

Visual Spatial Thinkers Twice Exceptional Students and Underachievement

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Twice Exceptional Students

- Overview
 - Characteristics
 - Learning strengths
 - Learning weaknesses
 - Visual system of thinking – Visual spatial learners
 - Teaching strategies

- Twice exceptional students are those who have outstanding gifts or talents and are capable of high performance placing them in the top 10% of children their age
but who also have a disability that affects some aspect of their learning or social interactions. (Brody & Mills, 1997)

Examples of weakness/disability

- Physical disabilities – *Stephen Hawking*
- Sensory disabilities – *Helen Keller*
- Asperger syndrome – *Dr. Temple Grandin*
- Emotional and /or behavioural disorders - *John Nash Jnr*
- Attention-deficit/hyperactivity disorder – *Nikola Tesla*
- Learning disabilities – dyslexia, language disorders, visual spatial with processing weaknesses – *Albert Einstein*

Columbus Group ¹⁹⁹¹

Giftedness is Asynchronous development in which **advanced cognitive abilities** and **heightened intensity** combine to create inner experiences and awareness that are **qualitatively different** from the norm.

This asynchrony increases with higher intellectual capacity.

The uniqueness of the gifted renders them particularly vulnerable and requires **modifications in parenting, teaching and counselling** in order for them to develop optimally.

Ellen Winner Model₍₁₉₉₆₎

- **Precocity**
 - Earlier
 - Faster
 - More easily
- **March to Own Drummer**
 - Learning is qualitatively different
- **Rage to Master**
 - Intrinsic motivation
 - Intense obsessive interest
 - Focus
 - Flow

Introversion/Extraversion

- Extraverts outnumber introverts
- More introverts in gifted population
- The more highly a person is the greater the likelihood of being an introverts

- EXTRAVERTS

- Energised by outer world
- Feel energised by people
- Single-layered personality
- Open and trusting
- Think out loud
- Like being centre of attention
- Learn by doing
- Comfortable in new situations
- Many close friends
- Don't mind interruptions
- Impulsive
- Risk-takers in groups

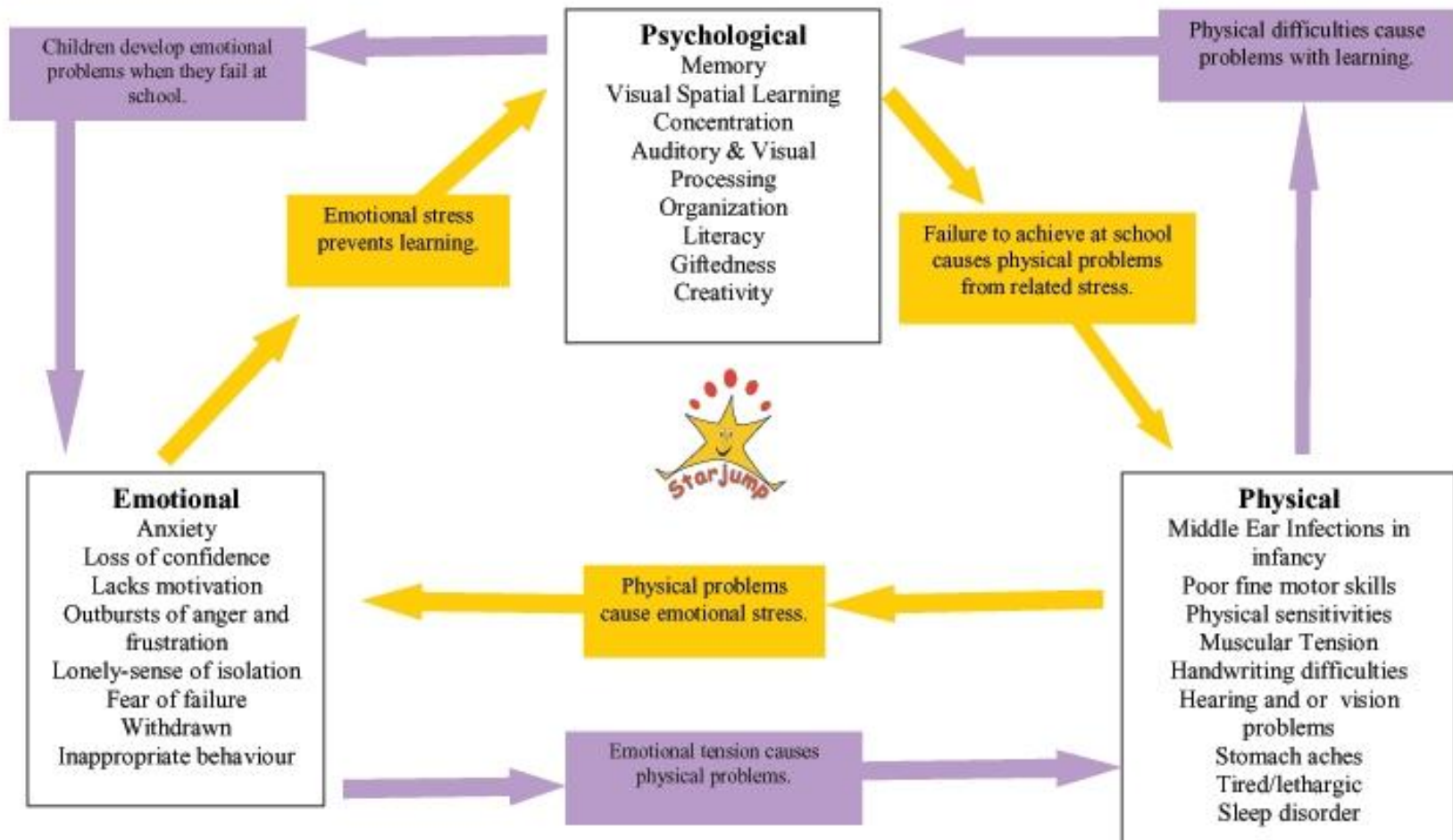
- INTROVERTS

- Energised by inner world
- Feel drained by people
- Persona an dinner self
- Need privacy
- Mentally rehearse
- Hate being centre of attention
- Learn by observing
- Uncomfortable with change
- Few close friends
- Dislike intrusions and interruptions
- Reflective
- Fear humiliation – quiet in large groups

Care for Introverts

- Respect their need for privacy
- Never embarrass them in public
- Let them observe first in new situations
- Give them time to think. Don't demand instant answers
- Don't interrupt them
- Give advanced notice of expected change coming up
- Give 15 mins warning to finish activity
- Reprimand in private
- Teach new skills privately rather than in public
- Encourage relationships with sole mate
- Don't push to make lots of friends
- **Respect their introversion. Don't try to remake them as extraverts**

BREAKING THE CYCLE OF LEARNING DIFFICULTIES



Characteristics of VSL

- In groups discuss and record on paper the behaviours or traits you think of when thinking about being visual spatial.
- Classify them into strengths and weaknesses

Characteristics – Learning Behaviour

- Struggle with basics – need to learn compensatory strategies
- High verbal ability – extreme difficulty with written work
- Reading problems
- Strong observational skills, poor memory skills especially working memory
- Attention deficit problem, but concentrate for long periods when interested
- Poor academic risk taker

Strengths

- Excel in solving 'real-world' problems, outstanding critical thinking and decision-making skills
- Strong Questioning attitude, may appear disrespectful
- Display unusual imagination, divergent, generate original and often 'bizarre' ideas, appear to be day dreaming.
- Wide range of interests – hindered by difficulty
- Focused interests or passions – often not school related topics

Characteristics

- **Strengths**

- Thrives on complexity
- Loves difficult puzzles
- Fascinated by computers
- Great at geometry and physics
- Keen visual memory
- Creative, imaginative
- A systems thinker
- High abstract reasoning
- Excels in math analysis
- High reading comprehension
- Excellent sense of humor

- **Weaknesses**

- Struggles with easy material
- Hates drill and repetition
- Has illegible handwriting
- Poor at phonics, spelling
- Poor auditory memory
- Inattentive in class
- Disorganised :forgets details
- Difficulty memorizing facts
- Poor at calculation
- Low word recognition
- Performs poorly on times tests

Social emotional behaviour

- Use humor to divert attention from weaknesses
- Appears immature – uses anger, crying ,withdrawal to express feeling of failure
- Sensitive about weakness area, highly critical of self and others
- Feeling of isolation, difficulty making friends
- Leadership ability – often amongst the ‘nontraditional students’
- Require teacher and parents understanding, support and feedback in weakness area

* * * * *

You didn't rule a margin, Jamie.

I Wish I Could Remember
the time when I was one;
from what my mother tells me
those days were lots of fun
* * * * *
at three I can remember
I crashed my Bright red trike;
at Five I was fantastic!
I rode that two wheeled bike
* * * * *
soon it is my Birthday and I'll
be turning 8 & there's such a
lot I want to do that I
can hardly wait!
* * * * *

MAJOR RISK FACTORS

- Generally at least above average to high intelligence
 - Masking effect
- Scatter in IQ scores on WISC assessments
 - Depressed IQ scores
- Struggle as work increases
 - Underachievement
 - Low self efficacy, loose motivation, hate school, teacher's expectations/beliefs, poor behaviours
- Poor short term auditory memory
- Poor working memory

HISTORY

- Family member with similar challenges
- History of allergies or ENT problems in first 5 years
- Conductive hearing loss in early childhood



Identifying characteristics of Visual-Spatial System of Thinking

- Visual, not auditory
- Spatial, not sequential
- Holistic, not detail-oriented
- Focus on ideas, not format
- Pattern seeking
- Divergent, Not convergent
- Sensitive and intense
- Asynchronous development

Left
Word



Right
Picture

A

B

C

D



Space



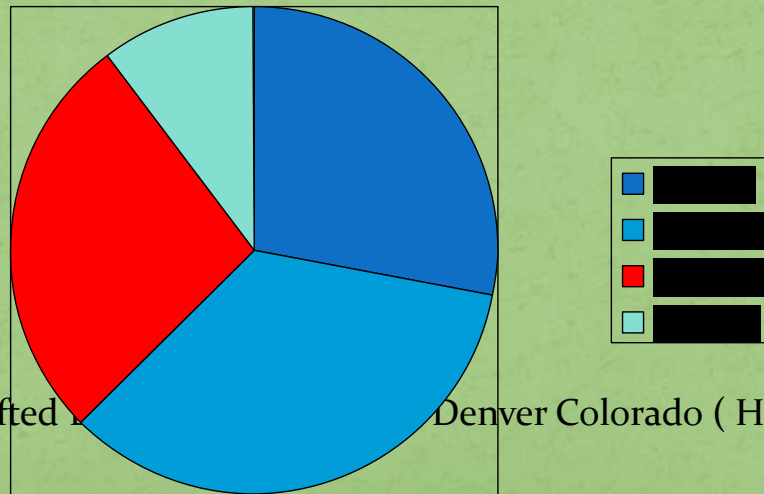
brilliance. The Visual-Spatial Learner, Denver: Delacort Publishing.

Dunn & Dunn (1993)

- Learning Style Inventory elements
 - Auditory – Analytic
 - Visual – Global
 - Kinesthetic - Global
- Of the students sampled
 - 19% were analytic
 - 26% were global
 - 55% were integrated
 - Text books and teachers tend to be analytic
 - Thematic approach better suit global
 - Gifted students prefer kinesthetic(experiential and active) and tactile (hands-on) instruction

Visual/Spatial - v - Auditory/Sequential

- About 1/3 of all 9 - 13 year olds in general population are strongly visual/ spatial
- Less than 1/4 are strongly auditory sequential
- Of balance 2:1 tendency toward visual/ spatial



- Based on recent research by Gifted & Talented Center, Denver Colorado (Haas, 2001)

Learning style preferences include

- Quiet or background noise
 - Bright or low light
 - Formal or casual seating
 - Uninterrupted study or intermittent breaks
 - No intake or intake (snacking, chewing, drinking or smoking)
 - Specific periods during the day
 - Passive or mobile
 - Global or analytic processing
-
- 3/5 of a person's learning style is biologically imposed (Restak 1979, Thies 1979)

Analytic processing preference

- Prefers to
 - Think in words
 - Uses inductive reasoning
 - Step by step instruction – in a sequential pattern that builds toward a concept

Analytical processors

- Learn persistently
- In quiet setting
- Bright lighting
- Formal seating
- Little or no food or drinks

Global/holistic processing preference

- Prefers to
 - Think in pictures, images or patterns
 - Uses deductive reasoning
 - Be presented with the concept with details added and discovered later

Global holistic processors

- Require regular breaks
- Soft lighting
- Sound in the environment
- Seating informally
- Regular snacks and drinks
- Learning with peers
- Tactile activities
- Learn on different tasks at the same time
- Poor auditory memory

Important implication

- Most gifted students with IQ ≥ 145 were global learners Cody (1983)
- Most underachievers were also global and almost exclusively tactile/kinesthetic learners (Price, Dunn, Dunn & Griggs 1981)
- Only 12% low achieving gifted students prefer auditory learning
- Underachievement may be learned through the struggle to cope with the psychological conflict of the classroom (Whitmore, 1980)

- While all gifted learners may prefer holistic tasks, only underachievers appear to have relative performance deficits in analytic tasks as compared to holistic tasks

Initial identification often due to school based problems including

- difficulty finishing tasks/schoolwork
- a poor sense of time, does poorly on timed tests
- difficulty with spelling and /or reading
- difficulty with times tables and /or computation
- often thought to be lazy or defiant

Eight Strategies for Visual-Spatial Learners^(Silverman)

1. They remember what they see and forget what they hear so SHOW them and allow them to show you.
2. They are NOT step-by-step learners so give them the big picture first.
3. Avoid timed tests.
4. Teach to their strengths. Teach them to use their strengths to compensate for their weaknesses.
5. If they don't complete their assignments because of their fine motor coordination or motor planning, let them use a key-board.
6. Use visualisation techniques in every subject.
7. If they grasp complex concepts but have difficulty with easy sequential tasks, give them ADVANCED WORK, even if they haven't mastered the easier work.
8. They usually suffer from poor self-concepts, so reassure them that they will get smarter as they get older.

Strategies to enhance self-efficacy

- Engage them emotionally through encouragement
- Make them winners – improve their personal best (ADHD Research)
- Use emotionally charged material; show them that you care about them; see their under-achievement as a temporary condition not a permanent one
- Re-assure them that they will get smarter as they get older. Use autobiographies about successful adults who had similar characteristics and struggled at school
- Explain clearly the features of a visual spatial learning style linking it to the strengths and weaknesses associated with it.

Positive outcomes of using “Wait time” Bagley,

M.T. (1988) Suppose the Wolf was an Octopus: Trillium

- Length of student responses increases
- The use of explanatory statements increases enormously
- Failure to respond decreases significantly
- Children experience an increase in confidence in their ability to respond fluently and comprehensively
- The incidence of speculative, creative thinking increases
- Student-centered interaction increases
- Students give more evidence both before and after inference statements
- The number of questions asked by student's increases
- The variety of responses increases
- Slow students contribute more
- Discipline problems decrease significantly

Reading

- Phonics don't work
- Allow time
- Silent reading may be more advanced than reading aloud indicates
- They need a picture of the word
- Greatest difficulty with sight words – no picture to go with them
- Use books rich in visual imagery to enhance interest and ability in reading
- Create movie as reading and then discuss and compare details

- The brown dog jumped over the fence
- Brown dog jumped fence

Spelling

- Avoid invented spelling
- Develop visual skills
- Use novelty and fun competition
- Use a spelling correction program to assist in them devising methods to compensate for weakness
- Develop large bank of sight words
- Look for small words in larger words
- Games
 - Guess the word
 - Tic tac toe
 - Type out words
 - Write the words on a white board, shaving cream, sand

Dolch /sight words

Picture Me Reading 1994

<http://picturemereading.com/index.html>



Writing

- Distinguish between written work and handwriting
- Consider purpose of activity
- Teach touch typing
- Give real world relevance
- Reduce stress
- Allow opportunities for success

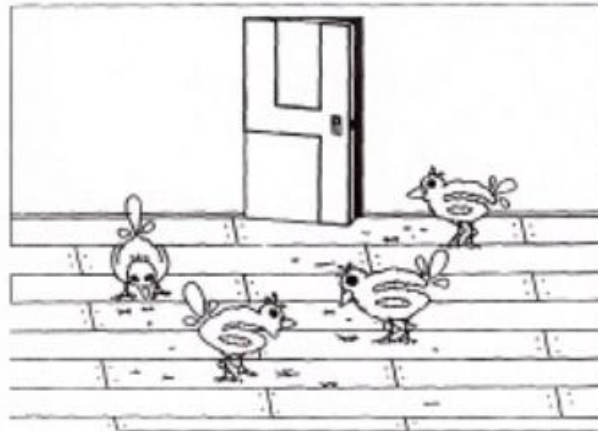
Maths

- Start with complex maths concepts
THEN encourage the basics
- Don't rote teach
- Show patterns
- DON'T RUSH
- Encourage mental manipulation
- Expect different strategies
- Explain the real world relevance or application
- Use visual, concrete approaches to maths, problem solving and pattern finding rather than computation

Memorize in Minutes

Times Tables in Minutes Walker Krimsten Publishing

$$4 \times 6 = 24$$



**Door x Chicks =
Denty Floor**

Teaching Strategies for Visual-Spatial Learners

Adapted from work by Dr Linda Kreger Silverman, director of the Gifted Development Center Denver

General practice

These students remember what they see and forget what they hear so **SHOW** them

- Write directions on the board, on overheads or on paper
- Use visuals, overheads, draw pictures
- Demonstrate, don't just tell, use hands-on experiences
- Let them observe others before attempting new tasks
- Limit the number of verbal instructions to maximum of 3 steps

Strategies to gain students attention and assist with focus and concentration

- *To gain attention:*
- Say their name loudly (but not angrily) or touch their shoulder when they do not hear you
- talk louder, faster, animatedly with gestures; do not speak in slow monotones, it can put them to sleep
- *To reduce distractions:*
- Use earphones or earplugs to block out noise when working
- Seat them in a position with minimal visual and auditory distractions. Such as at the front of class at a single desk. Or even facing the wall.
- *To improve learning*
- Use lists or mind maps
- Teach goal setting and time management strategies

Content

- Give them advance abstract material, even when they have difficulty with easy, sequential material
- Make information challenging and complex
- Use discovery techniques; finding patterns; inductive learning, inquiry training
- Use fantasy; provide opportunities to use their imaginations
- Have them discover their own method of problem solving eg
 - instead of teaching division step-by-step, give them a simple division problem, with the answer. Have them figure out how to get that answer in their own way. Don't ask them to show you their steps. When they succeed, give them a harder problem with the solution worked out and see if their system works.
- Avoid rote memorisation (especially auditory); use more conceptual approaches
- Teach to their interests eg hobbies, after-school interests

Strategies for instruction

- Avoid timed tests. If they are required, allow them to take them at home or alone, trying to beat their own past record, rather than competing with their classmates.



- Teach them to type and let them type and other written tasks on the computer
- Give copies of notes rather than have them copy them down
- Allow time to think about ideas before answering

Illustrated by Buck Jones. Re-printed by permission from Silverman, L. (2002)

- Upside-Down Brilliance: The Visual-Spatial Learner, Denver: DeLeon Publishing."

Resources – Web sites

- www.australiangiftedsupport.com
- [www.nswagtc.org .au](http://www.nswagtc.org.au)
- [www.gifteddevelopment .com](http://www.gifteddevelopment.com)
- www.giftedservices.com
- www.gifted-resources-centre.org
- www.piecesoflearning.com
- www.hoagiesgifted.org
- www.egroups.com/group/OnTheRightSide
- www.sinetwork.org
- www.bibliofind.com
- www.inspiration.com
- www.multiplication.com
- www.apduk.org
- www.bbc.co.uk/schools/typing/
- <http://picturemereading.com/index.html>
- www.starjumpcom.au

Resources - Publications

- Right Brained Child in a Left Brained World: Unlocking the Potential of Your ADD Child
Freed, J
- Upside Down Brilliance Silverman, L.K.
-
- Raising Topsy Turvy Kids Golon, A.
-
- Look closer: Visual Thinking Skills and Activities K – 12 Johnson, N.
-
- Smart Kids with School Problems: Things to Know and Ways to Help Vail, P.
-
- Using Both Sides of Your Brain Buzan, T.
-
- Mind Mapping for Kids Buzan, T.
-
- Mapping Inner Space – Learning and Teaching Mind Mapping Margulies, N.
-
- Memorize in Minutes: The Times Tables Walker, A.
- *2e: Twice-Exceptional Newsletter* - mark@glenellynmedia.com