Using the Naglieri Data to guide instruction

**Gifted Children**

Children who are classified as gifted by a nonverbal ability test have the mental capability to learn at a rapid pace and at a depth well beyond their age peers. These children can have high general ability, however, and still achieve at or below grade level in school, as measured by state standards. That is they are smart even when they do not have a large amount of knowledge that pertains or relates to doing well in school.

**What does the Naglieri measure?**

The Naglieri Nonverbal Ability Test measures General Ability. General ability is what allows people to solve a number of different types of problems that involve words, pictures, sounds, or numbers.

These problems may involve:

* Verbal, quantitative, or nonverbal reasoning
* Memory
* Sequencing
* Verbal and math skills
* Patterning
* Connecting ideas across and within content areas
* Insights, making connections
* Drawing inferences
* Analyzing simple and complex ideas

**What are the components of the NNAT 2?**

The NNAT 2 uses questions which can be described as having visual**-**spatial demands, as well as requiring sequencing, remembering information that has been obtained, and solving problems that require reasoning. These are not separate abilities, bur rather, separate demands of the test questions, all of which require general ability.

**Gifted Students’ Characteristics and Related Learning Needs**

|  |  |
| --- | --- |
| **Characteristic** | **Learning Need** |
| Curious about many topics | Extended learning opportunities |
| Process information quickly | Acceleration |
| Possess great memory | Testing out |
| Grasp underlying principles | Compacting |
| Make generalizations | Holistic approach |
| Are highly sensitive | Community building |
| Prefer to work alone | Independent learning |
| Relate well with older students | Mentoring, apprenticeships |
| Have advanced sense of humor | Leadership opportunities |
| Require little direction | Student-directed learning |
| Maintain deep concentration | Metacognition |

**Visual Spatial Learners**

**High Block Design Scores**

**From Rebecca L. Mann**

**A few prominent Visual Spatial Thinkers**

Albert Einstein

Thomas Edison

Leonardo da Vinci

**Strengths of Visual Spatial Learners**

**Visual Spatial Learners are adept at:**

Puzzles & mazes

Block Counting – 3D arrays with hidden blocks

Visual Transformations

Envisioning a folded & cut piece of paper when opened

Spelling words forward and backwards

Getting around in unfamiliar territory

Reading charts, maps \, diagrams

Picturing objects from different angles

Recalling a series of numbers/letters

Numerical relations & mathematical reasoning

Pulling everything apart

Discovering visual models of reality

Finding problems

**Visual Spatial Learners often enjoy:**

Blocks

Boxes

Construc™

Computers

Daydreaming

Gears

Legos™

Mazes

Movies

Puzzles

Tinker Toys

Taking stuff apart

**Visual Spatial Learners are:**

**Holistic Learners who:**

Perceive relationships between parts and the whole

Have trouble attending to details

Can’t grasp isolated facts until the big picture is in view

**“Aha” Processor who:**

Understand all or nothing, once the “Aha” occurs, learning is relatively permanent

Often cannot explain the steps of their thinking

Detest routine, repetitive tasks and do not learn by rote memorization

**Creative, they:**

Arrive at surprising conclusions

Have amazing imaginations and often have imaginary playmates

Make up rich stories but can’t always write them down

May do great drawings and be elaborate doodlers but have awful handwriting

**Reflective**

They need extra thinking time therefore; they can appear to be lazy or to be daydreaming

**Perceived as:**

Unwilling to fit into time schedules or routines

Careless – Regularly forgetting homework; if it is done, handwriting may be illegible

Reluctant to take risks

**Highly sensitive & hypersensitive to their environment such as:**

Clothing – “the sweatpants kids”; may chew on their clothes

Noise – they have poor listening skills but keen hearing, get more info than they can sift out; can hear the “lights”

Emotions – Good at reading people and can sense a teacher’s anxieties and ambivalence

**Readers who:**

Have better reading comprehension than decoding skills

Tend to skip over words but still get the thrust of the story – May never be good oral readers

Prefer reading heavily illustrated material

**Strategies for Teaching Visual Spatial Learners**

**The Whole Picture**

Explain major concepts so child understands instructional goal

Allow opportunities for inductive learning

Provide real life scenarios – service oriented projects are good

Discovery Learning – tell the child the goal of the instruction and let him/her figure out a way to get there

Use a multidisciplinary emphasis

**Hands On - Minds On**

Provide manipulatives and create hands on activities

Encourage the student to make models

**Visualize**

Show everything – use overhead or white board, color is better than chalkboard

Encourage the child to visualize lists, patterns, and situations

-Ask child if he can create a picture of the topic

Have a student construct, draw, or make visual representations

Ask yourself, “How would I teach this concept to a deaf child?” (auditory)

Use Venn Diagrams and graphic organizers; teach students how to use them

**Technology**

Encourage the use of computers for learning and teach keyboarding early

Encourage use of Inspiration or Kidspiration

**Increase the Difficulty**

Do not force the student to succeed at easier material before trying difficult work

Emphasize mastery of higher level concepts instead of perfection of simpler ones

**Use**

Color

Mnemonics

Humor

Meaningful material

Venn Diagrams

Rhythm

Music

Emotion

Fantasy

Manipulatives

**Color (check for color blindness)**

Have the child use highlighters to highlight directors or key concepts

Color coordinate everything that has to do with one subject

i.e. purple math book cover, purple notebook, purple portfolio, etc.

Use overheads or white boards with a variety of color; categorize by color

i.e. subjects one color, verbs another

Have the visual spatial child crate his own flashcards in color

i.e. 6 x 7 in black, answer below in red 42

Copy worksheets and study guides on colored paper, it is easier to keep organized and easier on the eyes

i.e. all test in yellow paper, all assignments in another color or math in green, reading in blue, etc.

**Mnemonics**

For Mnemonics to be effective …

The funnier the better

Make images 3D and/or moving

Exaggerate

Make images colorful

Uses as many senses as possible

**During Lectures**

Pause during verbal presentation to allow words to register

Allow student to tape record lectures

Encourage child to take notes in pictorial format

i.e. webbing, graphic organizers

Emphasize concepts, not details (dates)

Distribute handouts; don’t expect these students to take dictation

**Foreign Language**

Classroom instruction can be difficult

Total immersion in a language is much more effective

Good at Sign Language

**Spelling**

Draw configurations of words on graph paper (these kids need to **see** the word shape)

Write each word on a card in color

**Writing**

Visualize the entire sentence before writing it.

Tape record written work and then transcribe

Use webbing to formulate ideas

Grade ideas (content) and mechanics separately

**Math**

Give chance to devise own method of problem solving

Avoid drill and repetition – No Timed Tests

Do five hardest problems on the page and go on if successful

Multiplication table

* Look for patterns in multiplication charts 5678 is 56 = 7x8 and 4x9 = 6x6

Teach within the context of entire number system

Division – give divisor, dividend & quotient than let child figure out the system

**Reading**

Oral reading – a visual spatial child may never be a good oral reader

Get to the child before she makes a mistake so word won’t imprint incorrectly

The student may tire easily and lose concentration

Decoding – Sight words, not phonics – can’t hear the vowel sounds

Comprehension – Good speed readers since they don’t read every word

Get content first, and then scan for details

Study captions and graphics in texts

Read first and last sentence of each paragraph

Skim material 4 times vs. reading slowly once

Junior great Books is a terrific program for these kids

**Organization**

Color code calendars, assignments, books and supplies

Use an hourglass the visualize the passage of time

Make sure they have watches that are reliable

Teach them to “take a picture” of assignments as they are given

Help them learn to look up to recall side to remember what is they need to do

Teach them how to create priority lists and schedules

-they may not like it, but it is essential survival skill!!!

**Teacher/Student Interaction**

Teach the child to become a spy (on the right students), notice what is going on in the classroom – take cues from classmates

Institute a moment of silence – let students visualize (create a video in their mind) what they will need for homework

Reduce unpredictable noise – music works well (ear buds)

Use wait time – allow time for the child to translate the spoken words to images

Let the child completely finish answering even if she appears off target as she may bet there

\*Discipline in private and be nonjudgmental – negative message will cause them to shut down

\*Encourage the child’s strengths; don’t dwell on his weaknesses

\*Believe in these children, they may be the future Edisons and Einsteins of the world

**Effective Materials for use with Visual Spatial Learners**

Attribute blocks Base ten Blocks

Fraction bars Geoboards

Pattern Blocks Tangrams

Geoblocks Pentominoes

Soma Cubes Puzzles

Legos™ Construx™

Mindbenders Logic Problems

Gears String Art

Strategy Games Three dimensional geometric shapes

Destination Imagination Set, The Game of Visual Perception

**Resources – Books**

Eberler, R. (1997). *Scamper: Creative Games and Activities for Imagination Development.* Prufrock Press.

Gardner, H. (1993). *Multiple intelligences: the theory in practice.* New York, NY,: Basic Books

Johnson, Nancy. (1996). *Look Closer, Visual Thinking Skills & Activities.* Marion IL: Pieces of Learning

Silverman, L. (2002). *Upside-Down Brilliance: The Visual Spatial Learner.* Denver: DeLeon Publishing

West, T.G. (1991). *In the mind’s eye: visual thinkers, gifted people with learning difficulties, computer images, and the ironies of creativity.* Buffalo, NY.: Prometheus Books.

**Articles**

Mann, R.L. (2005). Gifted students with spatial strengths and sequential weaknesses: An overlooked and under-identified population. *Roeper Review,* 27(2), 91-96*.*

Mann, R.L. (2001). Eye to Eye: Connecting with Gifted Visual-Spatial Learners, *Gifted Child Today Magazine,* 24(4), 54-57

Silverman, L.K. (1989) The Visual-Spatial Learner. *Preventing School Failure, 34)1), 15-20.*

**Web Sites of Interest for Visual Spatial Learners**

<http://www.inspiration.com/home.cfm>

Inspiration is an integrated diagramming and outlining program that allows students to organize their thoughts in either a concept aping format and then click a button to see the outline forma, or vice versa.

<http://www.gifteddevelopment.com>

Linda Kreger Silverman, Ph.D., The Gifted development Center, 1452 Marion St. Denver, CO 80218

Linda Silverman has written numerous articles, copies of which may be ordered by assessing the website for the The Gifted Development Center or by writing and requesting a catalog publications.

<http://www.visual-learners.com/>

Alexendra Shires Golon has written several books (which can purchase electronically) that are helpful for elementary teachers, students, and parents.

<http://www.graphic.org>

The Graphic Organizer

Some links from this page you might find useful for the use of Graphic Organizers:

Ready to Print Graphic Organizers with novel studies

Graphic Organizers – Many types presented as teacher directions

Write Design – Examples of graphic Organizers

How to effectively Organize a Paper using a Graphic Organizer – a seven step approach

Organization Patterns – A basic guide for the 5 paragraph essay

<http://www.puzzlecraft.com/solutions/pen/pentom/pentomin.html>

The Penominoes Page

Pentominoes have some very interesting mathematical properties providing an endless array of challenging puzzles. For the puzzle buff, a pentominoes set will provide many hours of entertainment//eduplace.com/math/

<http://eduplace.com/math/brain/index.html>

Brain Teasers

Brain Teasers are both entertaining and mentally challenging. Each Wednesday evening they provide one new Brain Teaser at each of three grade ranges.

<http://math.rice.edu/~lanius/Lessons/>

Cynthia Lanius Mathematics Lessons

Terrific math related activities, including: Blocks/Fractions, Million $ Mission, Calendar Fun, Power Cards, Polyominoes, Geometry Outline, A Fractals Unit, I Love Calculus, Slope as Rate of Change, Dueling Pinwheels, The Hot Tube, and more

<http://www.mindtols.com/memory.html>

Memory techniques and mnemonics – a thorough collection of mnemonic strategies

<Http://www.bonus.com/> (got to Imagine then to Illusions)

Optional Illusions, Spiral Illusions, Magic Eye Puzzles, Spot the Differences and more. Go to Explore and How It Works – 46 things to do (try the robot).

VISUAL-SPATIAL LEARNERS

Learning Characteristics

|  |  |
| --- | --- |
| *Strengths* | *Weaknesses* |
| * Thrives on complexity | * Struggles with easy material |
| * Loves difficult puzzles | * Hates drill and repetition |
| * Fascinated by computers | * Has illegible handwriting |
| * Great at geometry, physics | * Poor at phonics, spelling |
| * Keen visual memory | * Poor auditory memory |
| * Creative, imaginative | * Inattentive in class |
| * A systems thinker | * Disorganized; forgets details |
| * High abstract reasoning | * Difficulty memorizing facts |
| * Excels in math analysis | * Poor at calculation |
| * High reading comprehension | * Low word recognition |
| * Excellent sense of humor | * Performs poorly on timed tests |

NON VERBAL

|  |  |
| --- | --- |
| Stanine 1, 2, 3  **Student Profile Teacher Role**  Difficulty in highly verbal environments Model, diagram, map,  Prefers concrete experiences Illustrate for student  Tendency to neglect details Help student find interests  Sees overall picture e.g. words-miss vowels Provide structured  Difficulty identifying where to focus environment  their attention Direct coaching  Do not learn effectively in unstructured Direct guidance and support  situations Carefully monitor student  when learning new tasks  **Student Needs** Frequent prompting  Show rather than tell  Need short explanations with modeling  Need help developing analytic strategies  Reduction of the number of things that  must be processed  Use familiar concepts to explain ideas  Concrete analogies  Very specific instruction  Needs slower paced instruction  Peer modeling and work with partner  Related information to material previously learned | Stanine 4, 5, 6  **Student Profile Teacher Role**  Visualizes or uses mental models Supply visual illustrations for  May have difficulty in reading instruction  reading and spelling Break up problems into simpler tasks  Tends to obtain lower scores Use visual cues to reduce strain  on achievement tests working memory  Tends to have high interests Uses terms like “What do you see?”  in specific areas when learning new material  Reward excellence by recognition  Keep all information in view for  comparisons  **Student Needs** Structured environment  Work in pairs Moderate pace for instruction  Use illustrations/schematics for Carefully monitor work  comprehension Break up problems into simpler tasks  Use videos with student controlling  Input of information  Use metaphors and analogies to concrete information  Use computer for graphic organizers  In writing tech descriptive working rather than narrative |
| Stanine 7, 8  **Student Profile Teacher Role**  Poor sense of time Encourage student with  Sensitive materials, project and problems  Likes to use visual/mental models to learn that follow their interest  Often have well developed verbal skills Diversity in grouping  May have difficulty in spelling Asks “What do you see?”  Likes adult company Student is sensitive of the  attitude of the teacher  **Student Needs** Praise student’s accomplishments  Hands on experiences In math needs concrete objects  Emphasize descriptions to solve problems  Encourage all three areas Guided instruction, model  Encourage revise and improve flow different strategies  of ideas | Stanine 7, 8  **Student Profile Teacher Role**  Poor sense of time Allow for guided discovery  Good at puzzles and mazes Put with older students  Can have sense of humor Needs visual representations  Excellent visual memory Try to develop visual thinking and  May seem inattentive or spacey reasoning  Possible music or art talent Can use systematic instruction in  Desk may be unorganized visual entities  Forgets to turn in work or poor quality Suggest trying new ideas rather  May have difficulty spelling than model  **Student Needs** Encourage self-regulation/  Use of computers and calculators self-monitoring  Follow interests and perseverance on Help with confidence “I trust you”  Long term projects Encourage student to reflect, see  Summarize verbally different perspectives  Visual mental models needed  graphic maps instead of verbal directions |

2007 Catherine Shaw [cshaw@jeffco.k12.co.us](mailto:cshaw@jeffco.k12.co.us) Reference: [www.cogat.com](http://www.cogat.com), *Upside Down Brilliance* by Linda Silverman