

The 25th P.A.R.K. Conference



The Power of Visual Learning for Dyslexic (and Non-Dyslexic) Students

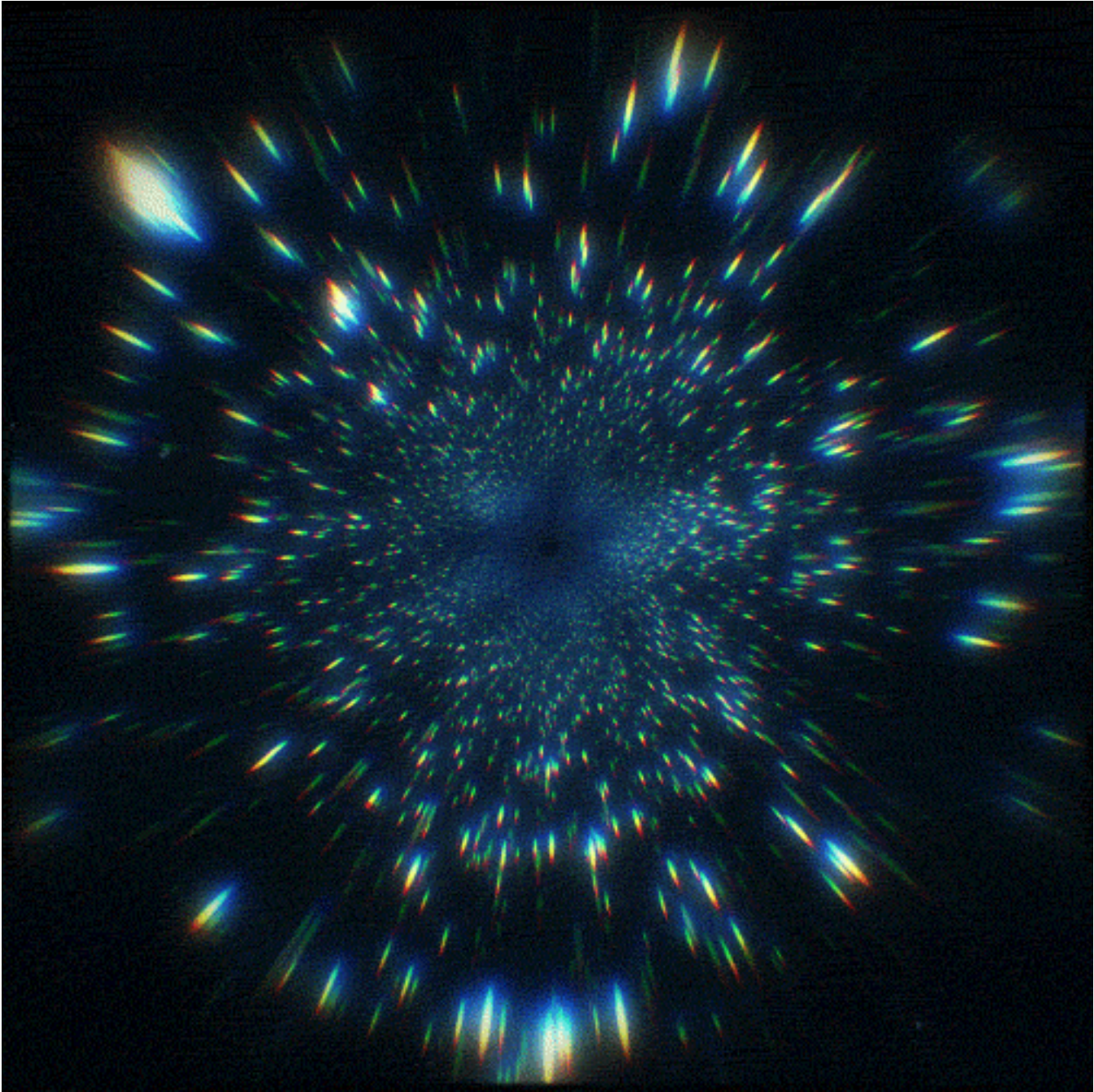
Martin Bloomfield – York Associates

@BytesDyslexia

@YA_Teachers

@YorkAssociates

Mendel University, Brno, 9 November 2019

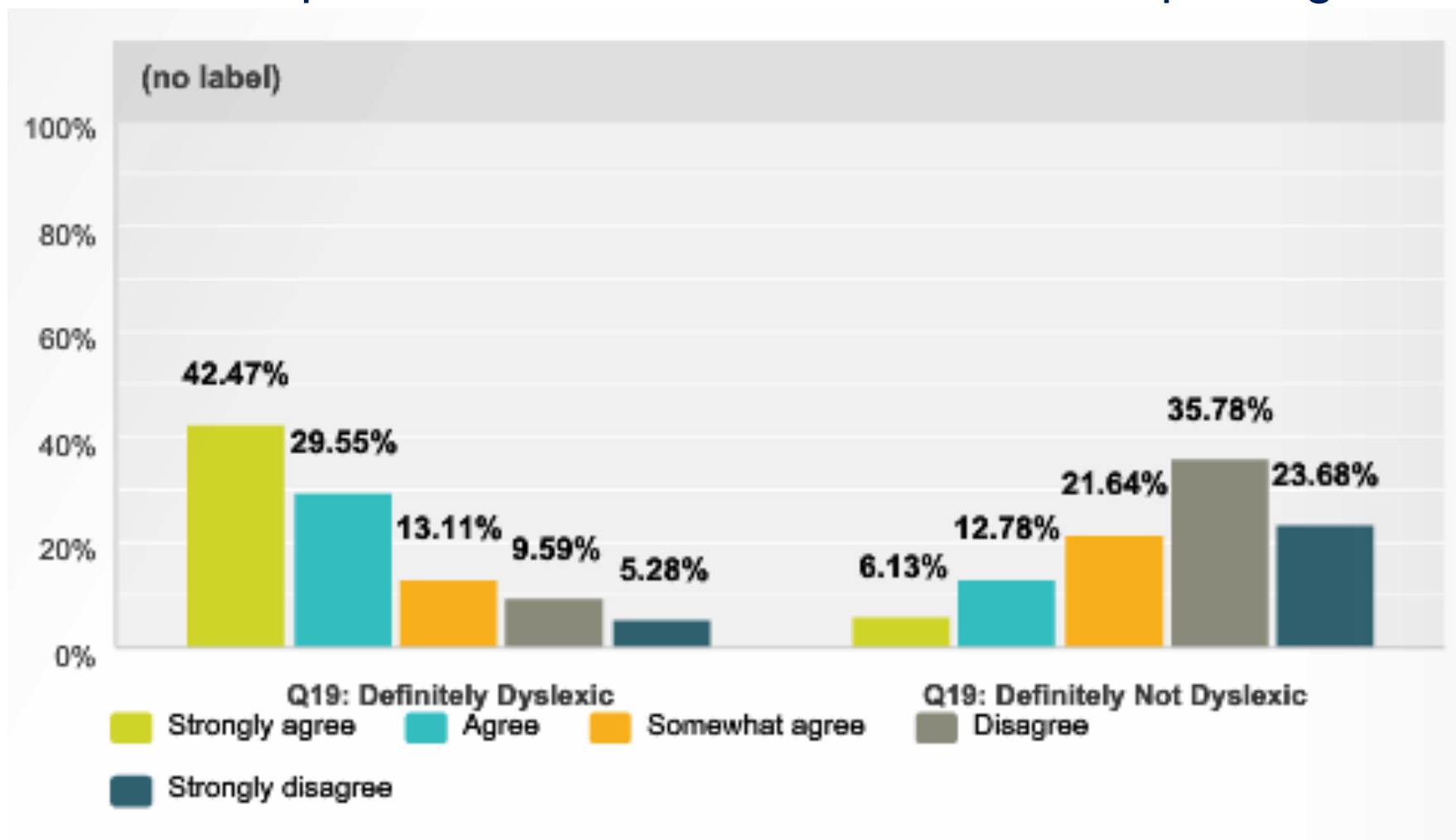



The Three Keys to Dyslexic Learning

- 1. **Visualisation**
- 2. **Creativity**
- 3. **Structures**




“When I view 3D spatial images in my mind,
I can manipulate them and see them from multiple angles”





Visual aids,
visual aids,
and more visual aids.

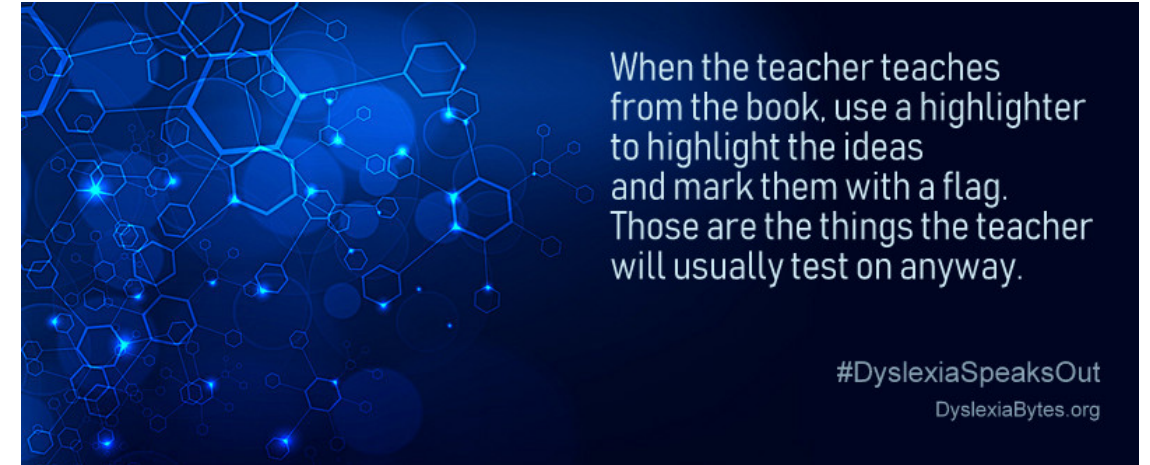
#DyslexiaSpeaksOut
DyslexiaBytes.org




Use different colour pens
to keep the ideas straight.
And use diagrams
instead of written notes.
My notes were all diagrams
in different colours.

#DyslexiaSpeaksOut
DyslexiaBytes.org

The Power of Visual Learning




The Power of Visual Learning



We need images and mindmaps
relating to the subject,
so then the dyslexic person
can get an idea
of what the mindmaps are saying.

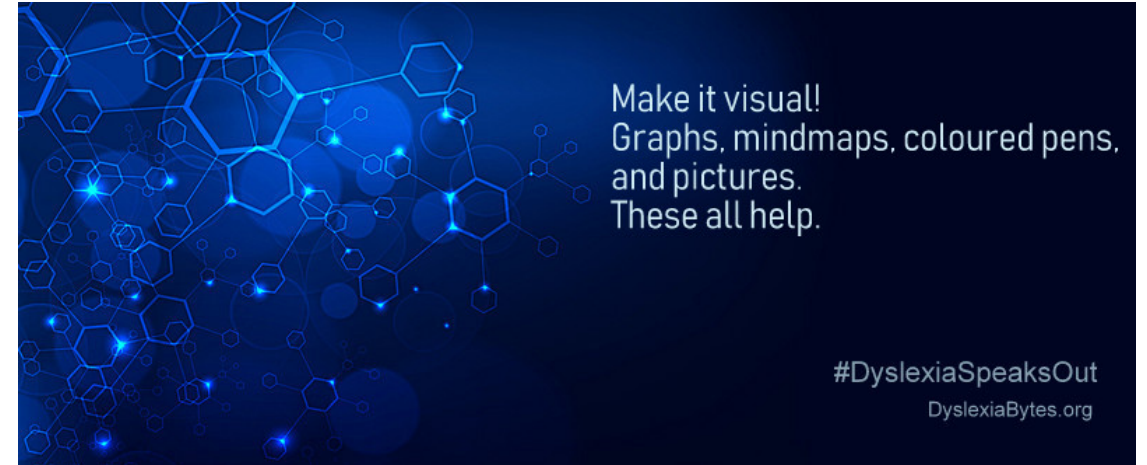
#DyslexiaSpeaksOut
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Highlighters:
one for keywords;
one for quotes;
one for words to look up;
and one for words
that need practice.

#DyslexiaSpeaksOut
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The Power of Visual Learning




The Power of Visual Learning



Reading and writing
is normal in class,
but dyslexics learn better
with seeing and listening.

#DyslexiaSpeaksOut
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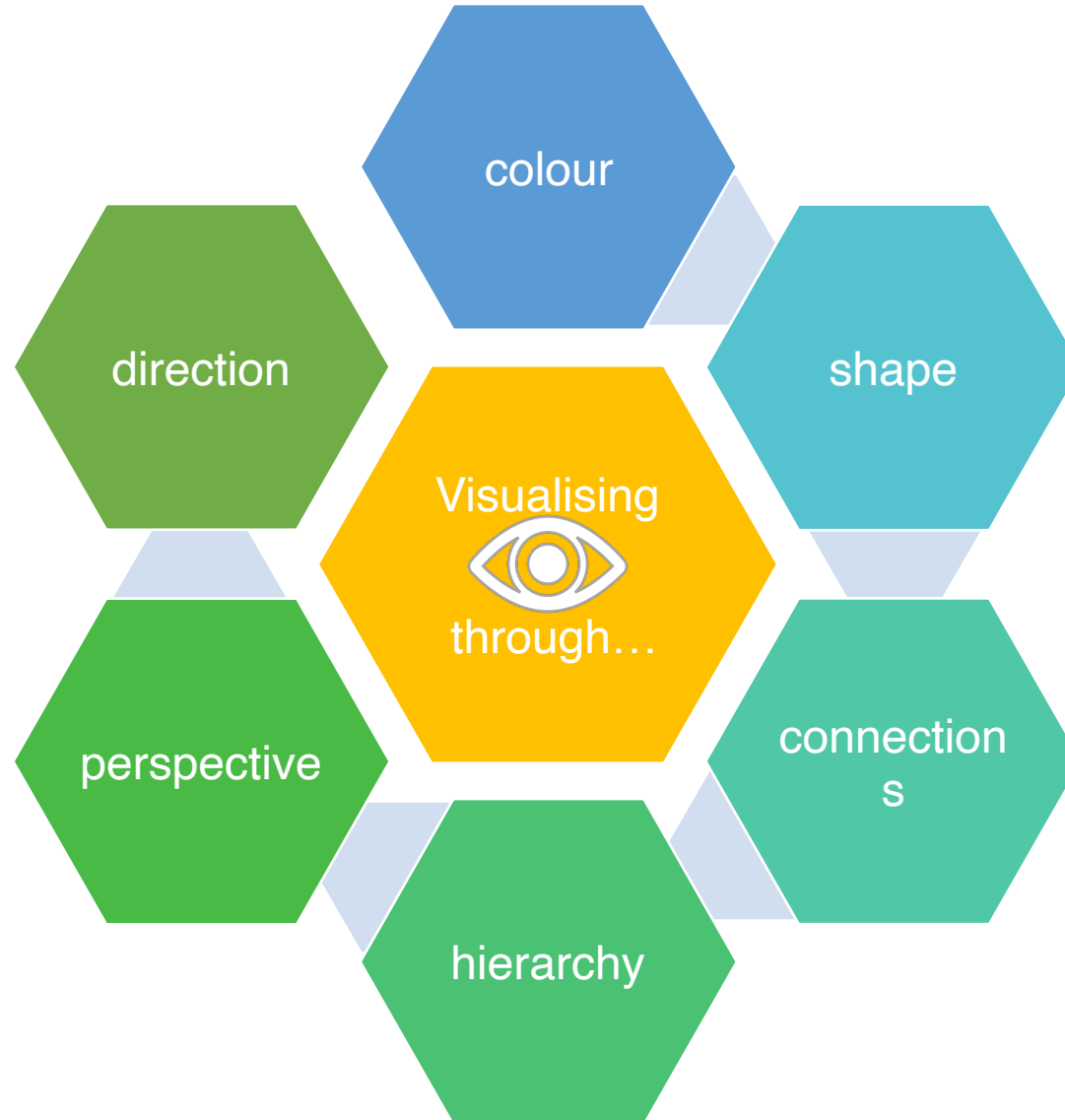


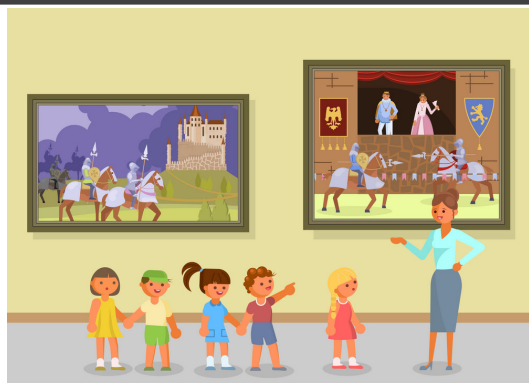
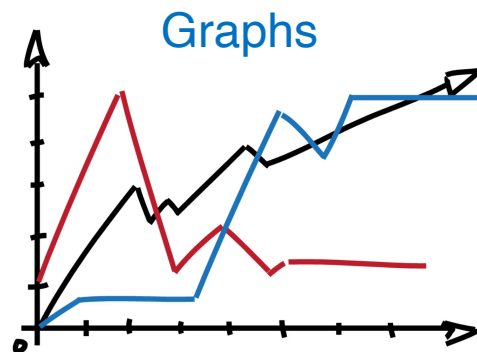
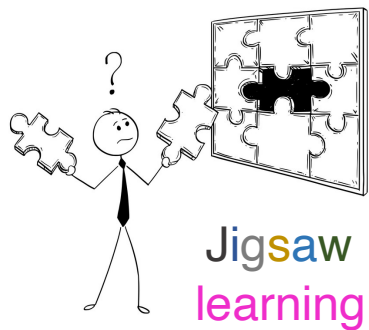
Try to use books in the classroom
that show lots of pictures
and only a small amount of text
(pictures say a thousand words
and are easier to read).

#DyslexiaSpeaksOut
DyslexiaBytes.org

The Power of Visual Learning

Six Simple Strategies for visualisation



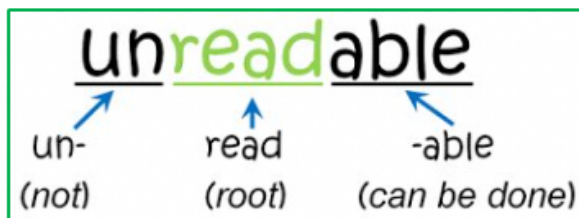


Learning Gallery

Visualisation prompts



Visual Morphology



Six Simple Shortcuts for visualisation



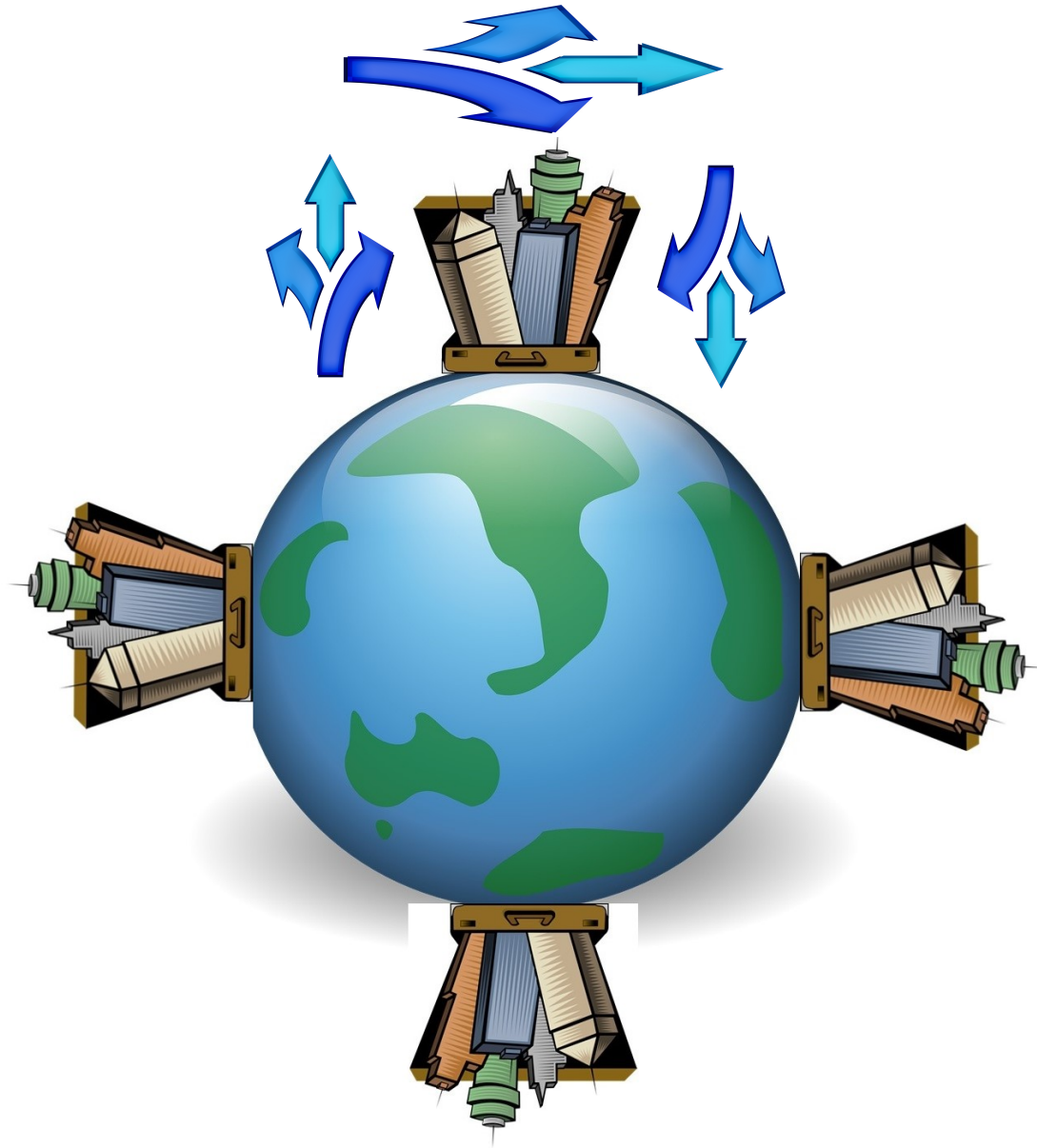
Three Worlds



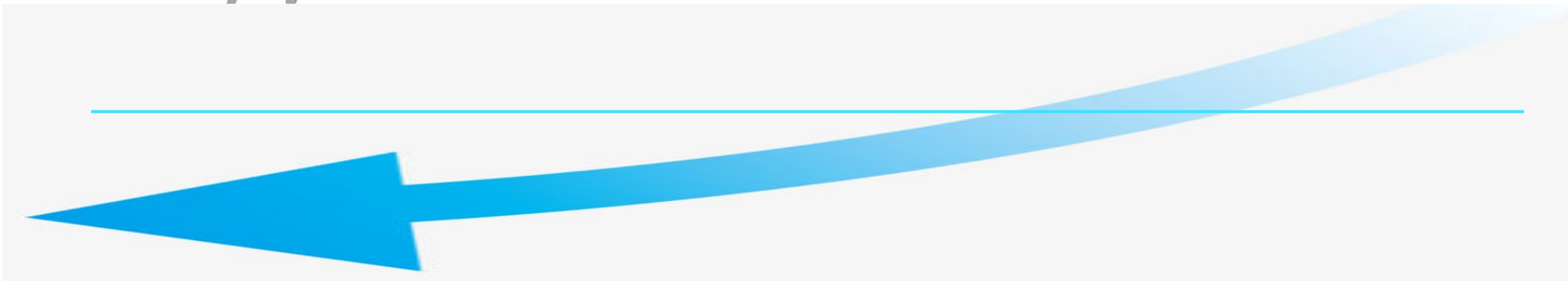
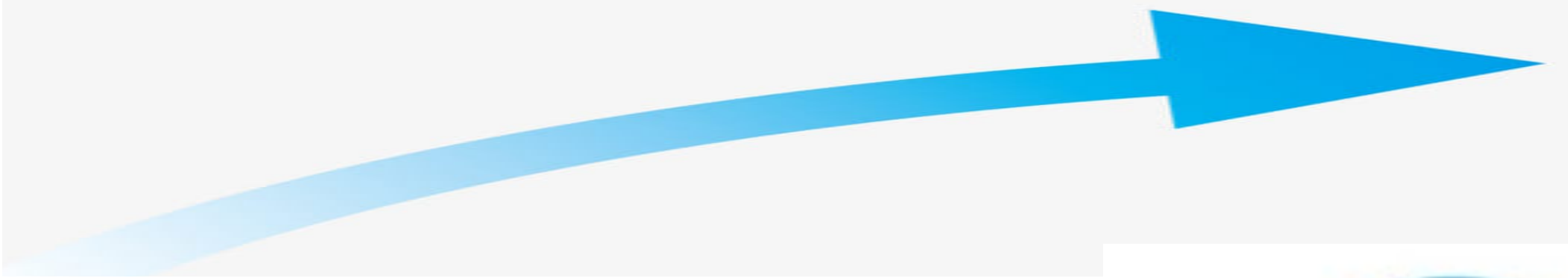












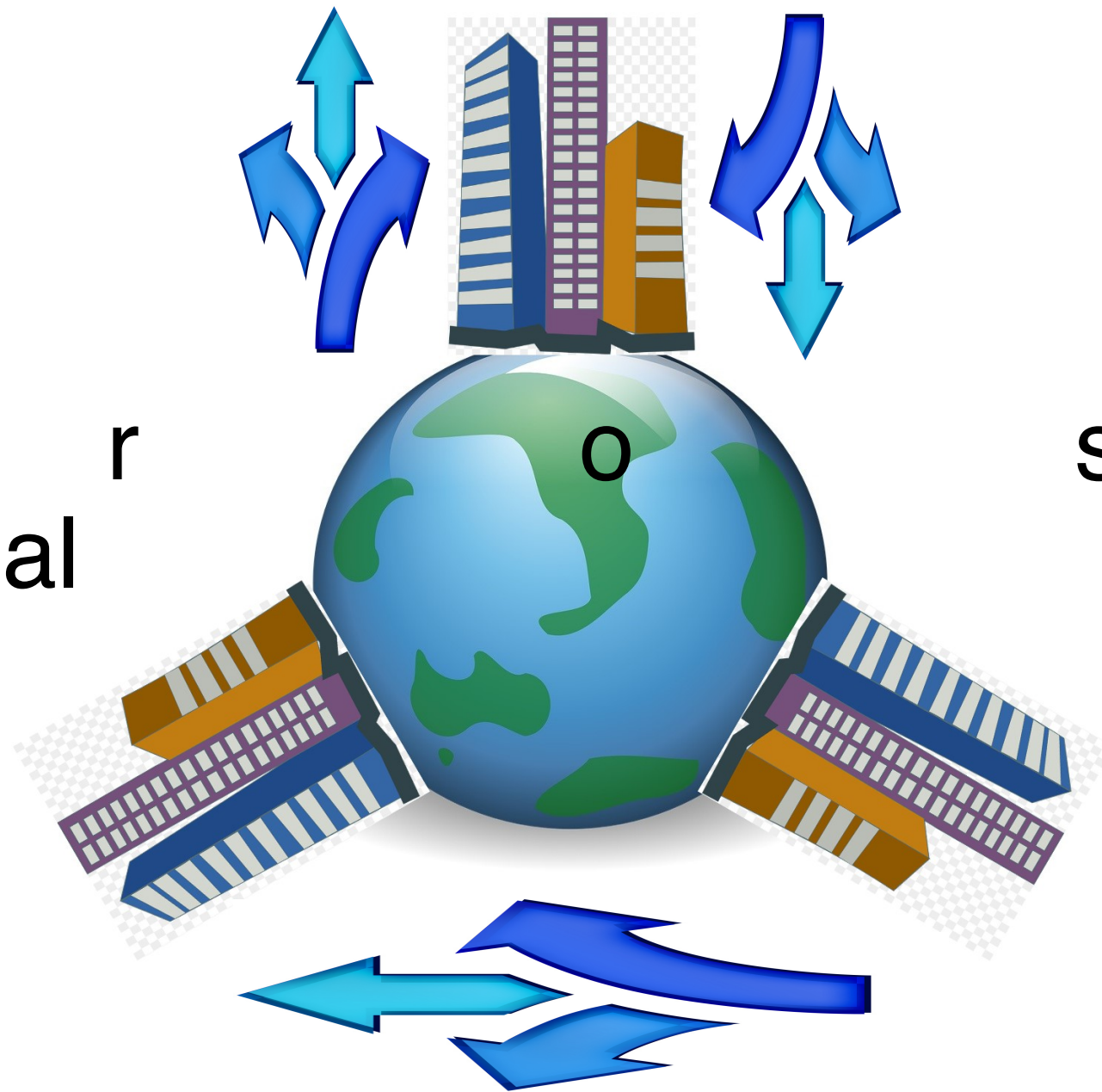
We know that diverse, cross-functional operations



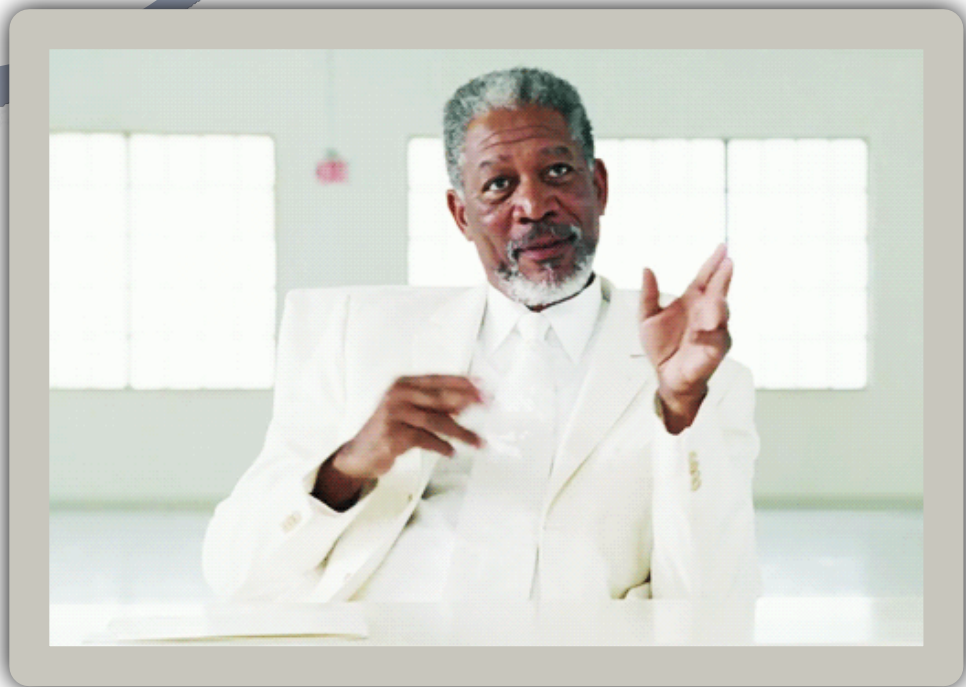
typically out-perform less diverse operations by
30-40%

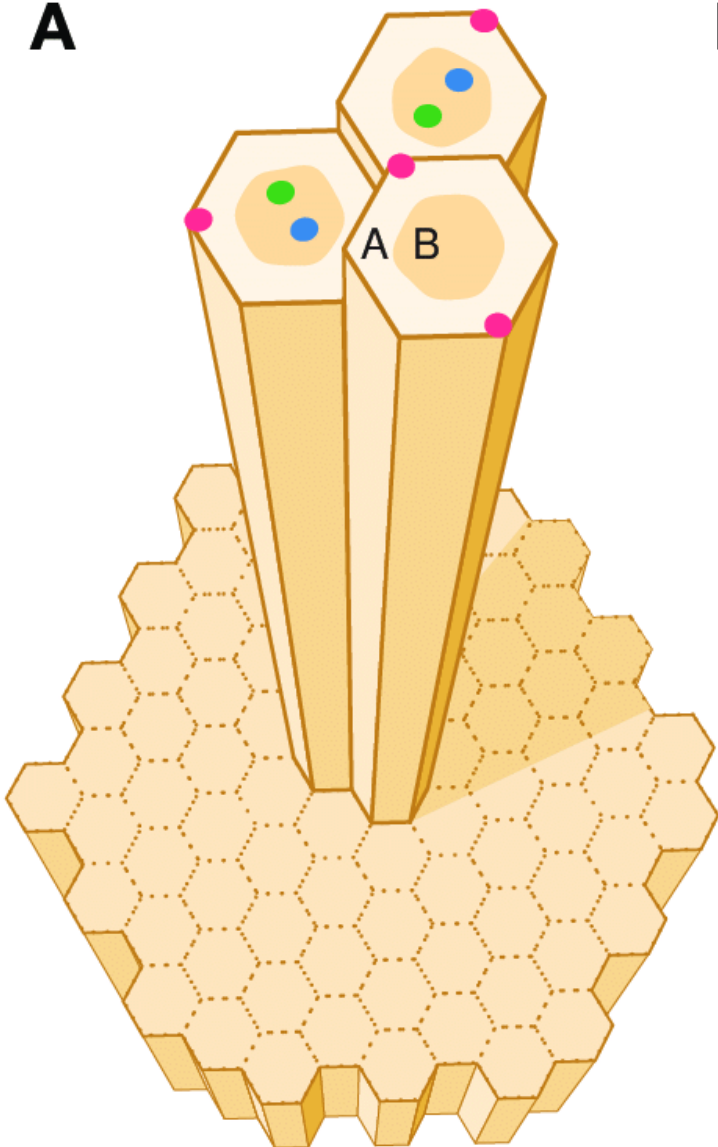
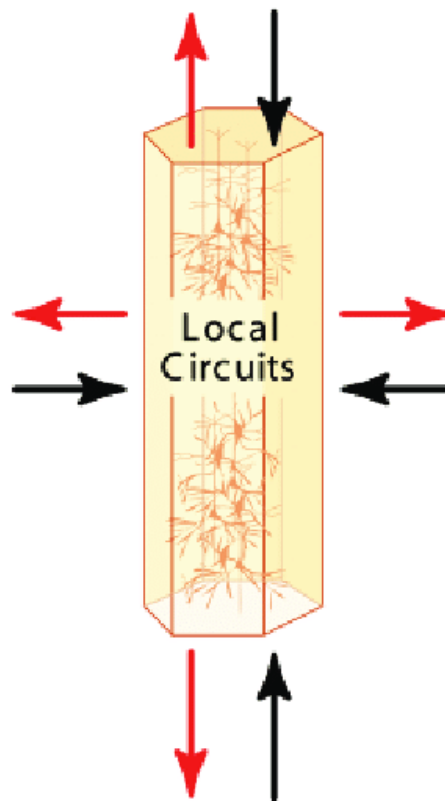
Source: McKinsey & Company, 2019

C
Functional

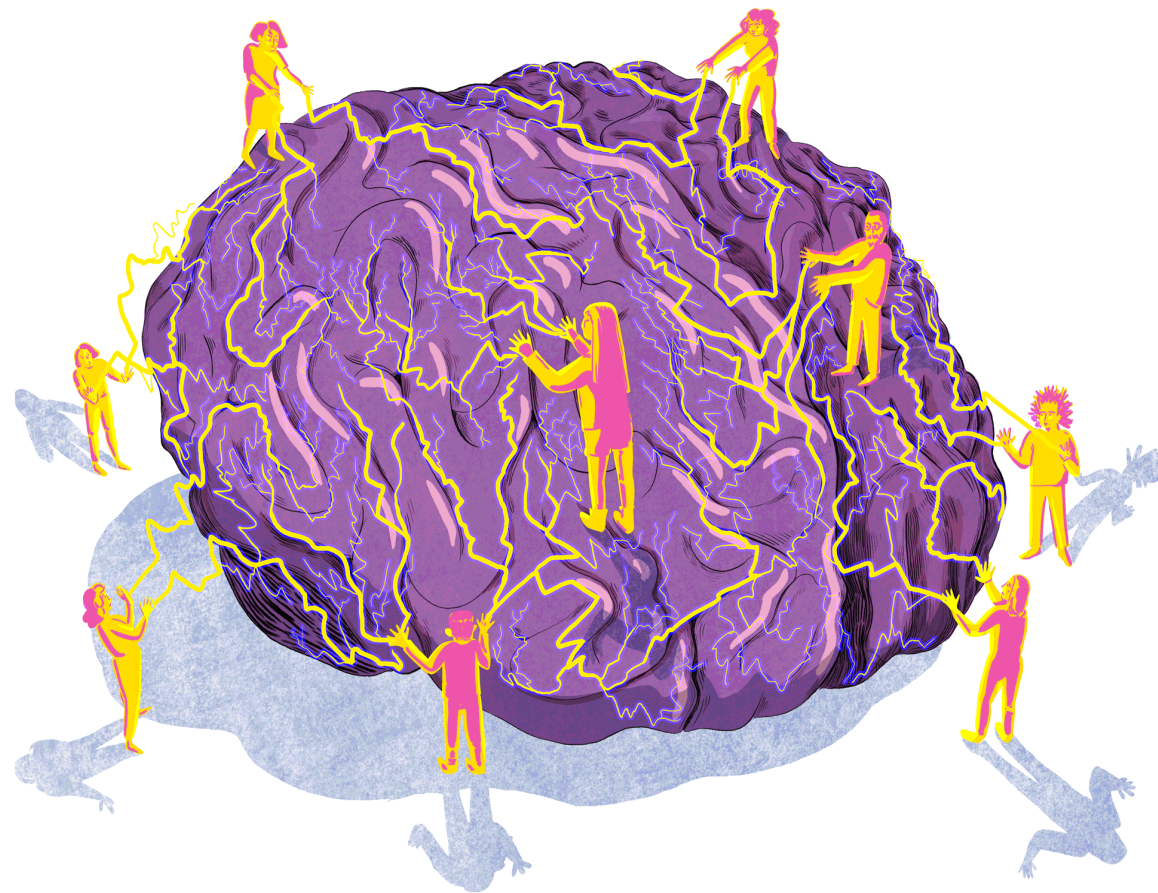


s



A**B**

Minicolumns

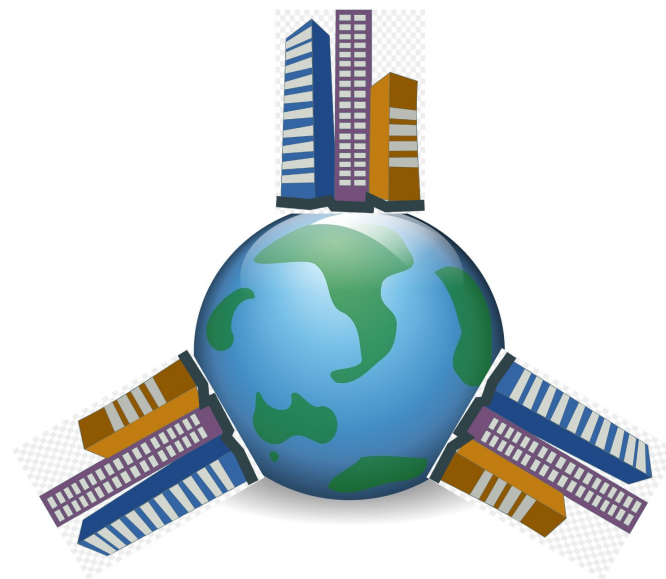
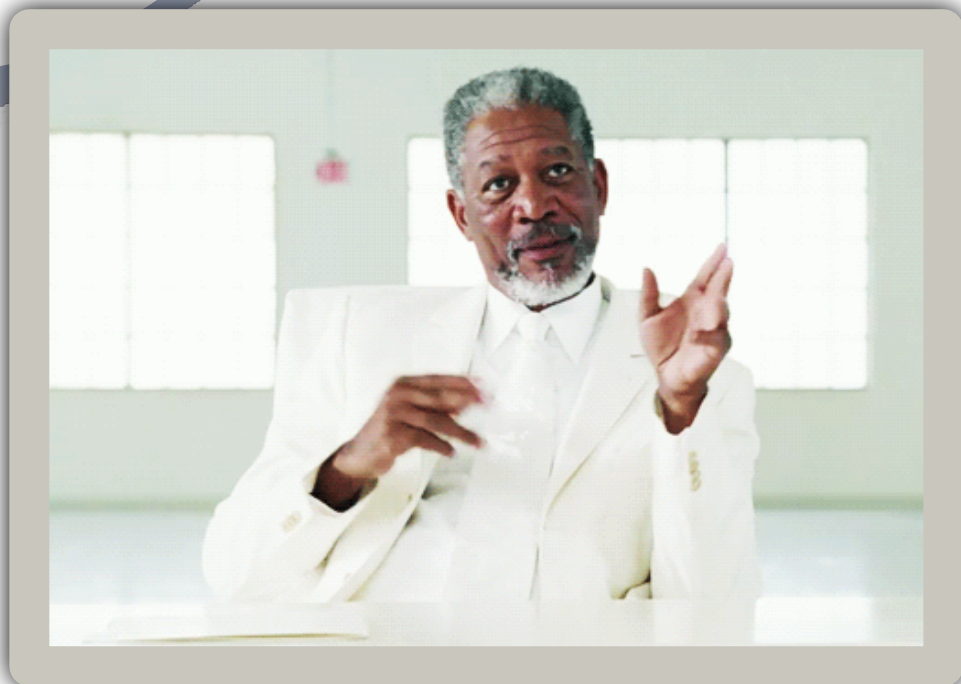




"Neurotypical"



Autistic



Dyslexic

The Three Keys to Dyslexic Learning

- 1. **Visualisation**
- 2. **Creativity**
- 3. **Structures**



Dyslexia and Creativity

Does being dyslexic mean the dyslexic person is built to be more creative?

There are studies that have found a link between dyslexia and creativity. One study showed that junior high school students who were diagnosed with dyslexia performed significantly better in a well-known psychological creativity test than their non-dyslexic counterparts.

Sources: Cockcroft, K. & Hartgill, M. (2004). *Focusing on the abilities in learning disabilities: dyslexia and creativity*.
Cancer, A., Manzoli, S., & Antonetti, A. (2016). *The alleged link between creativity and dyslexia: Identifying the specific process in which dyslexic students excel*.

Dyslexia and Creativity

Does being dyslexic mean the dyslexic person is built to be more creative?

A 1979 study of the creative potential of people with dyslexia found that people with dyslexia are able to learn and remember secondary information easily, a capacity linked to creativity.

Dyslexia and Creativity

Does being dyslexic mean the dyslexic person is built to be more creative?

20 years ago the Central St. Martins School of Art and Design funded research into the link between creativity and dyslexia. Dr. Beverly Steffert found three quarters of their 360 foundation students had dyslexia. They found that there seems to be a trade-off between being able to see the world vividly and three-dimensionally, and processing written words through reading or writing.

Source: Appleyard, D. (1997, February 27). *Education: The Art of being dyslexic.*

Dyslexia and Creativity

Does being dyslexic mean the dyslexic person is built to be more creative?

In one 1992 study, a positive relationship between creativity and interpersonal problem-solving was found in dyslexic subjects: higher scores in verbal fluency were associated with a better ability to analyse a problem, generate alternative solutions, and foresee the consequences to the solution that was chosen.

Dyslexia and Creativity

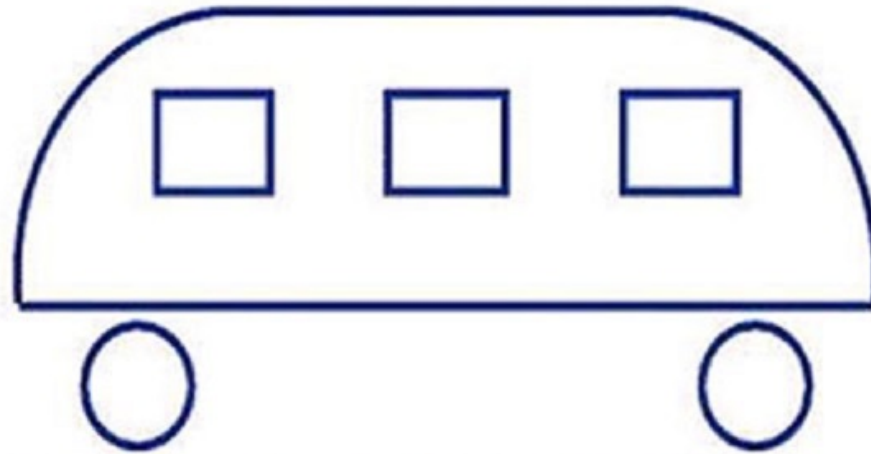
Does being dyslexic mean the dyslexic person is built to be more creative?

Creativity in dyslexic and non-dyslexic children in France and Belgium was evaluated with the Torrance Test of Creative Thinking. Children with dyslexia showed higher creativity scores than non-dyslexic participants. Importantly, it was also found that educational approaches could improve the creative scores in dyslexia even further, matching students from arts universities.

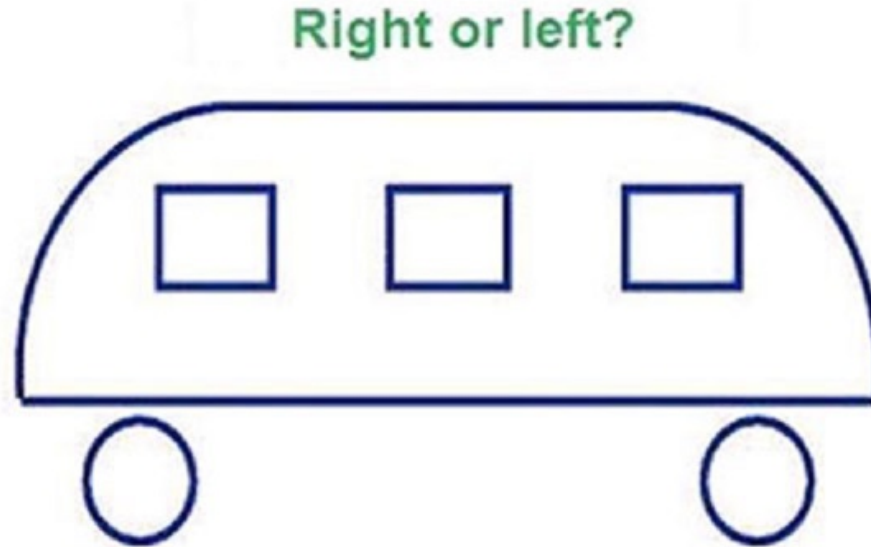
Source: *Education Influences Creativity in Dyslexic and Non-Dyslexic Children and Teenagers*, Kapoula, Ruiz, Spector, Mocerovi, Gaertner, Quilici and Vernet, 2016.

Which way is the bus going?

Right or left?



Which way is the bus going?



This question was asked to pre-school children in the USA.

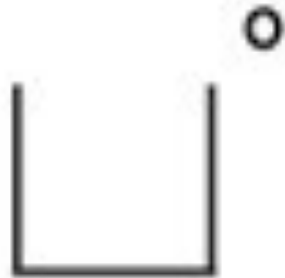
90% responded that the bus was going to the left.

When asked why, they said:

"Because you can't see the door to get on it"

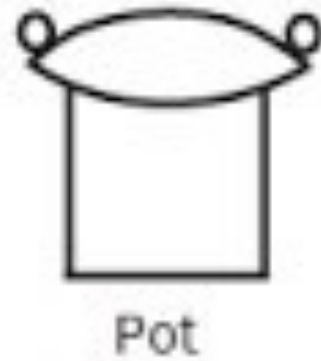
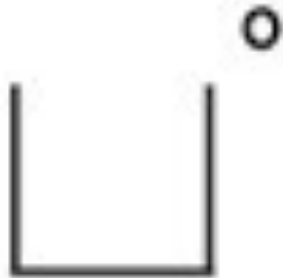
The Torrance Test

Complete



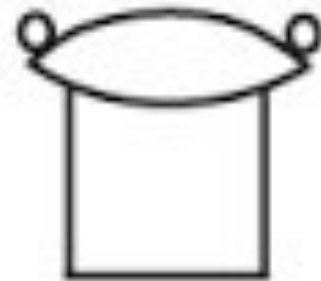
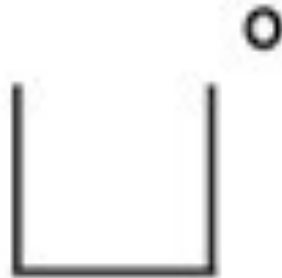
The Torrance Test

Complete



The Torrance Test

Complete



Pot



A fish on vacation

The Van Gogh Test



The Van Gogh Test



The Van Gogh Test





In a report published this October, consultancy firm EY used data from the World Economic Forum to outline how dyslexic people's skills aligned with the skills that would be required in the workplaces of the future.

Referencing the WEF's prediction of which skills would be the most in-demand by 2022, EY's report highlighted how certain capabilities were becoming more and less useful to employers with the rise of automation.



The need for processing and manual capabilities like time management, reading, and maths were on the decline, according to the report. Meanwhile, the report's authors highlighted the capabilities and skills typically seen in people with dyslexia that would be vital to all industries by the year 2022.

They included leadership, social influence, creativity, initiative and idea generation.

“Jobs in the workplace that dyslexic individuals may typically find challenging will largely be impacted by forms of automation,” the report's authors said.

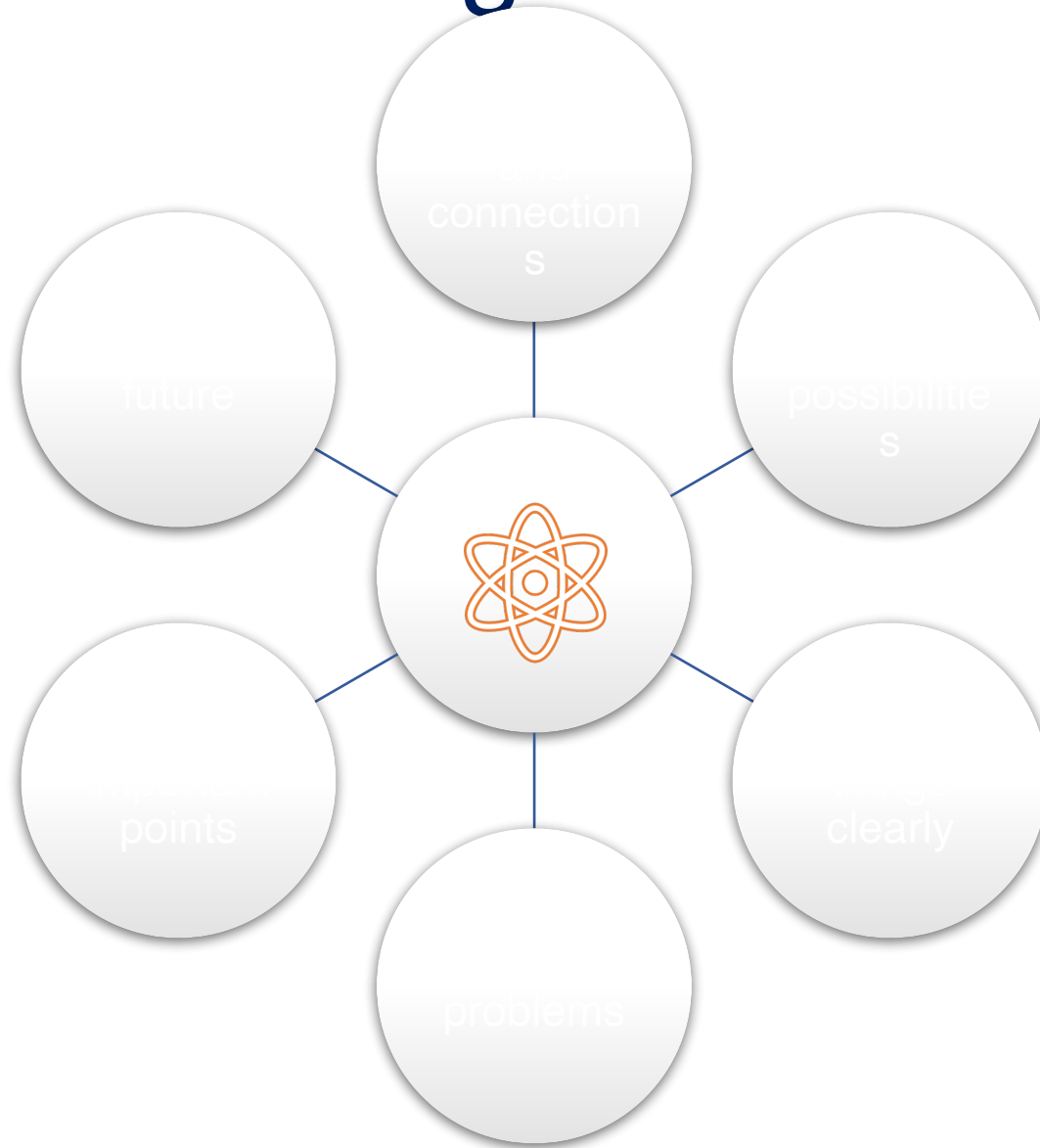
Dyslexia and Creativity

In the words of Aristotle, "There can be no words without images."

We know from research that creative thinking is absolutely linked to visual thinking.

Mind-mapping, for example, was key to rebuilding lower Manhattan after the 9/11 attacks. The mind map was powerful because it took something that was very complex and made it very clear. It now sits in the Museum of Modern Art as an artefact of cultural significance.

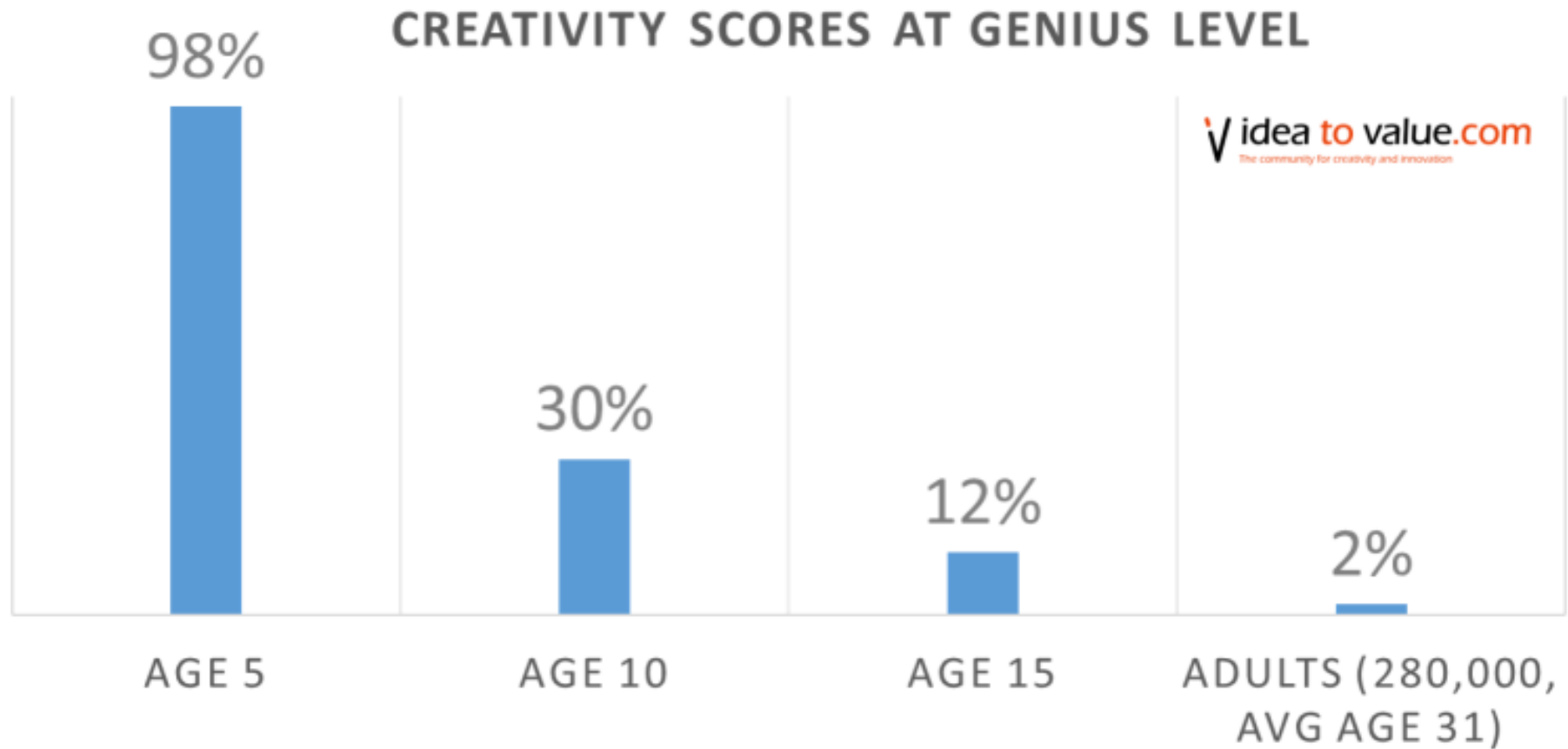
Visual Thinking Allows Us To...





But there is a
crisis in creativity

Divergent Thinking Crisis



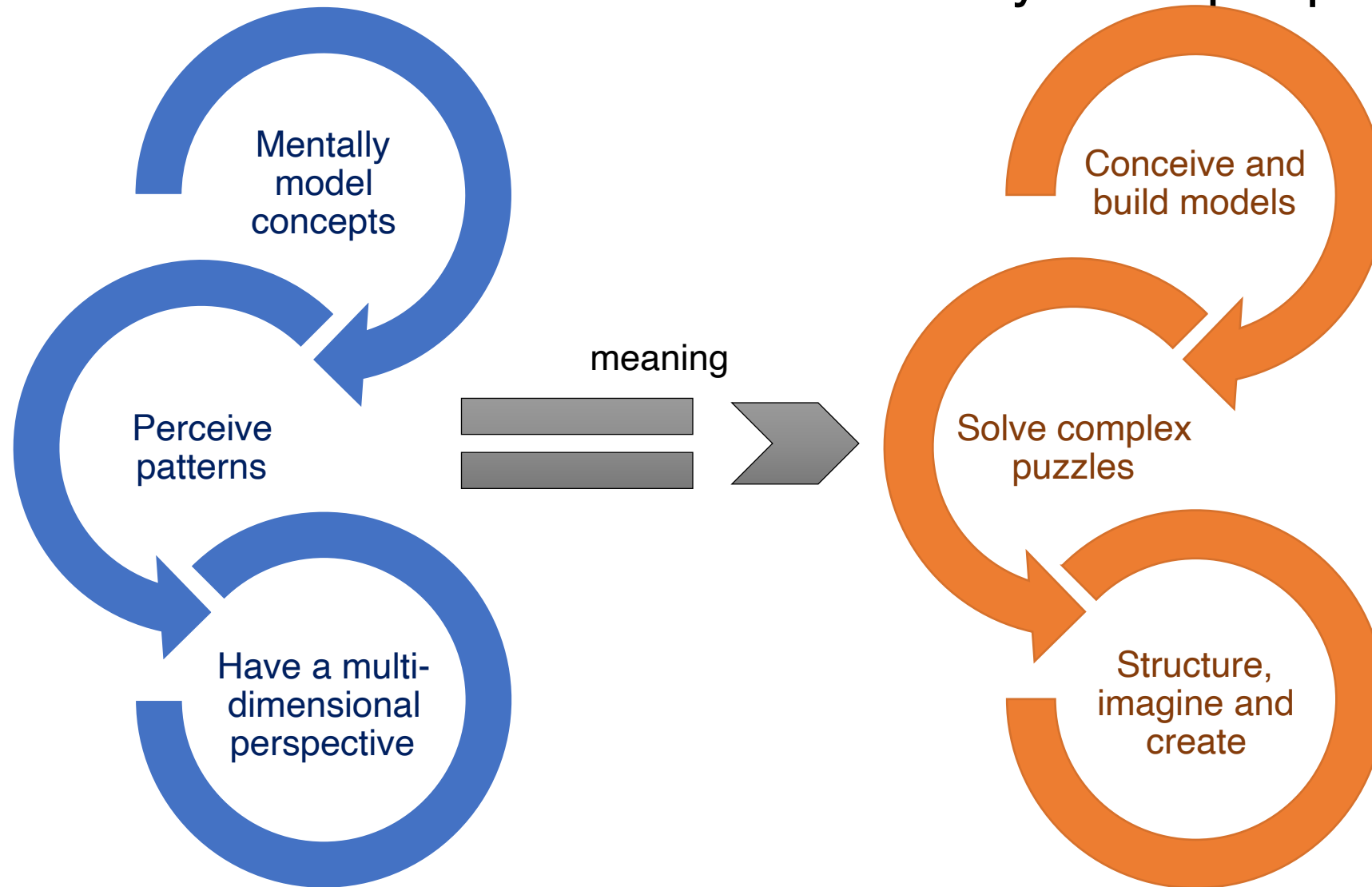
I analysed data from the famous Torrance test, since it was originally from 1966 up to 2008. The sample size is almost 300,000. Up to 1990 creativity was going up, then after that, somewhere between 1990 and 1998, something happened and it started declining. In 1998 it decreased and then after that continuously. After 2008 it decreased and then recently, 2018 decreased. Continuously decreasing. Something happened between 1990 to 1998...

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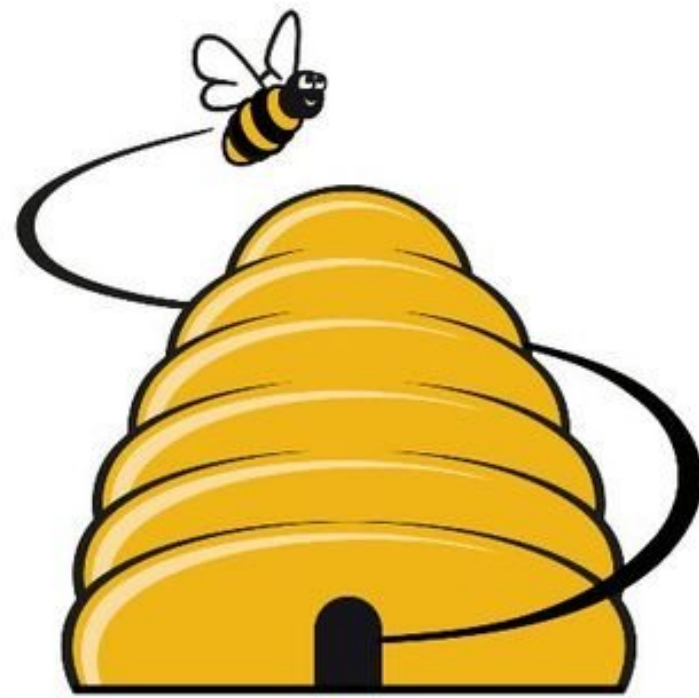
A recent IBM poll of 1500 CEOs identified creativity as the number 1 “leadership competency” of the future –

Newsweek

Different brain structures mean that dyslexic people



Dr Beverly Steffert,
Chartered Psychologist and Neuropsychologist, and an Associate Fellow of the British Psychological Society



The Beehive

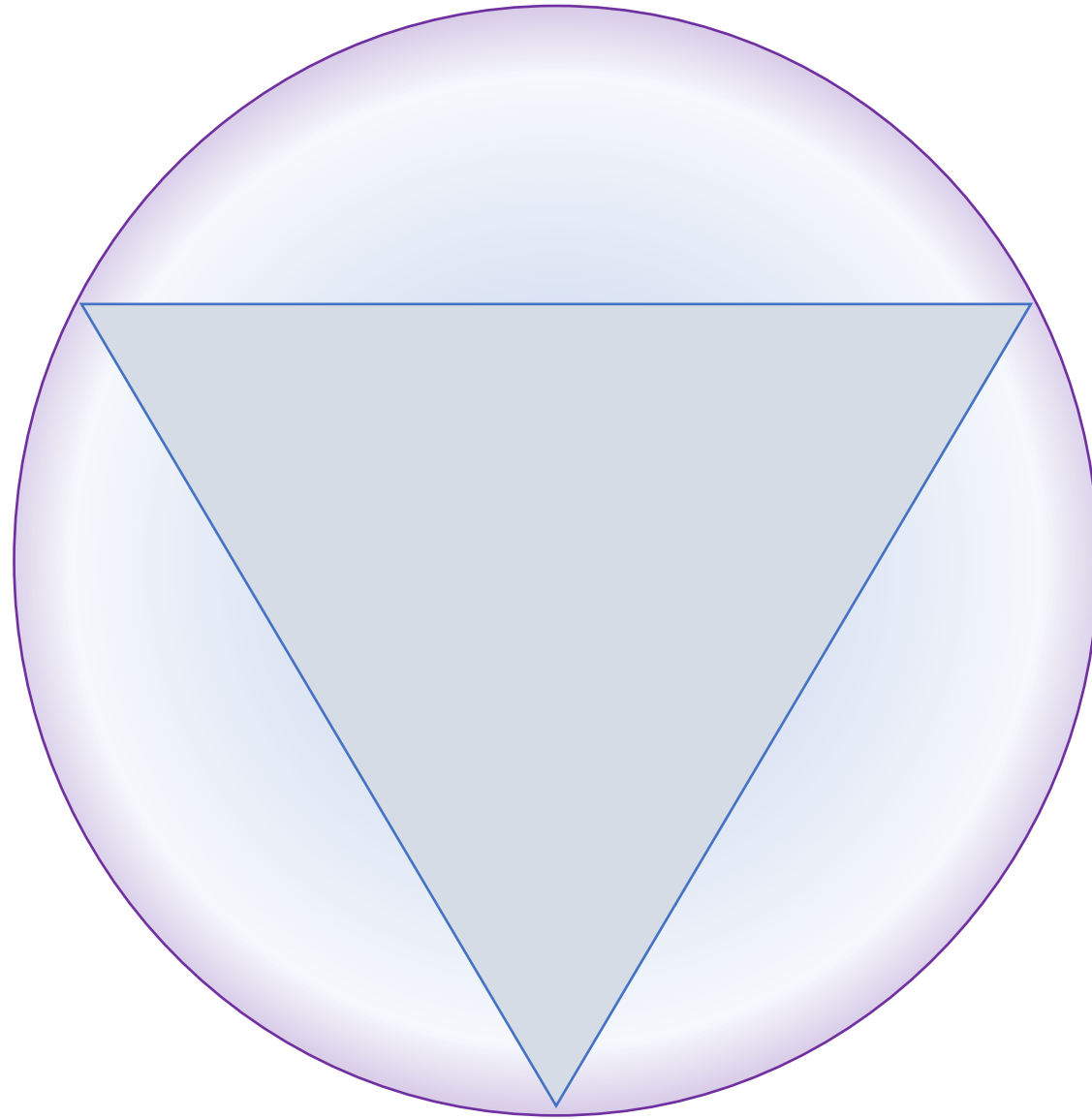


The Three Keys to Dyslexic Learning

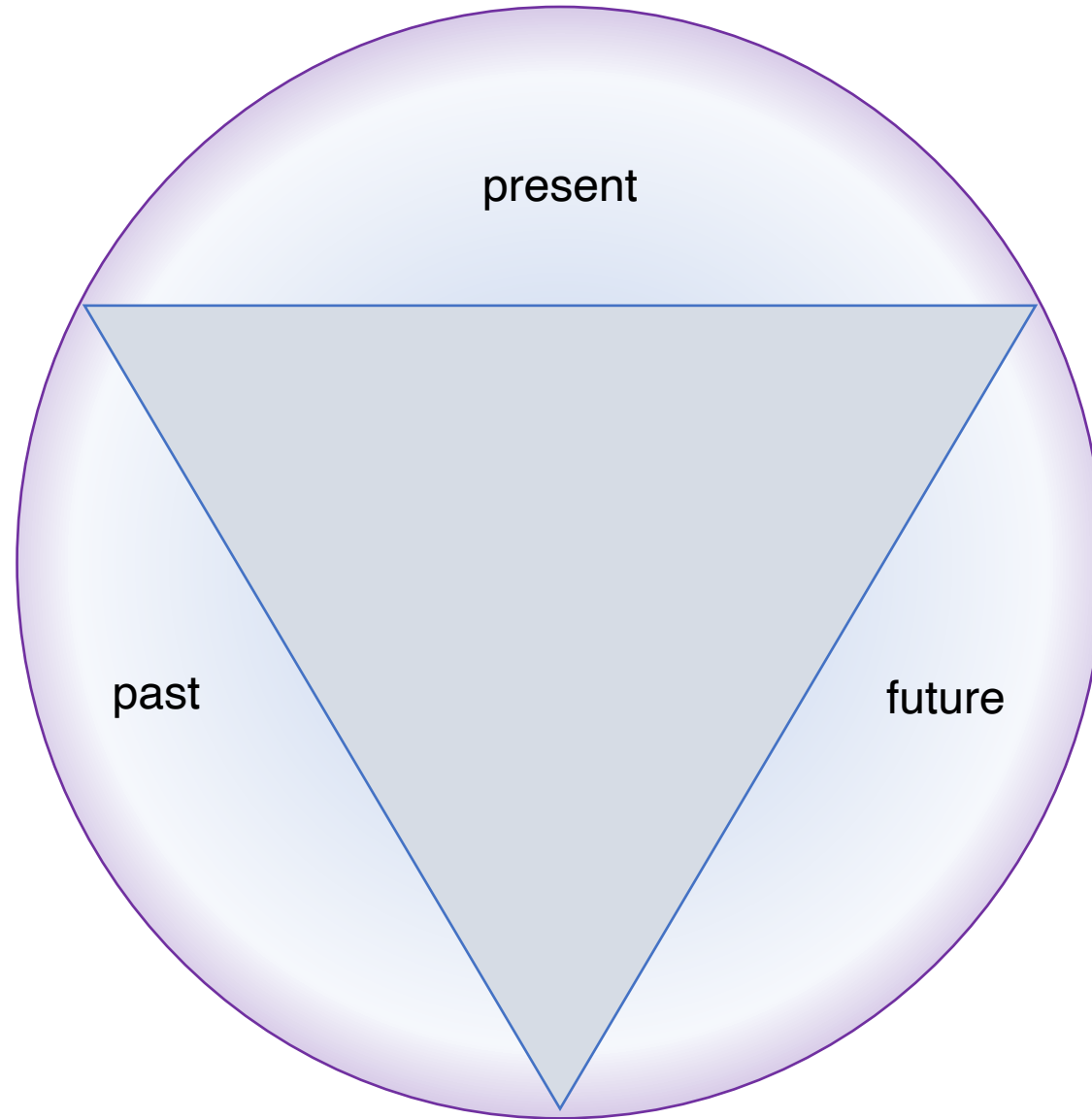
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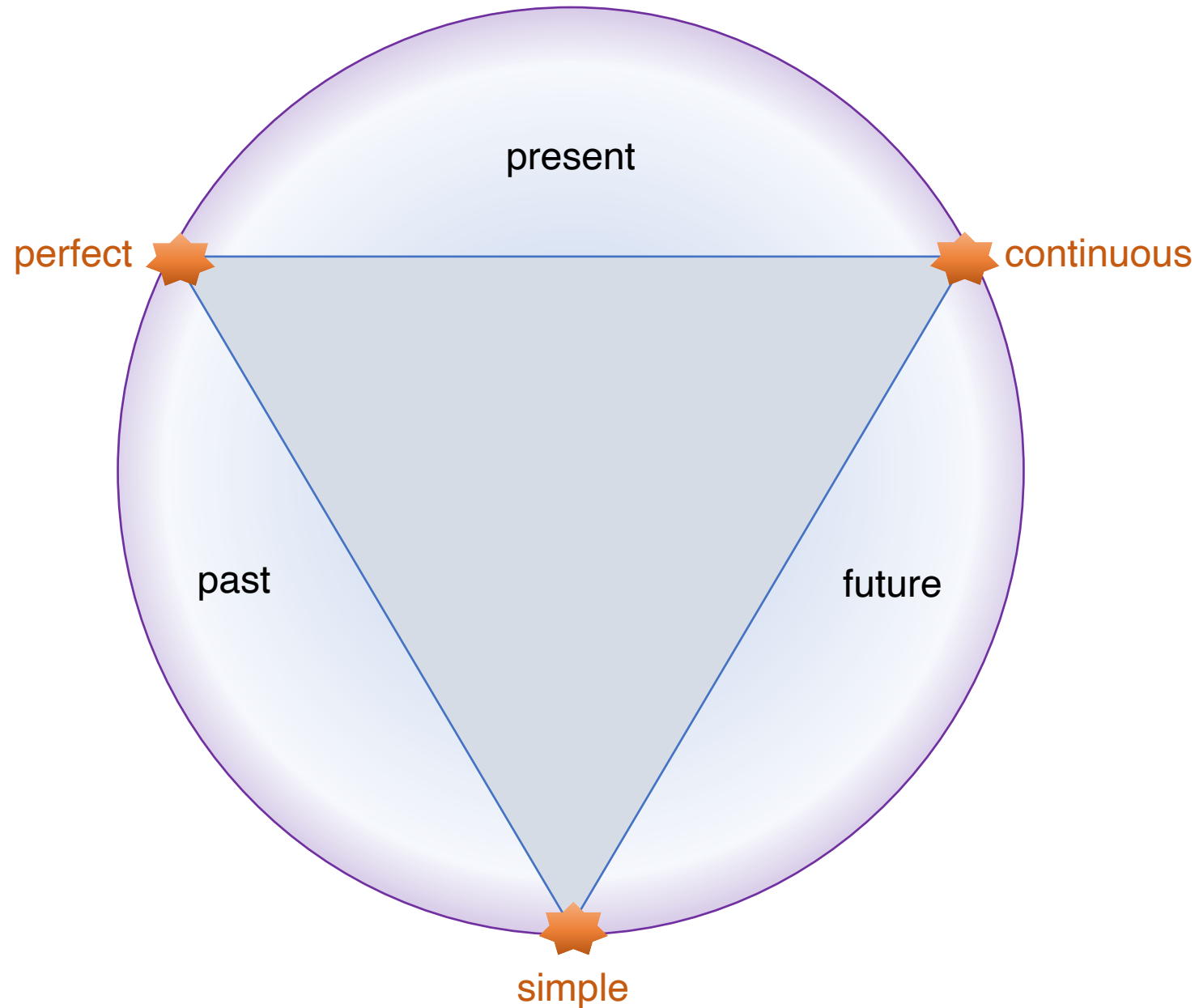
What's the shape of English grammar?



What's the shape of English grammar?



What's the shape of English grammar?



Structuring Information

Knowledge [\[edit \]](#)

Knowledge involves recognizing or remembering facts, terms, basic concepts, or answers without necessarily understanding what they mean. Its characteristics may include:

- Knowledge of specifics—terminology, specific facts
- Knowledge of ways and means of dealing with specifics—conventions, trends and sequences, classifications and categories, criteria, methodology
- Knowledge of the universals and abstractions in a field—principles and generalizations, theories and structures

Example: Name three common varieties of apple.

Comprehension [\[edit \]](#)

Comprehension involves demonstrating an understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating the main ideas.

Example: Compare the identifying characteristics of a Golden Delicious apple with a Granny Smith apple.

Application [\[edit \]](#)

Application involves using acquired knowledge—solving problems in new situations by applying acquired knowledge, facts, techniques and rules. Learners should be able to use prior knowledge to solve problems, identify connections and relationships and how they apply in new situations.

Example: Would apples prevent scurvy, a disease caused by a deficiency in vitamin C?

Analysis [\[edit \]](#)

Analysis involves examining and breaking information into component parts, determining how the parts relate to one another, identifying motives or causes, making inferences, and finding evidence to support generalizations. Its characteristics include:

- Analysis of elements
- Analysis of relationships
- Analysis of organization

Example: List four ways of serving foods made with apples and explain which ones have the highest health benefits. Provide references to support your statements.

Synthesis [\[edit \]](#)

Synthesis involves building a structure or pattern from diverse elements; it also refers to the act of putting parts together to form a whole. Its characteristics include:

- Production of a unique communication
- Production of a plan, or proposed set of operations
- Derivation of a set of abstract relations

Example: Convert an "unhealthy" recipe for apple pie to a "healthy" recipe by replacing your choice of ingredients. Explain the health benefits of using the ingredients you chose vs. the original ones.

Evaluation [\[edit \]](#)

Evaluation involves presenting and defending opinions by making judgments about information, the validity of ideas, or quality of work based on a set of criteria. Its characteristics include:

- Judgments in terms of internal evidence
- Judgments in terms of external criteria

Example: Which kinds of apples are best for baking a pie, and why?

Structuring Information

Levels of Critical Writing

Scholarly and Creative Writing:
Synthesizes information and creates an original argument, hypothesis, or creative work.

Persuasive Writing:
Examine the facets of a position, take a position, and/or evaluate another writer's position or stylistic choices

Expository Writing:
Explains a concept or value by analyzing its merits

Explains and interprets an abstract concept

Explains a simple idea by offering a report or description

Personal Narrative:
Recalls a story, events, or action in order. Story development improves as brain develops connections.

create

evaluate

analyze

apply

understand

remember

Produce new or original work

Design, assemble, construct, conjecture, develop, formulate, author, investigate

Justify a stand or decision

appraise, argue, defend, judge, select, support, value, critique, weigh

Draw connections among ideas

differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

Use information in new situations

execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

Explain ideas or concepts

classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

Recall facts and basic concepts

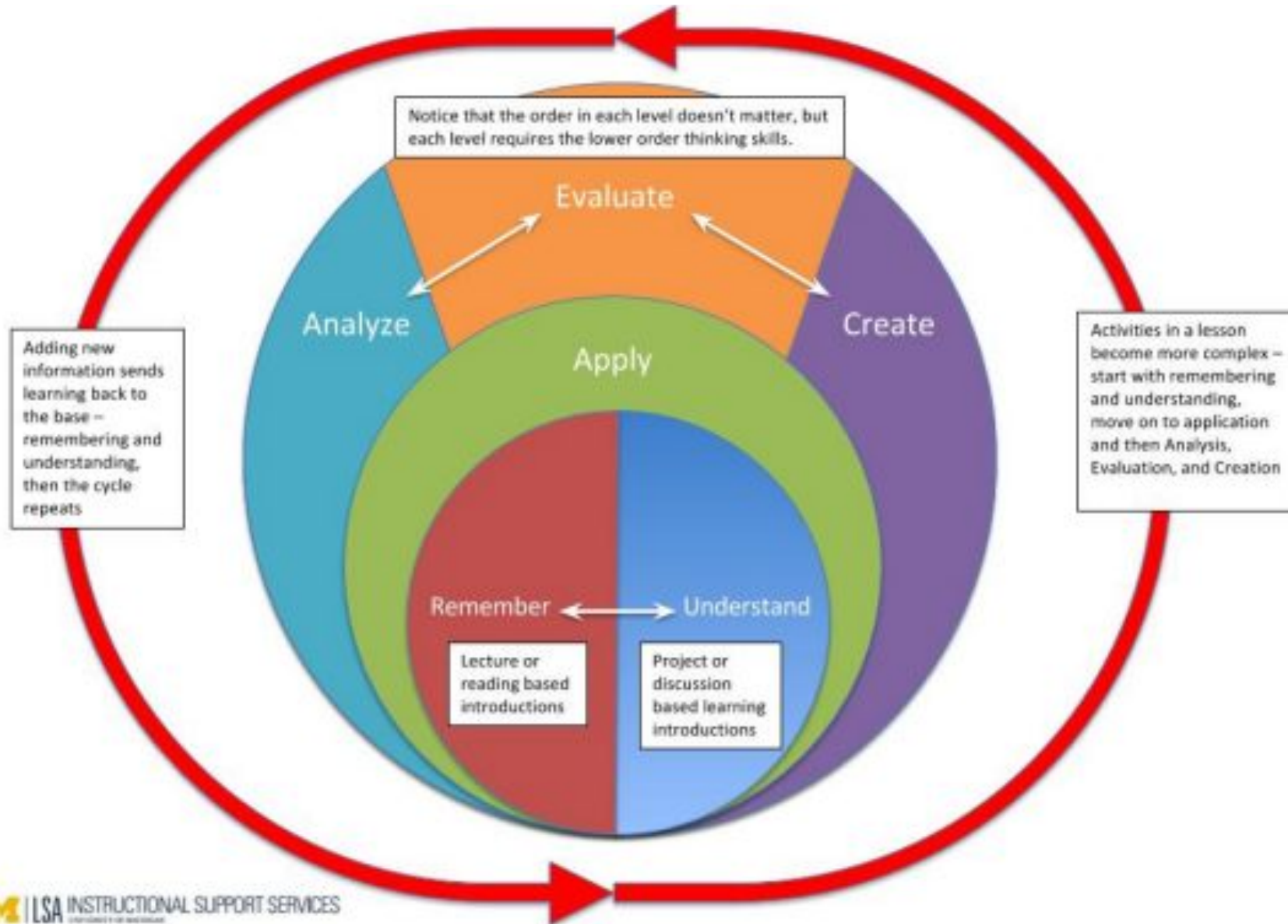
define, duplicate, list, memorize, repeat, state

Bloom's Taxonomy

Structuring Information



Structuring Information



Structuring Information



Structuring Information



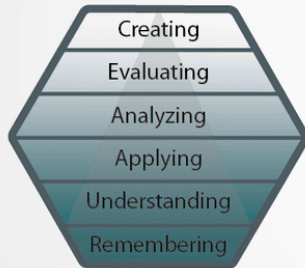
Structuring Information

Blooms Taxonomy Language for communicating about learning

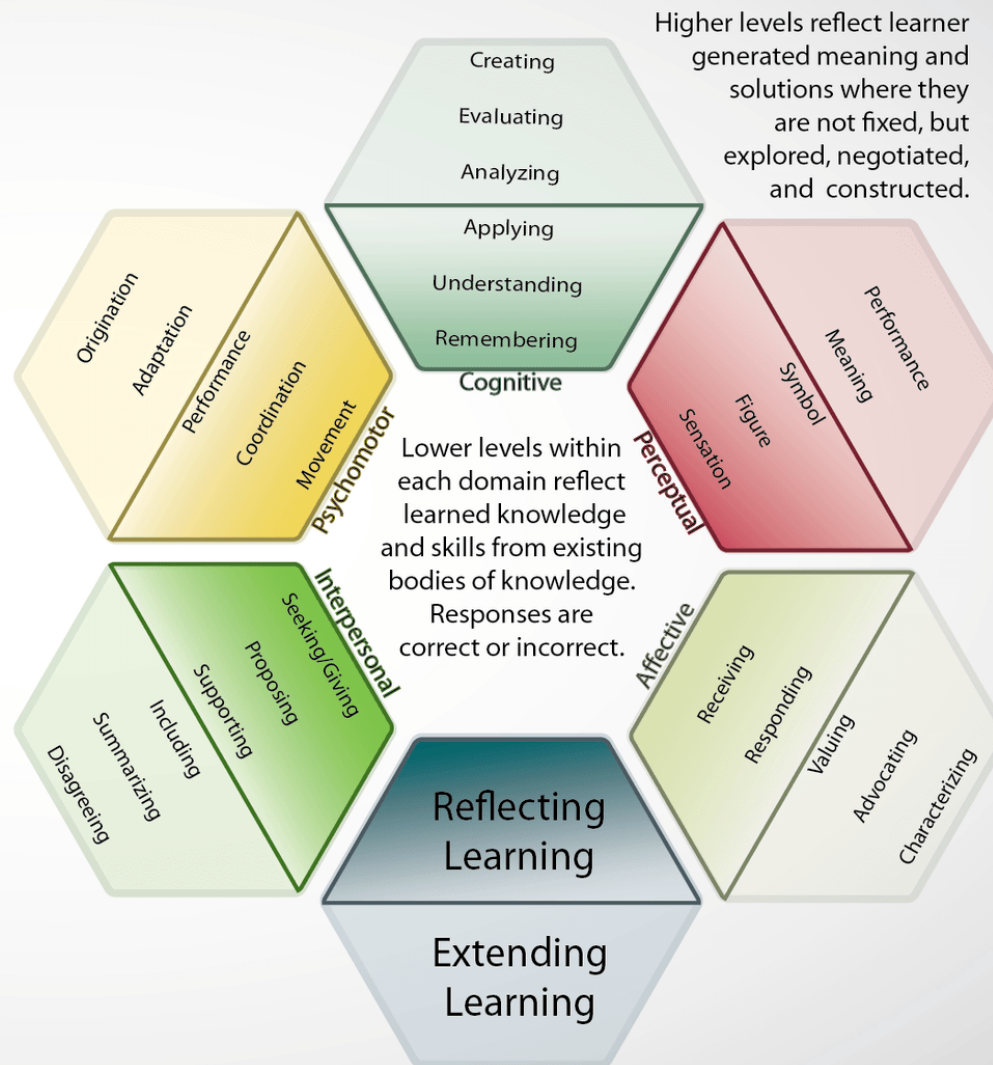
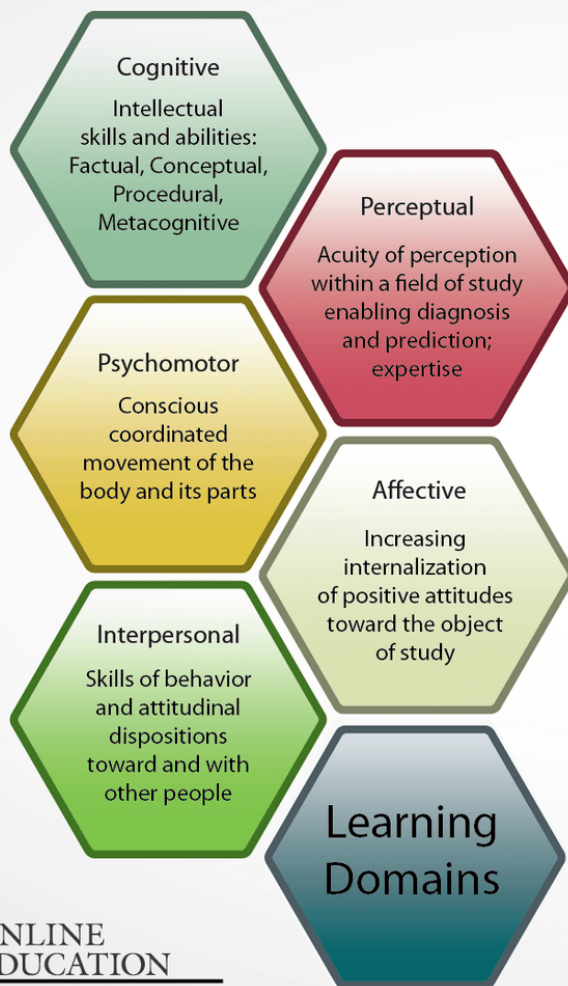
Learning Levels

Levels describe the extent of learning, ranging from:

- simple to complex
- superficial to deep
- isolated to integrated



Hierarchy conveys the need for learners to master lower levels before progressing to higher levels.



Higher levels reflect learner generated meaning and solutions where they are not fixed, but explored, negotiated, and constructed.

Lower levels within each domain reflect learned knowledge and skills from existing bodies of knowledge. Responses are correct or incorrect.

Structuring Information

A statement of a **learning objective** contains a **verb** (an action) and an **object** (usually a noun).

- The **verb** generally refers to [actions associated with] the intended **cognitive process**.
- The **object** generally describes the **knowledge** students are expected to acquire or construct. (Anderson and Krathwohl, 2001, pp. 4–5)

In this model, each of the colored blocks shows an example of a learning objective that generally corresponds with each of the various combinations of the cognitive process and knowledge dimensions.

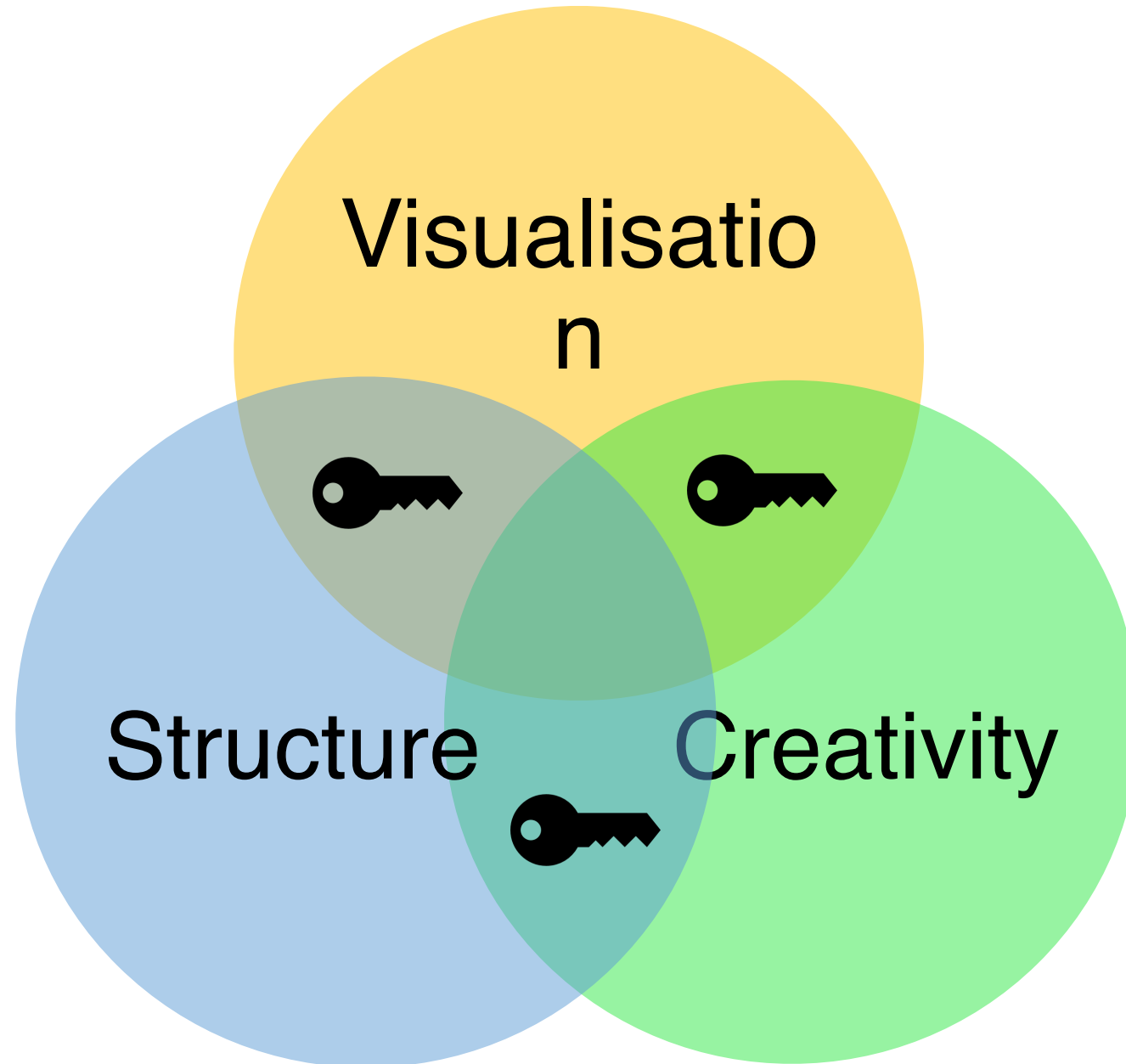
Remember: these are **learning objectives**—not learning activities. It may be useful to think of preceding each objective with something like: “Students will be able to . . .”

*Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Rath, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives* (Complete edition). New York: Longman.



Model created by: Rex Heer
Iowa State University
Center for Excellence in Learning and Teaching
Updated January, 2012
Licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
For additional resources, see:
www.celt.iastate.edu/teaching/RevisedBlooms1.html

The Three Keys to Dyslexic Learning



And the cost?

The UNESCO Institute of Statistics finds that:

“countries will need an extra 3.3 million teachers to achieve universal primary education by 2030.”

And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

U.S.	China	India	Brazil	Australia
\$300.8 billion	\$135.6 billion	\$53.6 billion	\$27.4 billion	\$18.4 billion

And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

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70-80% of people with poor reading skills are probably dyslexic.

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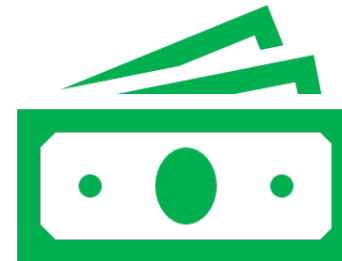
The cost of **unrecognised** dyslexia (to the UK alone) is around one billion pounds per year.

And the cost?

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One Billion Pounds Will Buy You...



And the cost?

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One Billion Pounds Will Buy You...

147,000 state pensions



And the cost?

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One Billion Pounds Will Buy You...

2.3 million people's disability living



And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

U.S.	China	India	Brazil	Australia
\$300.8 billion	\$135.6 billion	\$53.6 billion	\$27.4 billion	\$18.4 billion

One Billion Pounds Will Buy You...

12,000 hospital doctors



And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

U.S.	China	India	Brazil	Australia
\$300.8 billion	\$135.6 billion	\$53.6 billion	\$27.4 billion	\$18.4 billion

One Billion Pounds Will Buy You...

26,000 nurses



And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

U.S.	China	India	Brazil	Australia
\$300.8 billion	\$135.6 billion	\$53.6 billion	\$27.4 billion	\$18.4 billion

One Billion Pounds Will Buy You...

22,000 secondary school teachers

Teacher at the beginning
of the school year



Teacher at the end
of the school year



And the cost?

Social and Economic Terms: health, crime, welfare, lost earnings, lost business productivity and other societal problems.²

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One Billion Pounds Will Buy You...

27,000 primary school teachers



The 25th P.A.R.K. Conference



Just think
what we could do



@BytesDyslexia

@YA_Teachers

@YorkAssociates

Mendel University, Brno, 9 November 2019