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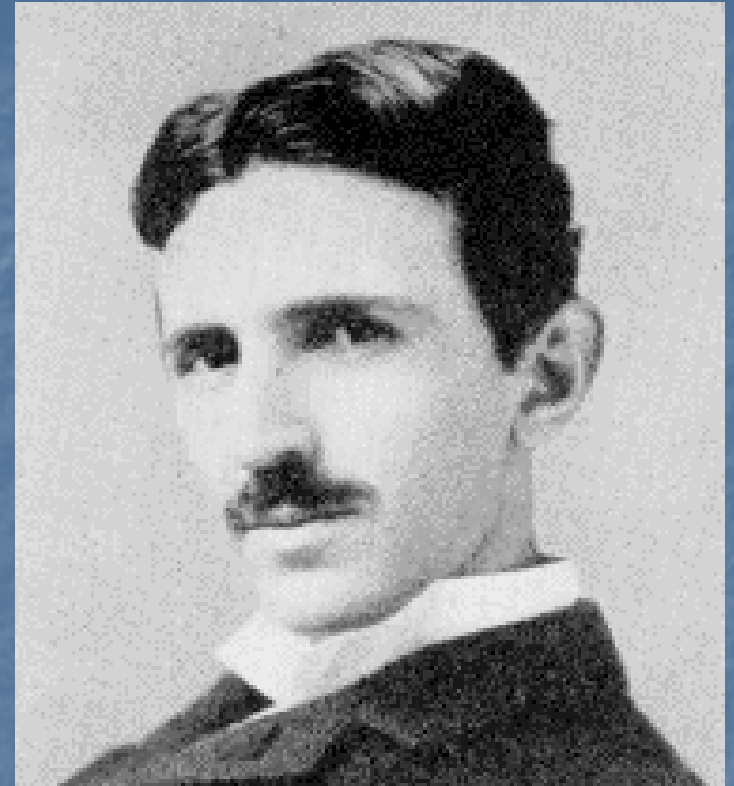
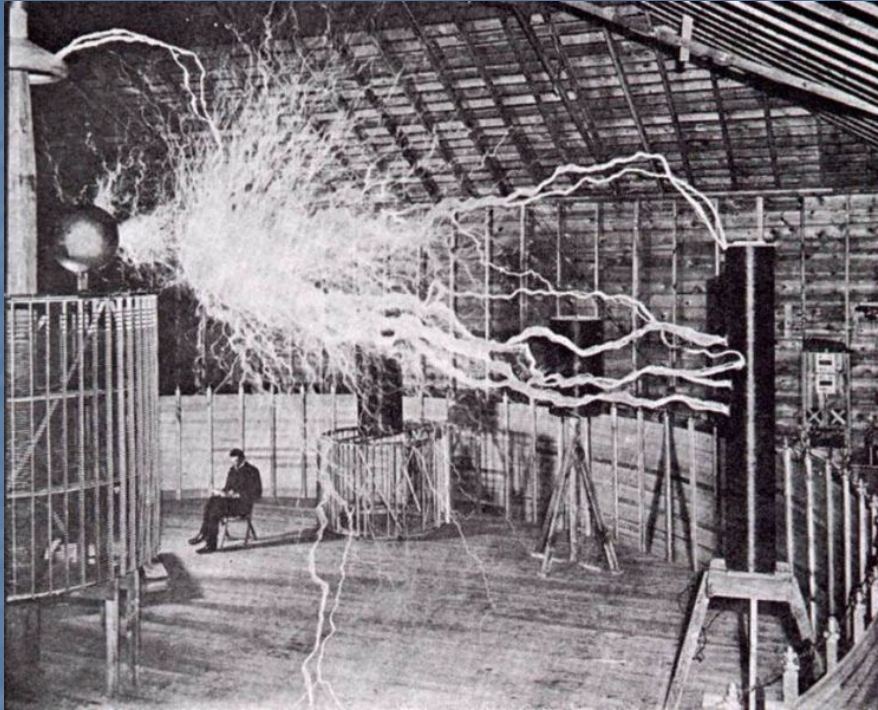


Julian Beever

"I observed to my delight that I could
visualise with the greatest facility.
I needed no models, drawings or experiments.
I could picture them all as real in my mind."

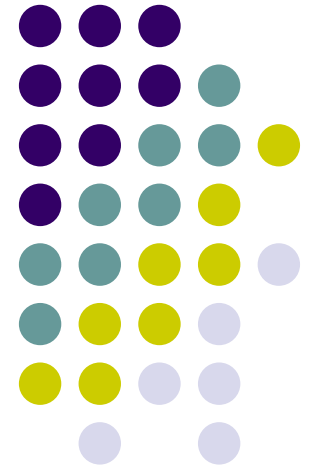
Tesla (1919)

(cited in West, 1997)



Nikola Tesla

Visual Spatial Giftedness At School and Home

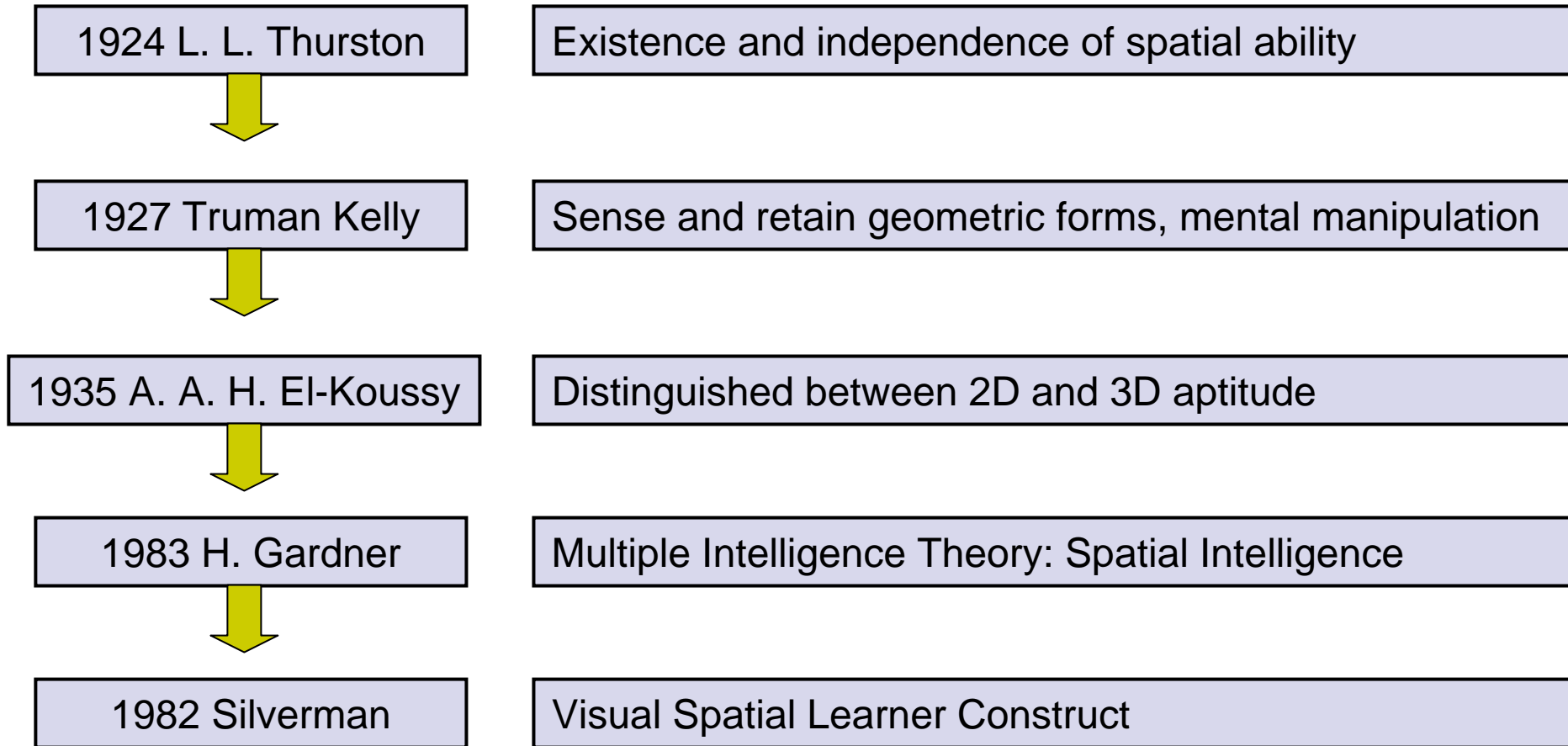


Visual Spatial Giftedness At School and Home



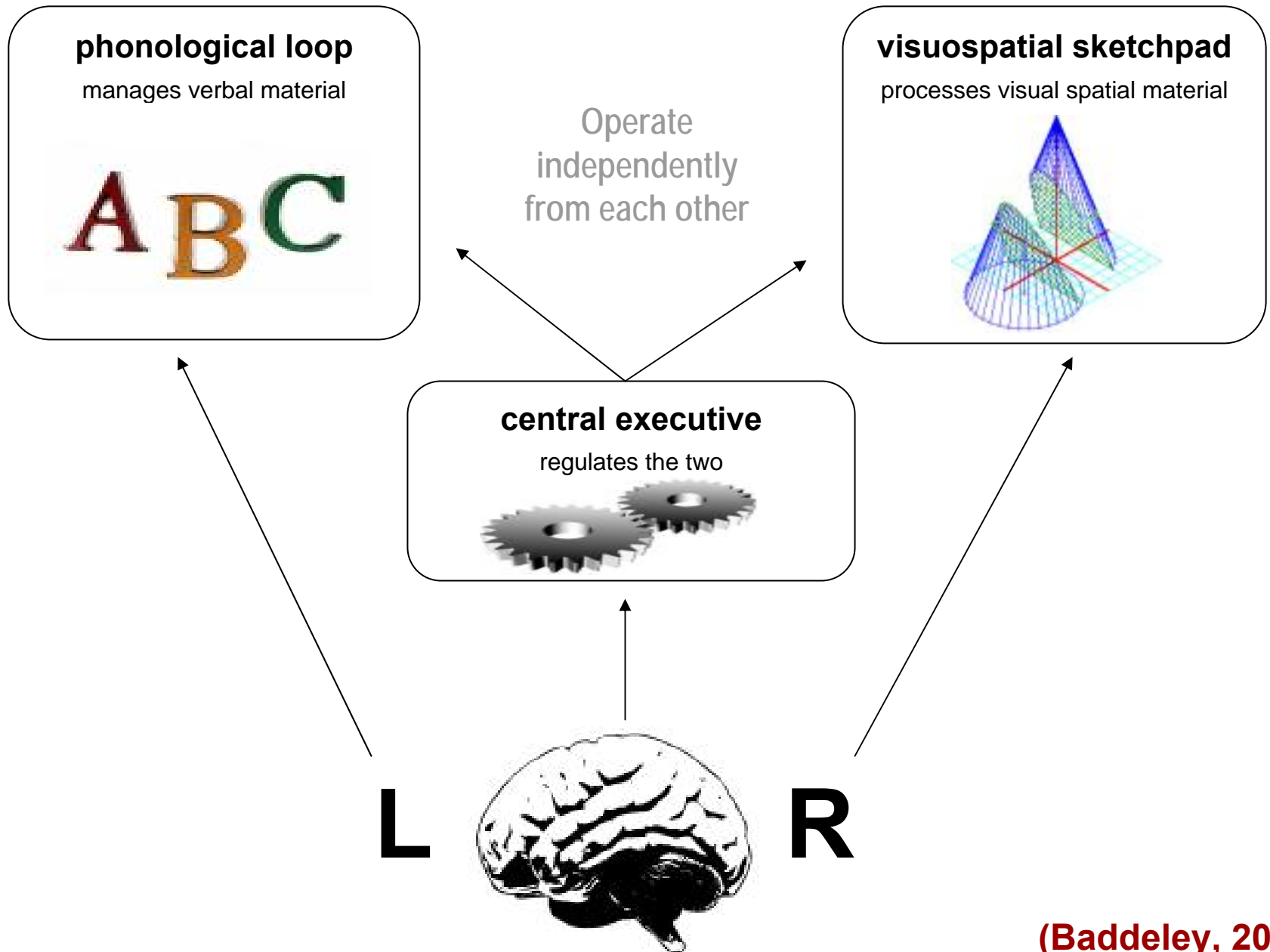
1. Theoretical history
2. Cognitive skills and behaviours
3. Identification
4. Principles for differentiation
5. Learning strategies
6. Strategies for home

THEORY: Visual Spatial Construct



(Gardner, 1983; Silverman, 2000)

Baddeley's theory of Working Memory



(Baddeley, 2003)

Visual Spatial: Areas of aptitude



- **Colour**
- **Tone**
- **Texture**
- **2D pattern**
- **3D form and space**
- **Structure**
- **Movement: present and potential**
- **Context: spatial and temporal**
- **Application of skills to practical/social ends**
- **Creativity- innovative composition**

Visual Spatial: Cognitive Behaviors



- **Spatial as opposed to sequential thinking**
- **Synthesis of ideas**
- **Intuitive grasp of complex systems**
- **Inductive reasoning**
- **Thinks primarily in pictures**
- **Thinking is fast, complex and non-sequential**
- **Use of imagination, visualisation to combine existing facts in new ways**
- **Can provide models, abstract visual memory**

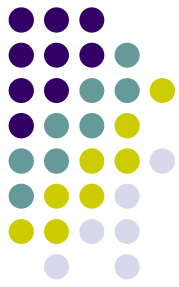
(Parkinson & Edwards, 1993)

Visual Spatial Affective Behaviours



- Reflective thinking = day dreaming / off task
- Heightened sensitivity
- Can 'read' people easily
- Disorganised, messy
- Little sense of time
- Confusion and frustration
- Perfectionism / Avoidance
- Introverted / unassuming

(Mann, 2001; Silverman & Freed, 1996; Lubinski, 2003)



Two types of gifted V-S student:

Usually identified as gifted:

- Normal pattern of development.
- Left hemisphere more developed than right.
- May be achieving at a high level in many areas.

Often not identified as gifted:

- Asynchronous development.
- Right hemisphere more developed than normal.
- May struggle with left hemisphere processes
 - reading, writing, sequences.

Observable behaviours



Characteristics of visual spatial giftedness

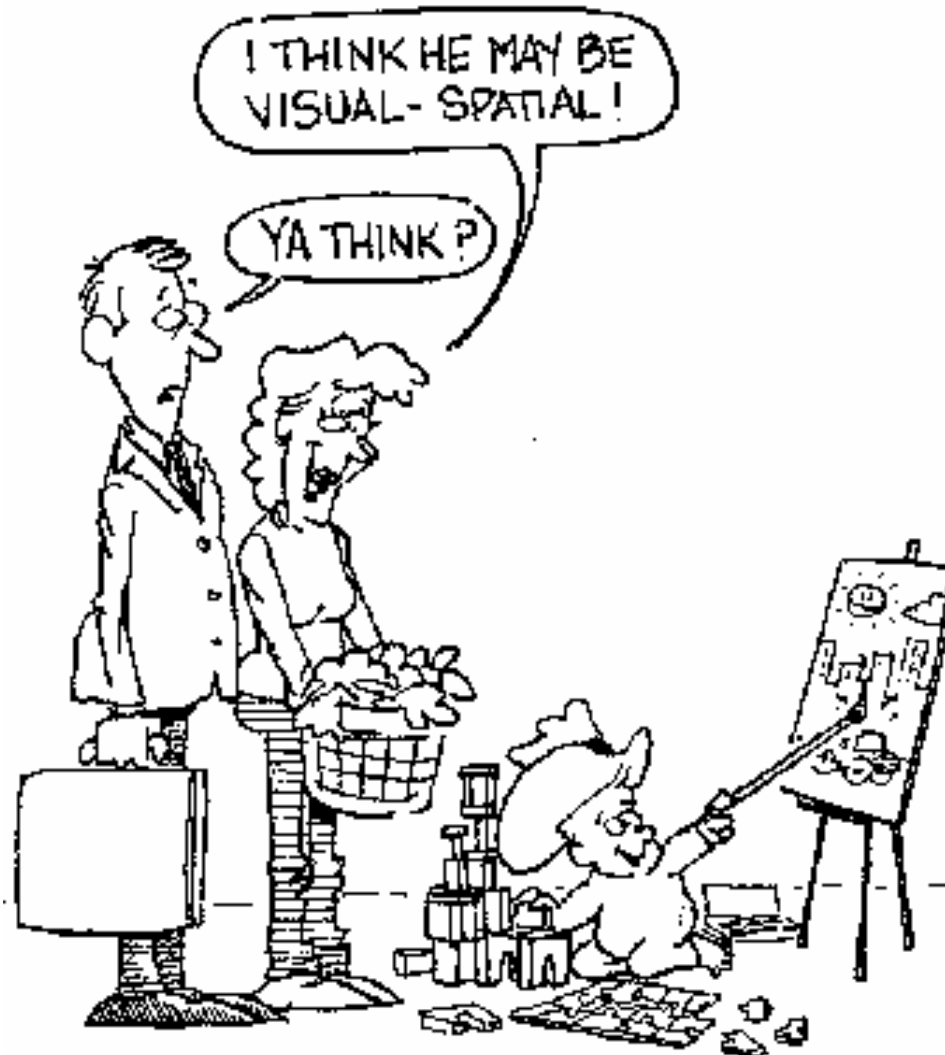
May also display these behaviours if development is asynchronous.

Grasps relationships between systems
Excels with complex, higher level content
Is reflective
Has excellent memory for specific information
Is preoccupied with ideas
Is able to manipulate visual images
Exhibits creative talent
Excels at mathematical concepts
Uses metaphorical language effectively
Has strong reading comprehension skills
Is aware of physical properties and patterns
Possesses a vivid imagination

Has difficulty grasping isolated details
Struggles with easy or basic content
May be seen as a day dreamer
Has difficulty with rote memorisation
Possesses weak social skills
Processes verbal communication slowly
Struggles in traditional academic settings
Has poor computational skills
Rarely uses concise descriptions in language
Has weak reading decoding skills
Is slow to process conventional understandings
Has difficulty putting stories into written form

(Dixon, 1983; Silverman, 2002; West, 1997 cited in Mann, 2005b)

IDENTIFICATION



IDENTIFICATION



Psychometric Tests:



- Stanford Binet – high visual spatial score



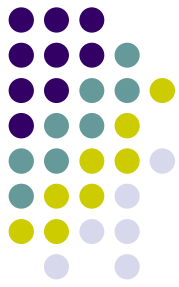
- Spatial Ability Tests- John Hopkins University

- WISC – Wechsler Intelligence Scale for Children



(Silverman, 2002; Stumpf & Eliot, 1999)

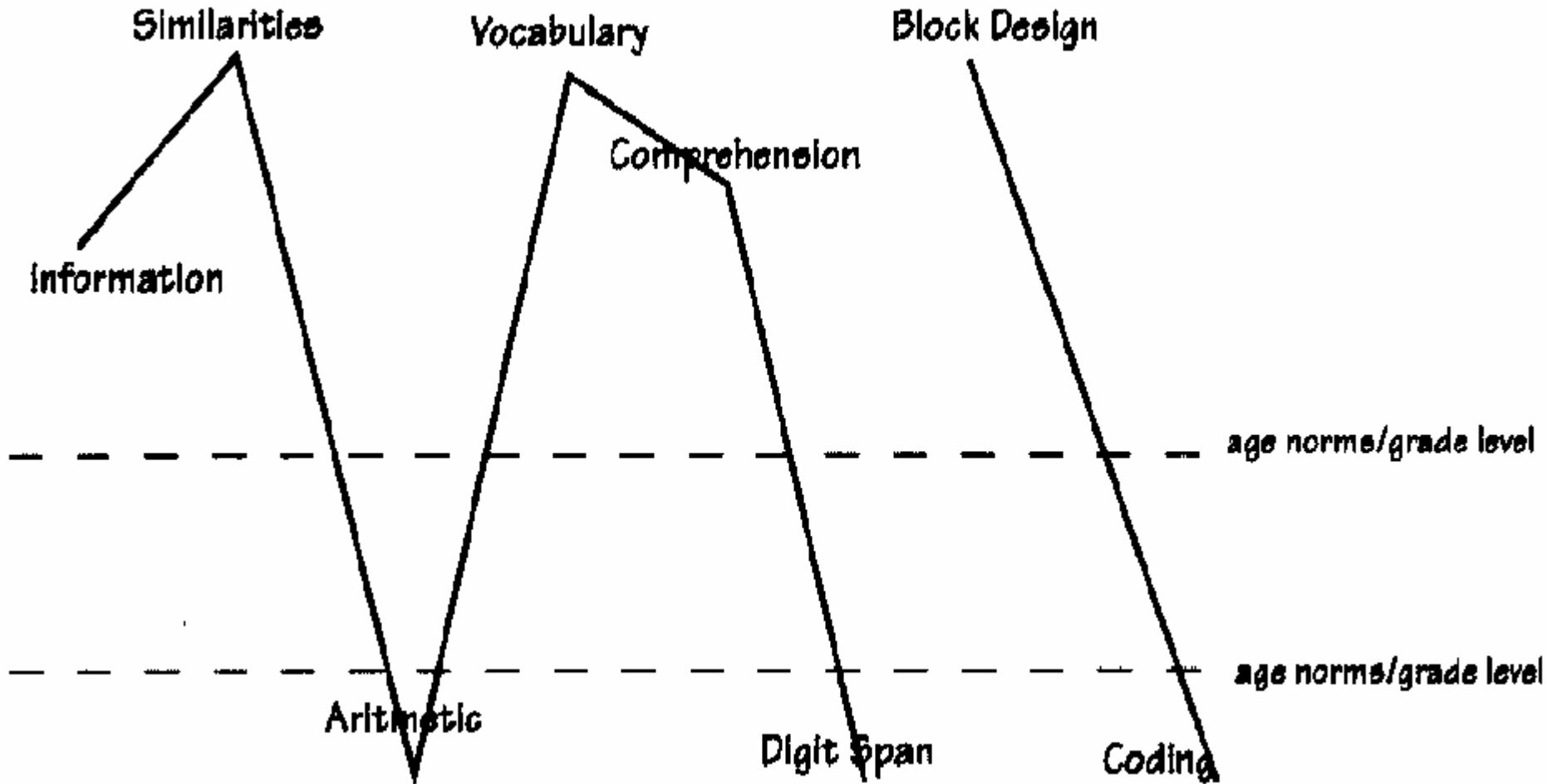
WISC-III Indicators



- **Block design of 17 or more**
- **Or two out of three indicators:**
 1. **Performance IQ 130 or above + surpasses verbal IQ**
 2. **Block design of 17 or more**
 3. **Perceptual organisation index 130 or above**

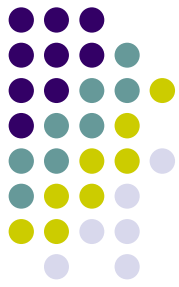


WISC: 'visual spatial scatter'



(Silverman, 2000)

Classroom Observation: Best Indicators



Student interests:

- build create, manipulate shape, and transform materials and objects
- artwork, assembling, building, cooking, designing, drawing, gardening, inventing, painting, repairing
- construction toys: lego, connex, kileek, mobilo, blocks
- puzzles, jigsaws and mazes
- moving through space: art, drama, music, dance
- constructing computer programs or scientific experiments
- at school: architecture, computers, technology, arts, physical science

Parent's careers and interests

Ear infections, ≥ 8 in first three years

Early development

(Silverman, 2002; Lubinski, 2003; Sword, 1997)

Careers that utilise V-S giftedness:



Photography

Sculptor

Physics

Innovative scientist

Artist

Architecture

Computer science

Chemistry

Inventor

CEO

Designer

Aeronautics

Surgeon

Business owner

Electrical engineering

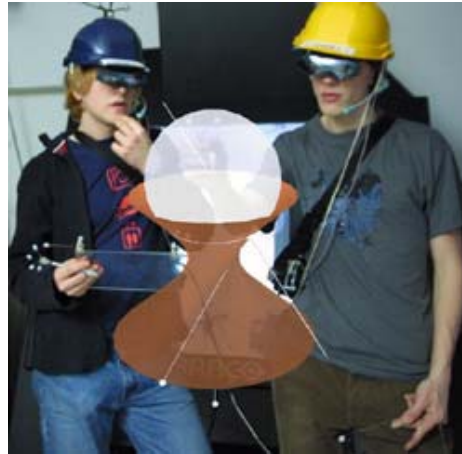
Pure mathematical research

Engineering

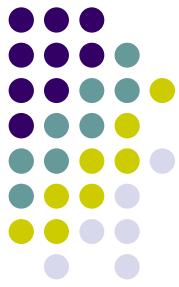
Carpenter

Cartography

Interpreting MRI and x-rays



Classroom Observation: Best Indicators



Student interests:

- build create, manipulate shape, and transform materials and objects
- artwork, assembling, building, cooking, designing, drawing, gardening, inventing, painting, repairing
- construction toys: lego, connex, kileek, mobilo, blocks
- puzzles, jigsaws and mazes
- creative endeavours like art, drama, music, dance
- constructing computer programs or scientific experiments
- at school: architecture, computers, technology, arts, physical science

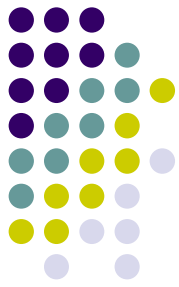
Parent's careers and interests

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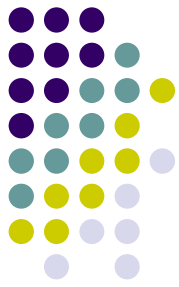
(Silverman, 2002; Lubinski, 2003; Sword, 1997)

Rating scales and questionnaires

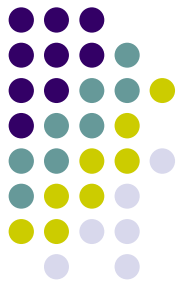


- Silverman- observer and student rating scales
www.visualspatial.org/VSI/rating.pdf
www.visualspatial.org/VSI/vsieng.pdf
- Mann- student questionnaire www.gifted.uconn.edu/siegle/Dissertations/Rebecca%20Mann.pdf
- Sword- identifier checklist
www.giftedservices.com.au

AT SCHOOL



- 5 key principles for differentiation:
 1. Collaboration
 2. Support
 3. Complexity
 4. Visual-spatial media
 5. Life long learning
- Learning strategies



1. Collaboration

- Role of teacher
- Reciprocal relationship with parents and child
- Support from colleagues

Program relates to student's strengths, interests, learning style, motivation and supports any weaknesses

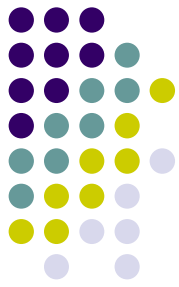
(Ministry of Education, 2000; Riley, 2001)

2. Support

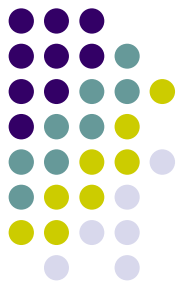


- **Study Skills:** sequential processing
time management
- **Intra-personal Skills:** self-understanding
emotional needs
- **Inter-personal Skills:** social needs
grouping
- **Teacher access and provision of support.**

3. Complexity



- **Content:** Broad based themes, complex systems, real life problems.
- **Process:** Introduce whole idea in all its complexity at the beginning.
Field trip, speaker, interview, video. Use mapping and visual media.
- **Product:** Multiple solutions. Obscure, novel and unique ideas and systems. Practical inventions.
- **Presentation:** Multimedia, visual, graphic, design, arts, movement.
Authentic audience.
- **Higher order thinking:** holistic, simultaneous.
- **Challenge:** individualised, requires risk taking and effort.



4. Visual- spatial media

Real life visits, hands on, materials, processes,
machinery, conversations, problems.

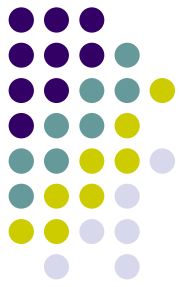
2D graphic organisers, computer programs,
video, websites, animation, visual art.

3D materials, clay, models, diorama, invention
construction, prototype, deconstruction.

Movement drama, music, demonstrating,
through space creating, experimenting.

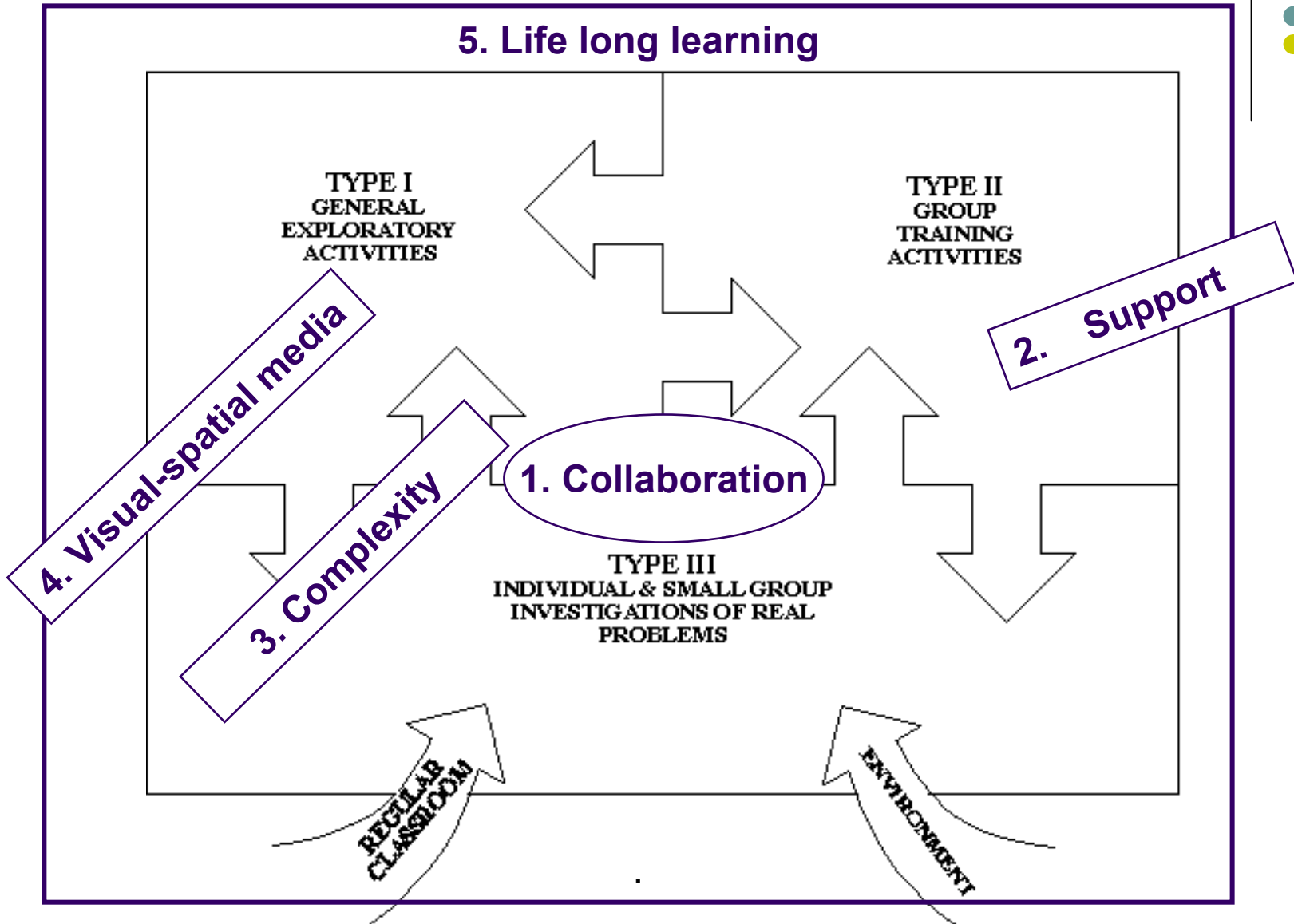
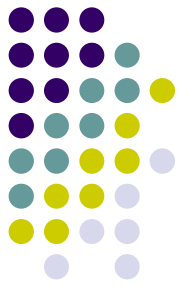
Content, Process and Product.

5. Life long learning



- Engaging
- Enjoyable
- Intrinsic Motivation
- Challenging
- Builds skill base
- Develops independence
- Confidence
- Love of learning

Relationship of principles to the Enrichment Triad:



(Renzulli & Reis, 1997, reprinted and adapted with permission by Joy, 2006)

Visual Spatial Learning Strategies



Resources	Colour , SIZE and images
Reading	Graphic novels, Manga
Printing	Keyboard or linked writing instead
Spelling	Visualisation strategies
Timestables	Wall pictures
Notetaking	Pictures, tape recording
Essay org.	Graphic organisers, colour codes
Show steps	Work backwards
Memory	Music, Mnemonics, Metaphors, Fantasy
Focus	Allow doodling, walking, tactile objects



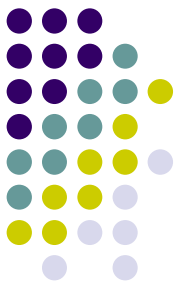
yummyyyyy!!!!

$$3 \times 8 = 24 \rightleftharpoons 8 \times 3 = 24$$



7 dogs each with 7 bones

$$7 \times 7 = 49 \rightleftharpoons 7 \times 7 = 49 \times$$





m m m yum!



Yum



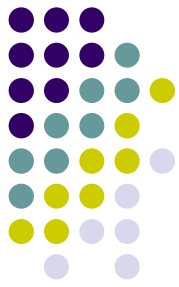
YUMMY

$$6 \times 3 = 18$$

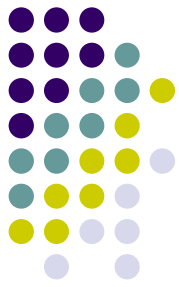


$$3 \times 6 = 18$$

AT HOME



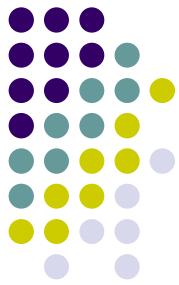
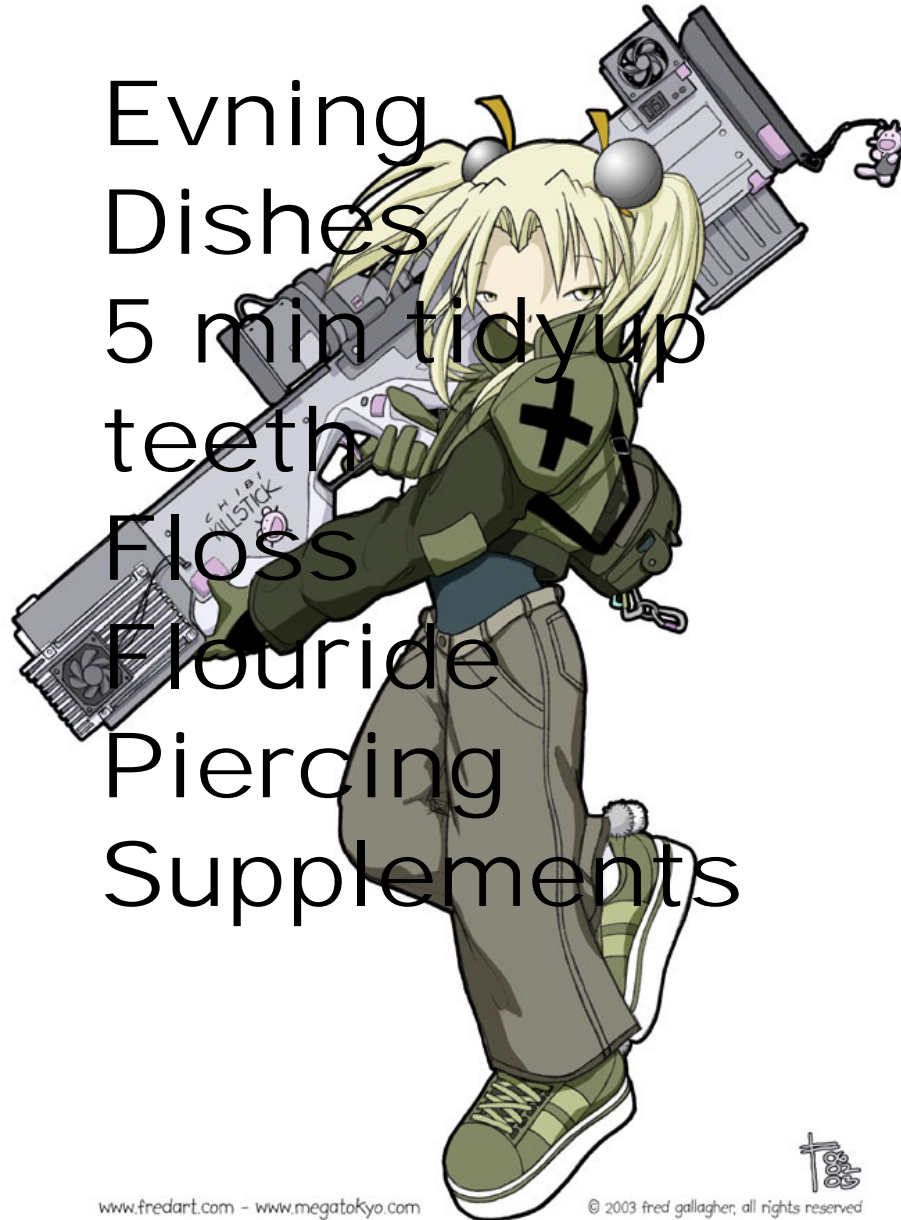
- List / flowchart routines
- Break it down- the hoola-hoop
- Match images of desired result
- Visualising consequences promotes action
- Basic commands, one at a time
- Observe a new skill before trying
- Support school learning with visual techniques
- Follow passions after school



**Morning:
Shower
Deodorant
Teeth
Piercing
Supplements
Bed and
curtains
Light
Make lunch**

ph34r t3h cute ones.




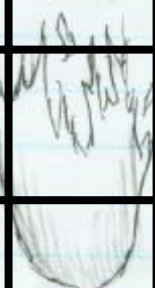
Evning
Dishes
5 min tidyup
teeth
Floss
Flouride
Piercing
Supplements





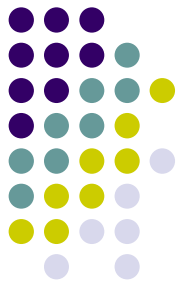
Morning Jobs
Teeth
Bed and Curtins
Deoderant
Shower
Teen Multi



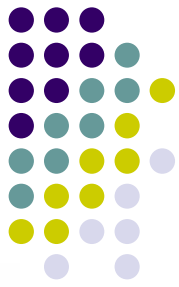
20c/job	Evening	M	T	W	Th	Fr	Sat	Sn
								
	Dishes							
	Tidy room							
	5 min tidyup							
	Teeth							
	Floss							
	Fluoride							
	Supplements							
	Wash face							
\$5	Make dinner Monday night							



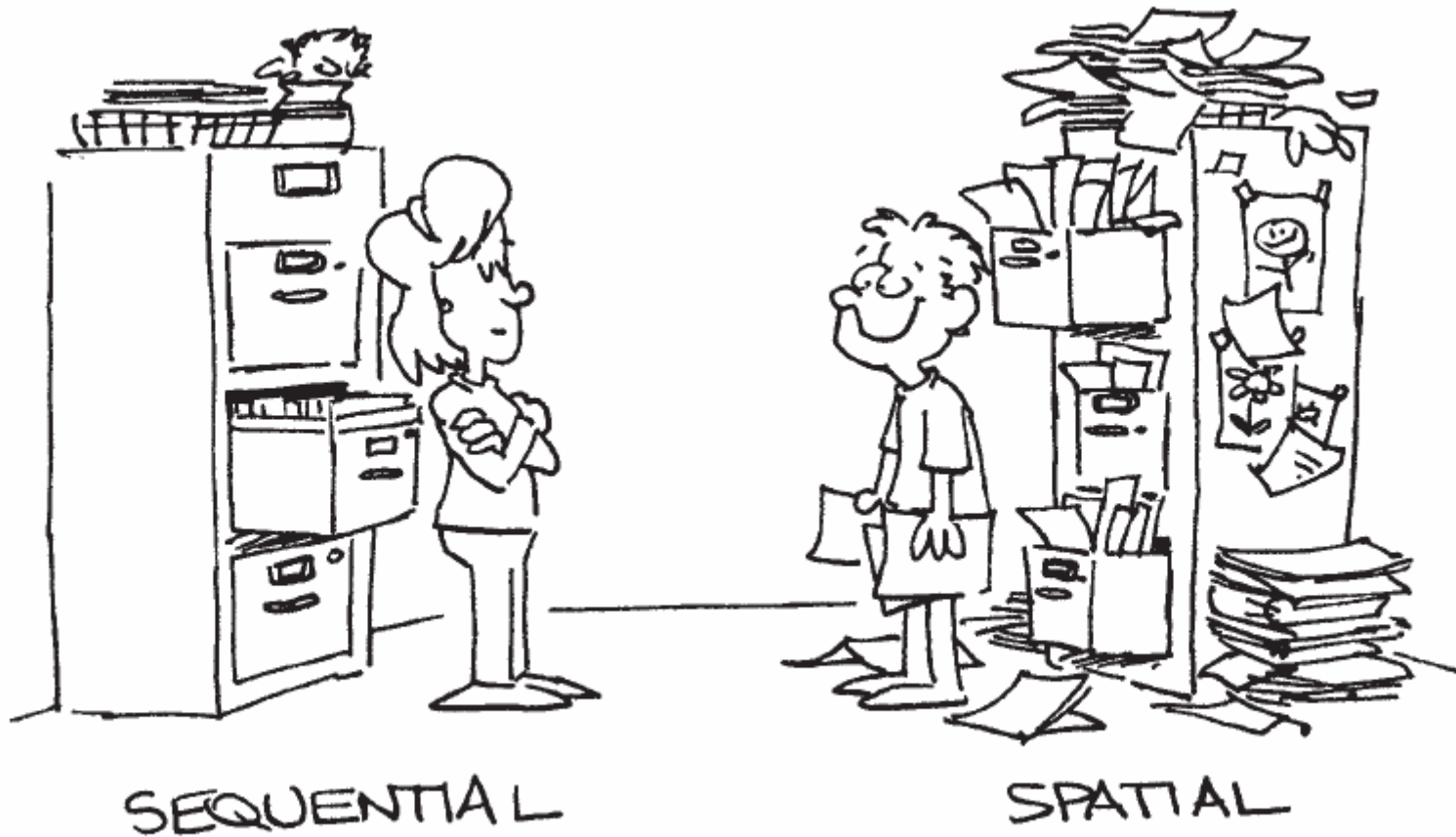
AT HOME



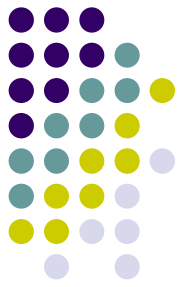
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- Acceptance and understanding!



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