/1998/09/neurodiversity/305909/>
- Cramond, Bonnie. “Attention-deficit Hyperactivity Disorder and Creativity: What is the Connection?” Journal fo Creative Behavior, 1994, vol. 38, no. 3, pp. 193-210.
- Doidge, Norman. The Brain that Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science. New York: Penguin, 2007.
- Edelman, Gerald. Neural Darwinism: The Theory of Neuronal Group Selection. New York: Basic, 1987.
- Eisenberg, Dan, and Benjamin Campbell, The Evolution of ADHD: Social Context Matters, San Francisco Medicine, October 2011, pp. 21-22.

References p. 2



- Rosenzweig, M. R., Bennett, E. L., & Diamond, M. C. (1972). Brain changes in response to experience. Scientific American, Vol. 226, pp. 22-29.
- Grandin, T.(1996).Thinking in pictures:And other reports from my life with Autism.New York:Vintage.
- Greenspan, Stanley, & Wieder, Serena . Engaging Autism: Using the Floortime approach to help children relate, communicate, and think. Cambridge, MA:DaCapo/Perseus, 2009.
- Happé, F. (1999). “Understanding assets and deficits in autism: why success is more interesting than failure,” Spearman Medal Lecture, The Psychologist, vol. 12, no. 11, November, 1999.
- <http://udlguidelines.cast.org/>
- Jamison, K.R. (1996). Touched with fire: Manic-depressive illness and the artistic temperament. New York: Free Press.
- Karolyi, C.V., et al. “Dyslexia Linked to Talent: Global Visual-Spatial Ability,” Brain and Language. June, 2003, vol. 85, no. 3, pp. 427-431.
- Kingsley, Jason, and Mitchell Levitz. Count Us In: Growing up with Down Syndrome, New York: Harcourt, 1994.
- Kolb, Bryan, etc. “Age, Experience and the Changing Brain”, Neuroscience & Biobehavioral Review, March 1998.
- Montagu, Ashley. Growing Young. New York: Praeger, 1988.
- Mottron, L. “The Power of Autism,” Nature, November 2, 2011. Vol. 479, pp. 33-35.
- Odling-Smee, F. John et al. Niche Construction: The Neglected Process in Evolution. Princeton, N.J.: Princeton University Press, 2003.

References p. 3



- Pineda, Pablo. Interview: "Down Syndrome is not a Disease, but Another Personal Characteristic"" http://www.disabilityworld.org/06-08_03/il/down.shtml.
- Sforza, T., Lenhoff, H., & Lenhoff, S. The (Strangest) Song: One Father's Quest to Help His Daughter Find Her Voice. Amherst, N.Y.: Prometheus Books, 2006.
- Shaw, P., et al. Attention-deficit/hyperactivity disorder is characterized by a delay in cortical maturation. Proceedings of the National Academy of Sciences, December 4, 2007, Vol. 104 No. 49, pp.19649–19654.
- Simeonova, D. I. et al. "Creativity in familial bipolar disorder," Journal of Psychiatric Research, November, 2005, Vol. 39, no. 6, pp. 623–631.
- Singer, Judy. "Why Can't You Be Normal for Once in Your Life," in Marian Corker and Sally French (eds), Disability Discourse, Buckingham, England: Open University Press, 1999, p. 64.
- Tauszik, Karleen. Every Kids' Guide to Goals: How to Choose, Set, and Achieve Goals That Matter to You. Karleen Tausik, 2017.
- Taylor, Andrea Faber & Frances E. Ming Kuo. Could Exposure to Everyday Green Spaces Help Treat ADHD? Evidence from Children's Play Settings. Applied Psychology: Health and Well-Being, 2011, Vol 3, no. 3, pp. 281 – 303.
- Yale Center for Dyslexia and Creativity, <http://www.dyslexia.yale.edu/> .

Contact Information



- Email: thomas@institute4learning.com
- Website: www.institute4learning.com
- Blog: <http://institute4learning.com/blog/>
- Twitter: [@Dr_Armstrong](https://twitter.com/Dr_Armstrong)