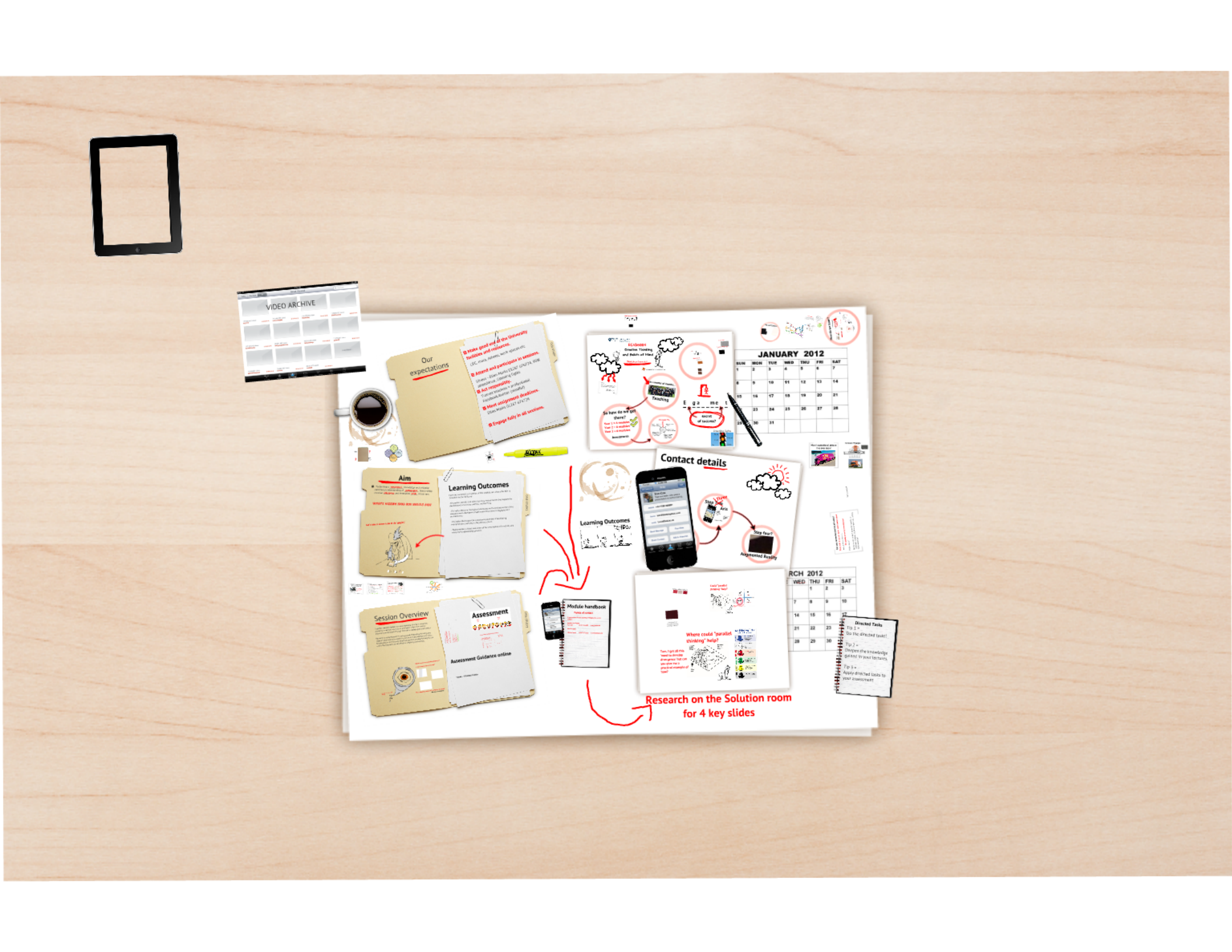

VIDEO ARCHIVE
Our expectations
Aim
Learning Outcomes
Session Overview
Assessment
Assessment Guidance online
Module handbook
Learning Outcomes
Contact details
JANUARY 2012
Where could 'parallel thinking' help?
Directed Tasks
Research on the Solution room
for 4 key slides

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Yr Athrofa
Institute of Education
Addysg i Gymru Education for Wales

ECAD6004

Creative Thinking and Habits of Mind







Think like a 5 year old!

Canolfan Addysg Athrawon De-Orllewin Cymru
The South West Wales Centre of Teacher Education

Aim

- · To develop a **conceptual** knowledge and critically considered understanding of **pedagogies** that develop creative, **enterprise** and innovative **skills** in learners.

WHAT'S MISSING FROM OUR MODULE AIM?

...'gogies'

Are we thinking about the same thing?



NOT FOCUS

Entrepreneurship education



FOCUS

Enterprise education



The 3 'gogies'



What are the main differences between these approaches?

Valuable outcome



?

?

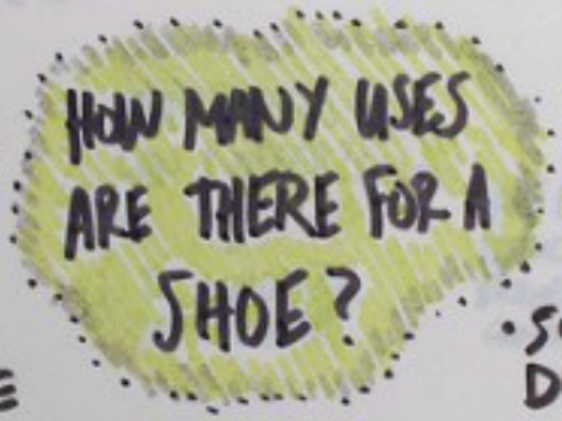
Purpose behind the activity

Creativity game

How many uses are there for a...







- GLUED TO SURFACE: SECURE FOOT HOLDERS
- (OR) CLIMBING WALL
- DOOR KNOCKER
- HOME FOR SMALL GARDEN ANIMALS
- ICE CREAM SCOOP
- (OR)
- GARDEN TROWEL
- DOOR WEDGE
- STAMP FOR PRINTING
- LEATHER SOLED SHOES: SHUFFLE BOARD GAME (LIKE SHOVE HA'PENNY)
- CHEESE GRATER/SCRAPER
- CARPET BEATER
- EAR MUFFS FOR HORSES
- PLASTERING TROWEL
- CUDDLY TOY (SLIPPERS)
- TIP JAR
- SUEDE: MAKEUP REMOVER
- (OR) EXFOLIATOR
- PRESS FOR ANY-THING
- BOOK ENDS
- EAR STRETCHERS (TIED ON WITH LACES)
- SOAP DISH
- FLATTEN PASTRY
- 2 SHOES TIED TOGETHER: THROWING WEAPON
- SOIL + GRIT COLLECTOR (TO TAKE SAMPLES TO LAB)


HOW MANY USES ARE THERE FOR A SHOE?
CLAP TOGETHER
TO MAKE MUSIC...
OR
USE OLD LEATHER TO MAKE A COAT
...SCARE BIRDS AWAY
PROTECTIVE HAND GUARDS FOR PUTTING OUT FIRES
OR
STURDY WINTER GLOVES
KILL RODENTS
BASHING IN NAILS
EAR DEFENDERS
USE SOLE AS ABRASIVE SCRAPER/ CLEANER
FAKE FOOTSTEP NOISES
FAKE CREAKY FLOORBOARD NOISES
OR
PLANT POT
SMUGGLE THINGS INTO PRISON
DEADLY WEAPON
A MEAL FOR THE DESPERATE
MAKING STEW
PURIFY (STRAIN) WATER
MESH UPPER
LEVER HERE
REMOVING STAPLES
SPANKING
HIDING SECRET THINGS
(LIKE CHOCOLATE)
COMPOSTING
DRINK HOMEBREW
SQUEEZ-ABLE STRESS RELIEVER
OR
STORING... SOCKS, BLISTER PLASTER, ATHLETES FOOT CREAM.
WALKING!
CAT HOLDER
OR
IPHONE HOLDER/ DOCK
COOL LAMP.


SMUGGLE THINGS
INTO PRISON
EVER HERE


A MEAL FOR
THE DESPERATE

NAILS

EAR DEFENDERS



DEADLY

The Creativity Gap

A 2012 Adobe study on creativity shows 8 in 10 people feel that unlocking creativity is critical to economic growth and nearly two-thirds of respondents feel creativity is valuable to society, yet a striking minority – only 1 in 4 people – believe they are living up to their own creative potential.

David Perkins (Senior Professor, Harvard Graduate School of Education):

For me, about 90% of what we teach probably constitutes particular nuggets of knowledge that those kids would never encounter again in a significant way in their lives.

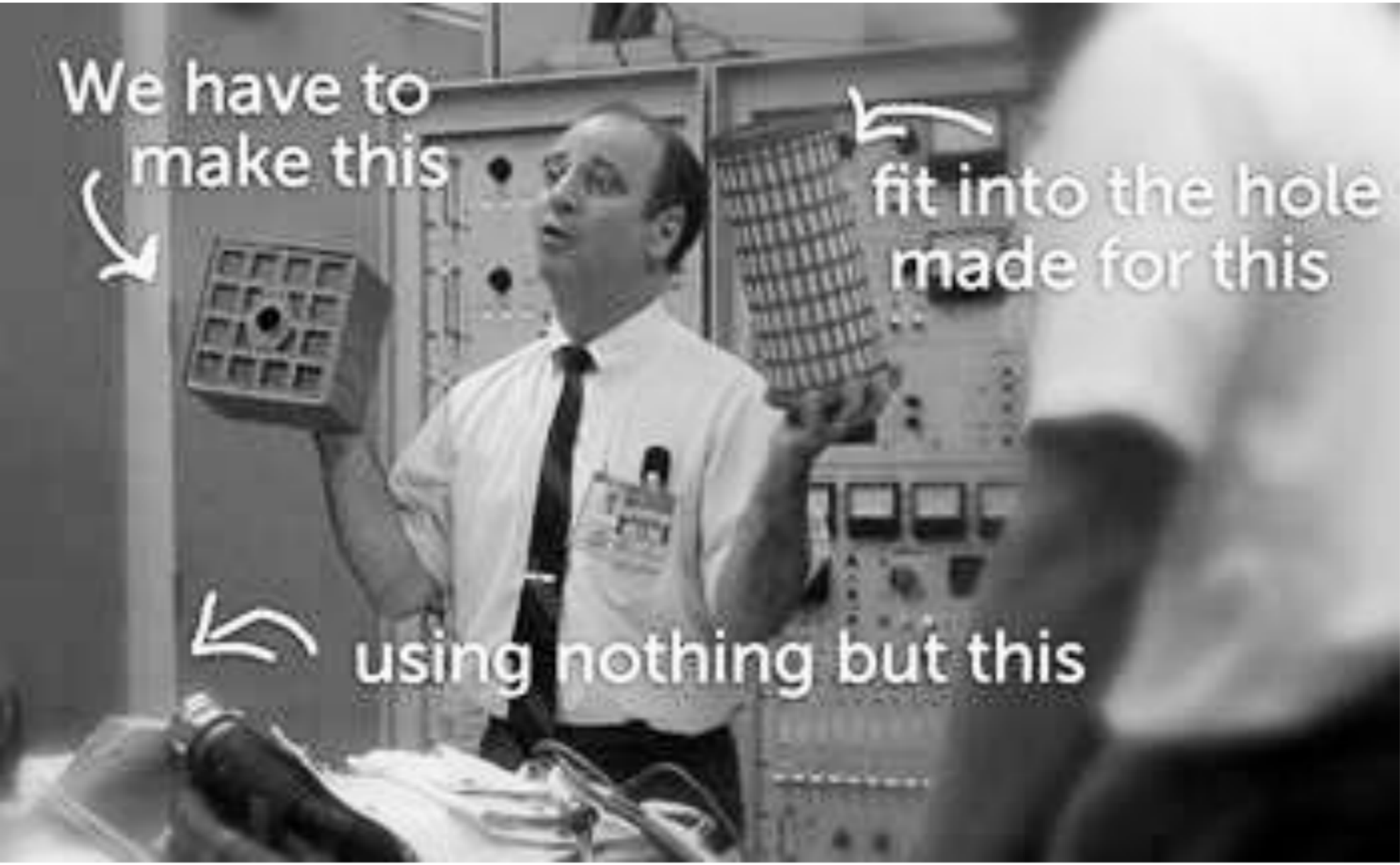
It just doesn't matter! That is completely bizarre. We simply need to do better than that."

"I think, that we need to think in terms of education for the unknown."


Apollo 13

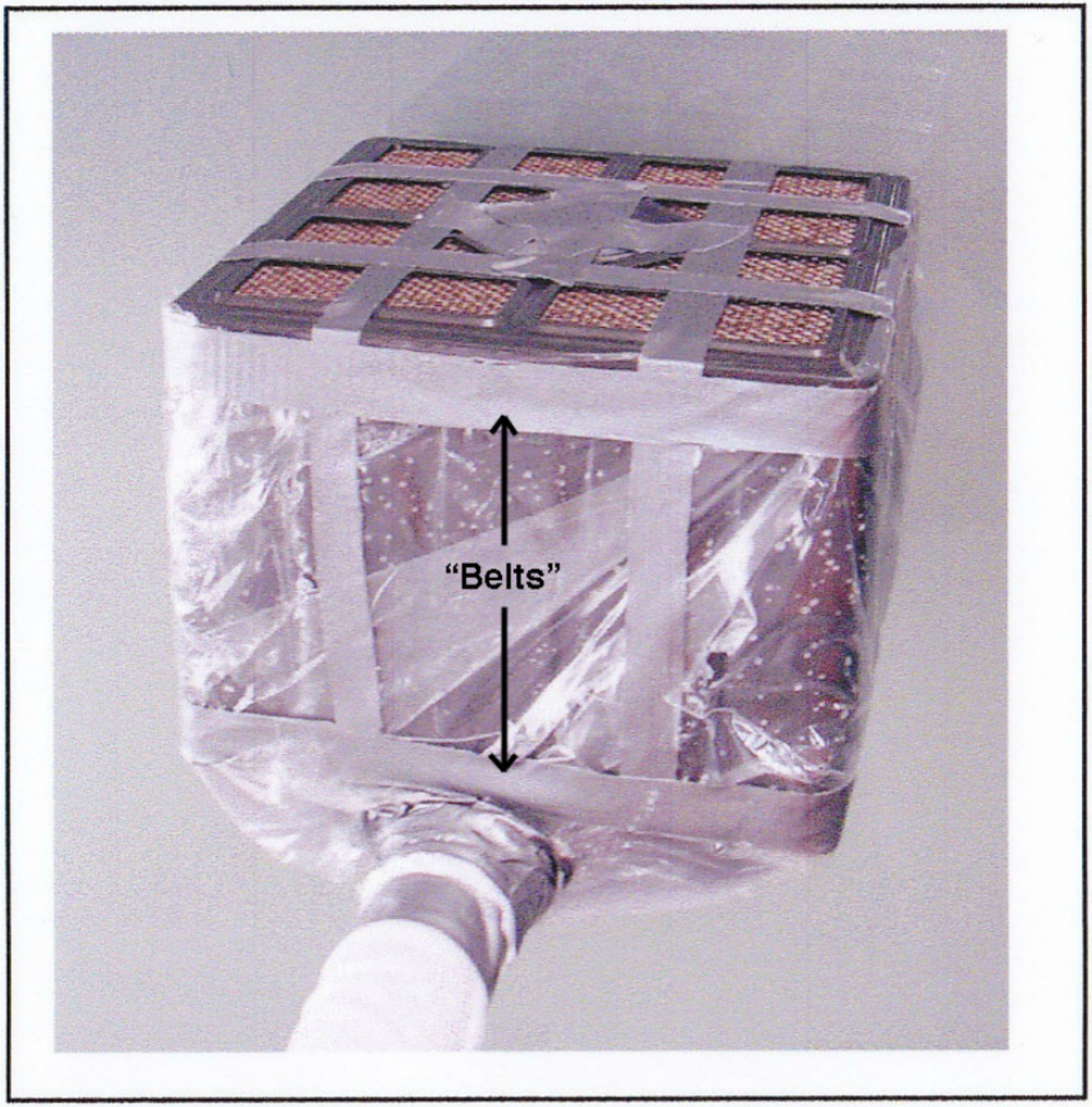
NASA's most successful failure ever!




We have to
make this
fit into the hole
made for this
using nothing but this

The Crew Systems Division put together an improvised adapter.

Using all sort of weird and random parts, like a flight manual cover, suit parts, and socks!



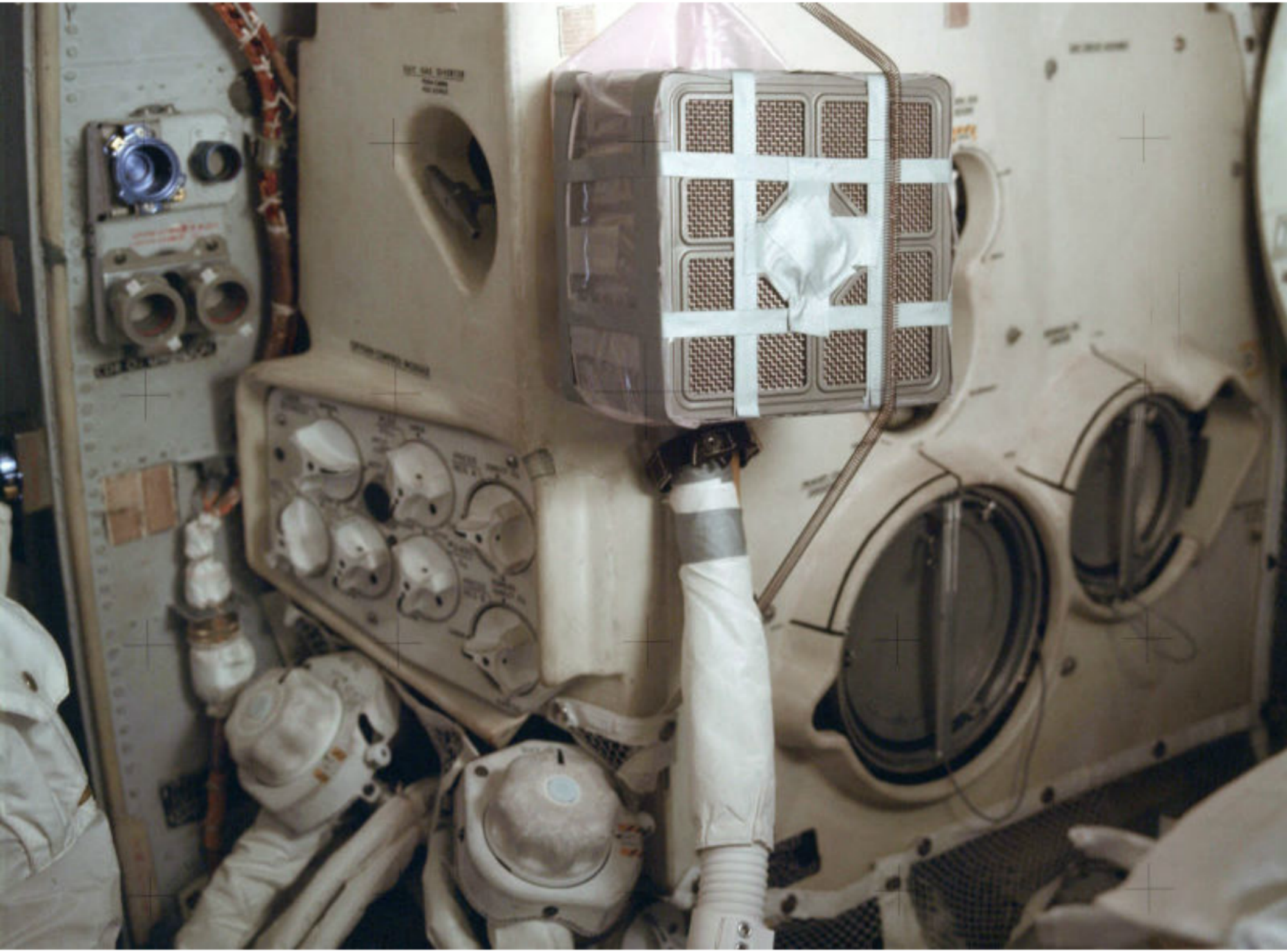


PROCEEDURE - 19 steps

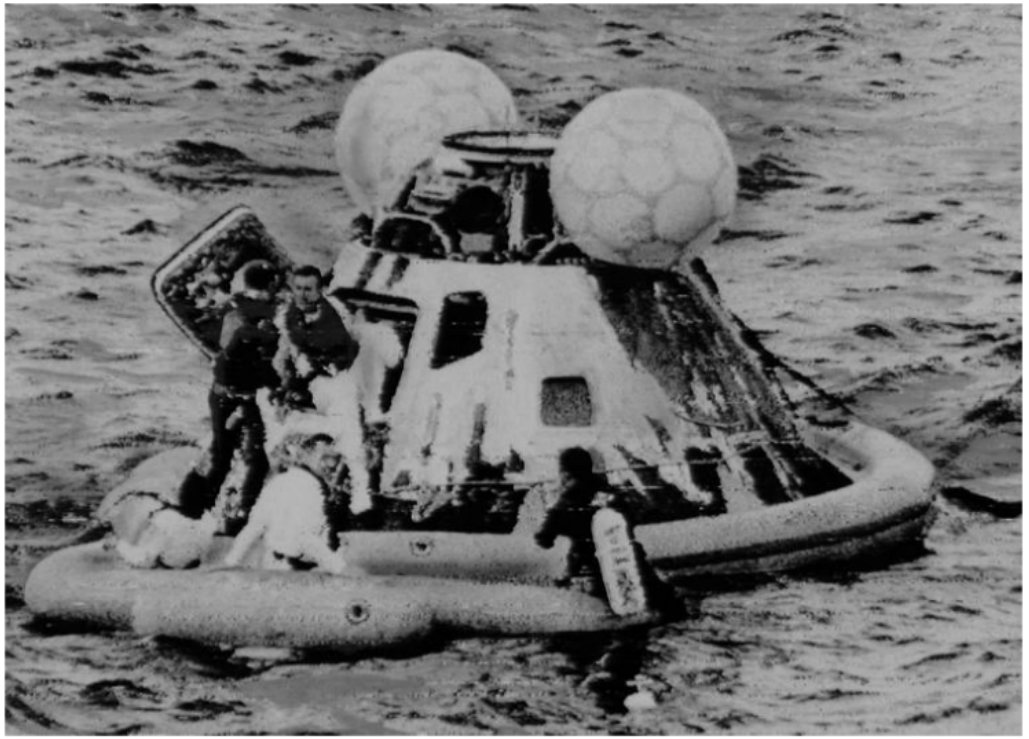
#1) Place the LCG bag over the top of the square lithium-hydroxide canister. The bag must be pulled down to just over the triangular ventilator slots on the side.

NOTE: Be careful not to rip the bag because there are only three bags onboard.







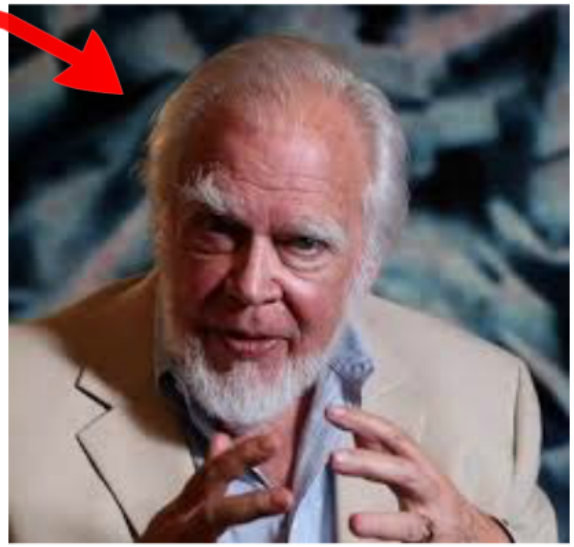




THE KIND OF CREATIVE THINKING THAT SAVED THE APOLLO 13 ASTRONAUTS DOESN'T JUST HAPPEN.

It's the result of an intentional effort to foster a creative culture.

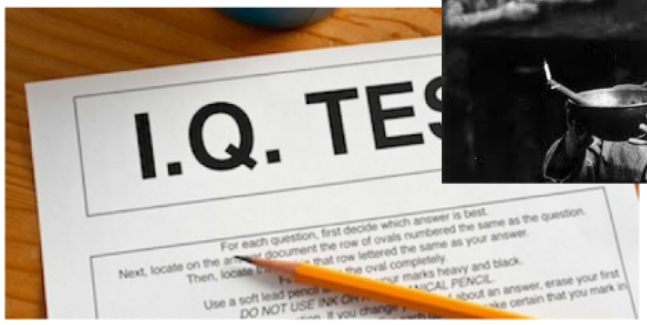




A systems scientist. In 1965 he founded a research and consulting institute to study the enhancement of creative performance.

NASA deputy director

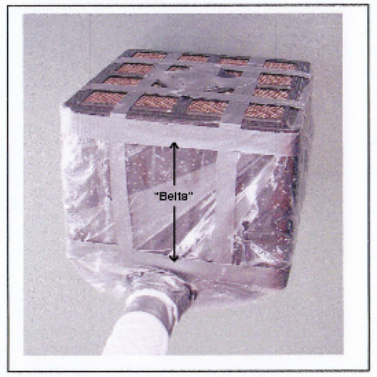
He had lots of applicants. However, he said measuring people by standard intelligence measures wasn't sufficient.





George Land

They needed people who could demonstrate the sort of ingenuity that could solve the sort of problem that plagued the aborted Apollo 13 mission.

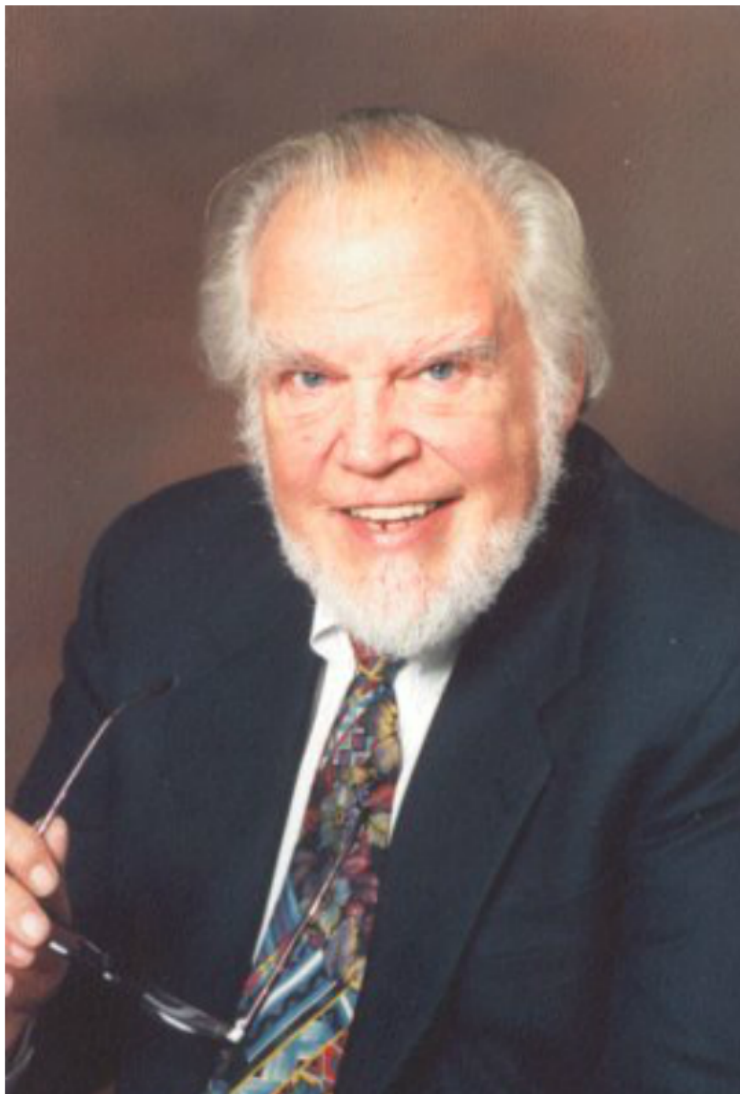


He needed a way to select the people who would create the best solutions because they had unusually tough questions.

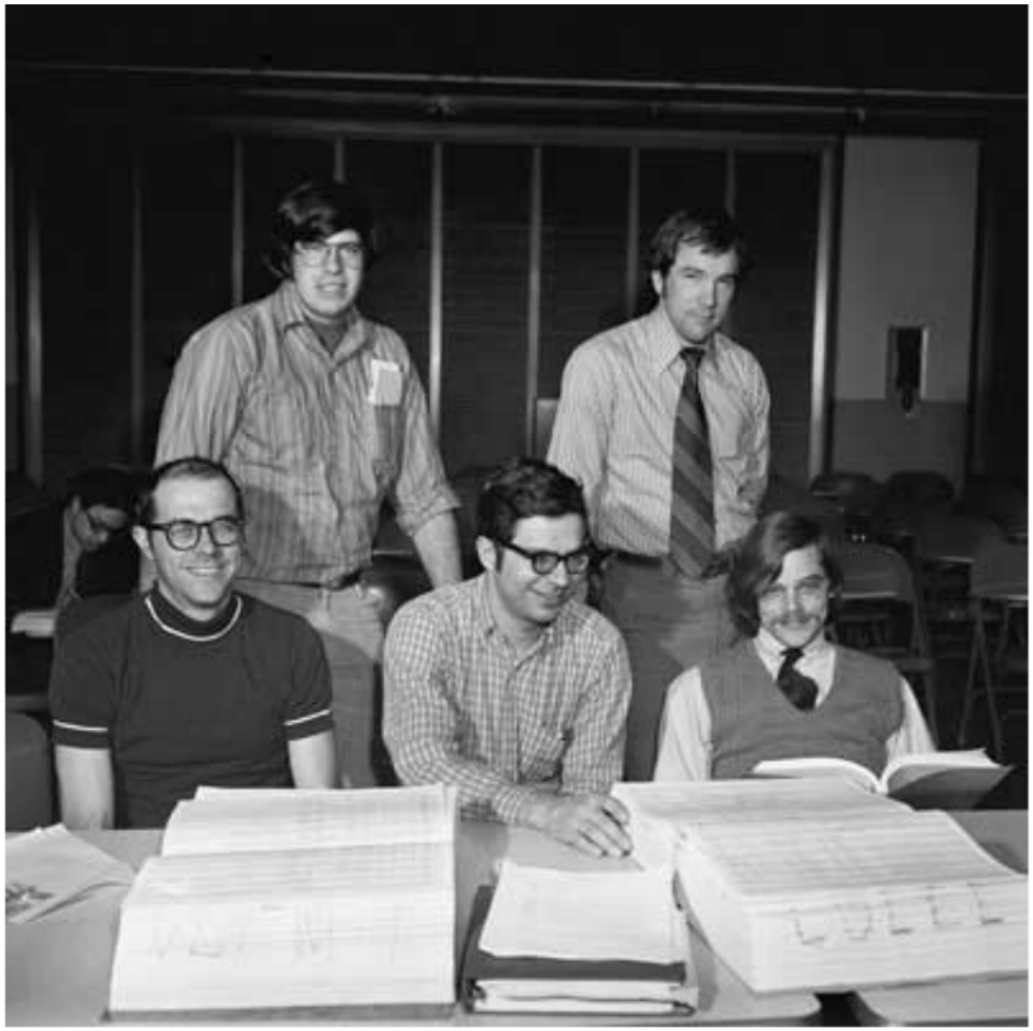
Land and his team developed an instrument to measure creative thinking, and NASA implemented it as an additional step in their candidate vetting process.

NASA DIDN'T JUST FIND INTELLIGENT PEOPLE...

...BUT PEOPLE WHO COULD THINK DIFFERENTLY.

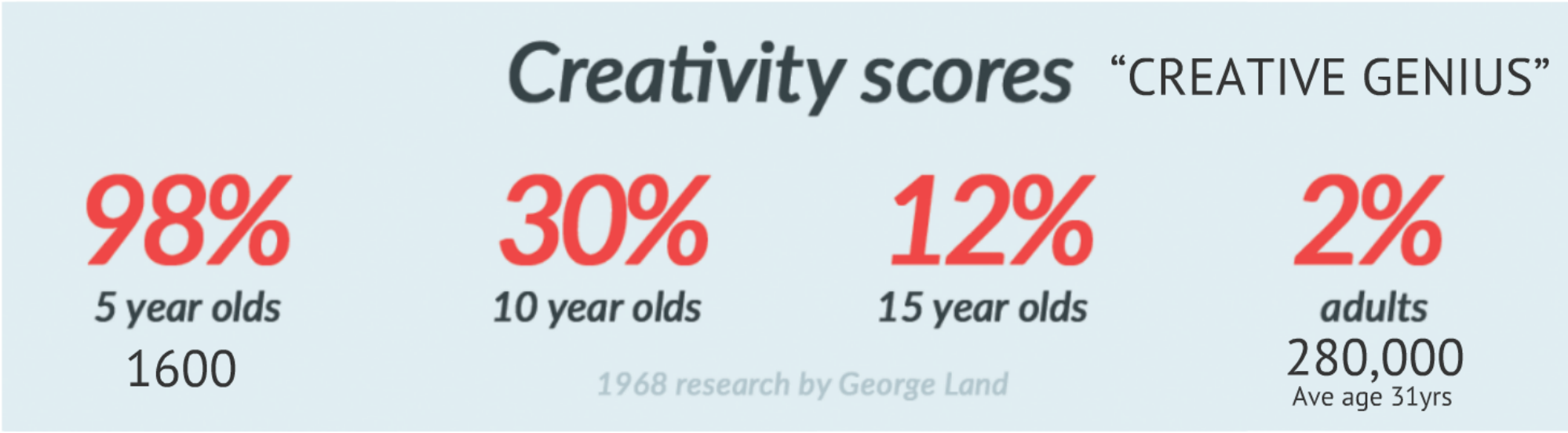


The test was a rousing success and, as a measure of employee performance, highly predictive for NASA.



They had determined how to measure existing levels of creative thinking in prospective employees.

Fundamental question
Is creativity innate or learned?

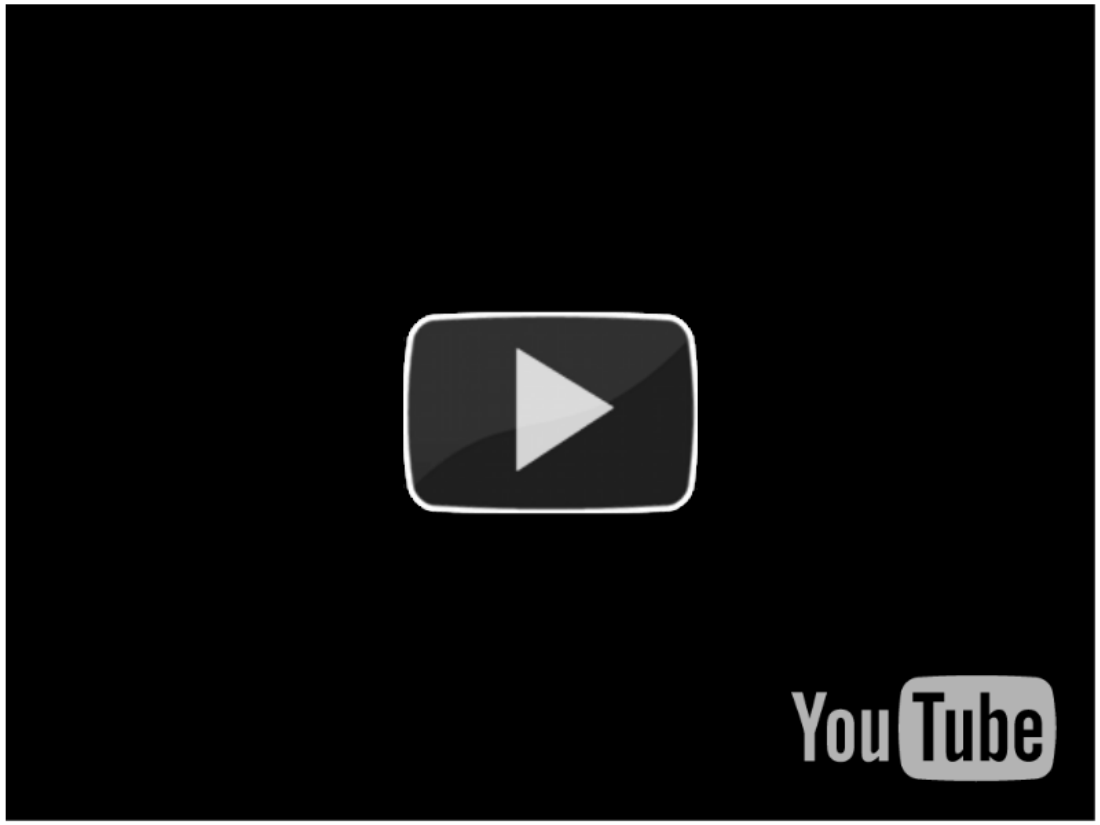


"What we have concluded," wrote Land, **"is that non-creative behavior is learned."**

(Source: George Land and Beth Jarman, Breaking Point and Beyond. San Francisco: HarperBusiness, 1993)

Each of us was once a creative genius.

SOMEWHERE ALONG THE WAY, THOUGH, WE LOSE OUR CREATIVITY.



Do schools kill creativity? | Sir Ken Robinson


Do schools really „kill" creativity?
What needs to change?
CAUTION
CREATIVITY KILLERS

How are schools actually suppressing creativity?

550 people across the world.
(Sommer and Sommer)

1. Teachers are not inspiring

2. Intense curriculum leaves little time for alternative problem-solving methods

3. Standardized teaching methods rarely leave scope for alternative solutions

4. Creative solutions aren´t rewarded with higher grades

5. The school system primarily encourages intellectual conformity

How can creativity be fostered in school?

1. By training teachers to recognize alternative solutions



2. By giving time for divergent thinking



3. By teaching pupils to ask questions that lead to new ways of solving problems



4. By schools supporting their pupils` individual interests and talents



5. Through a more constructive approach to mistakes



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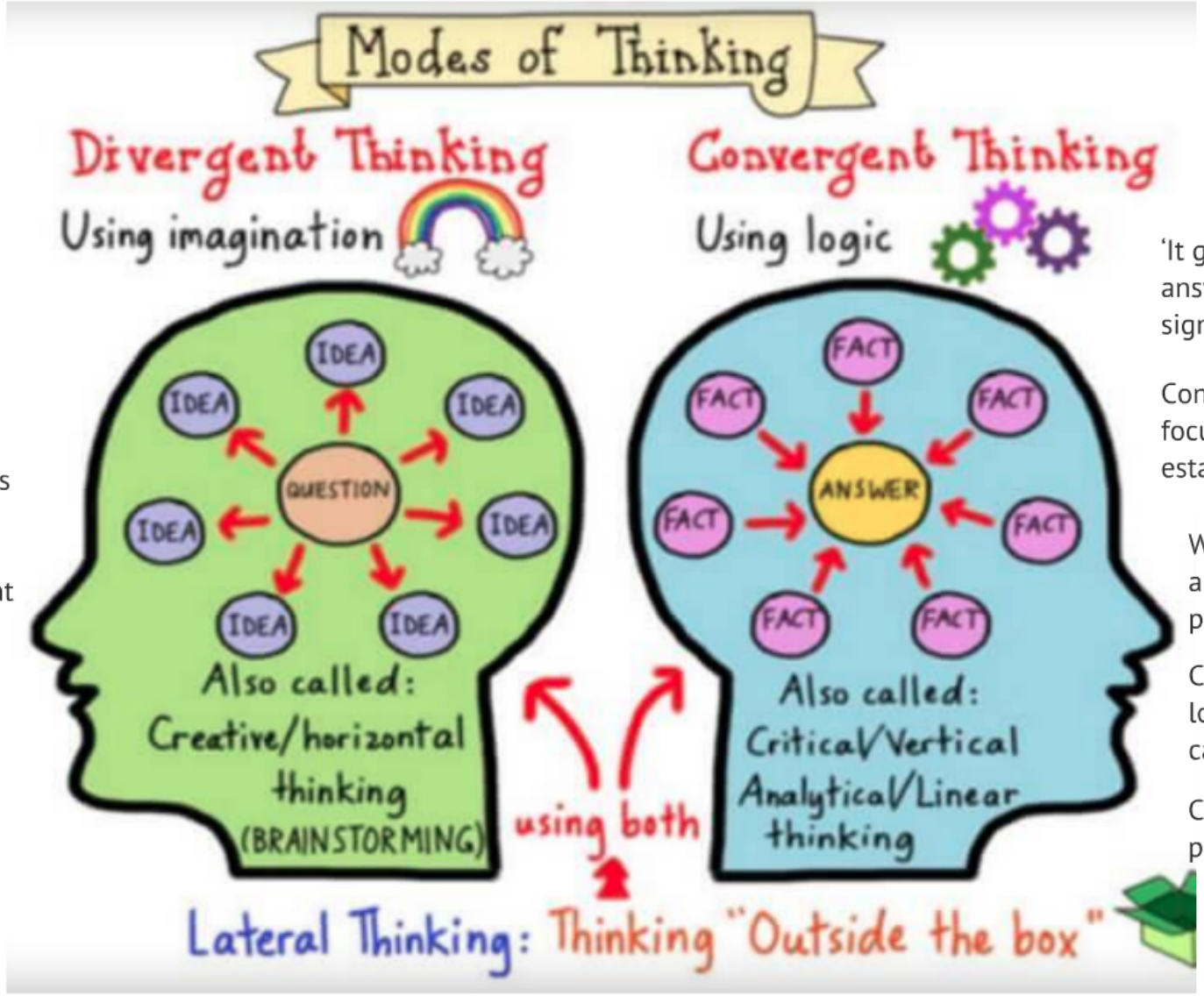


ught process or method
deas by exploring many

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'It generally means the ability
answer to standard questions
significant creativity.

Convergent thinking is the ty
focuses on coming up with th
established answer to a probl

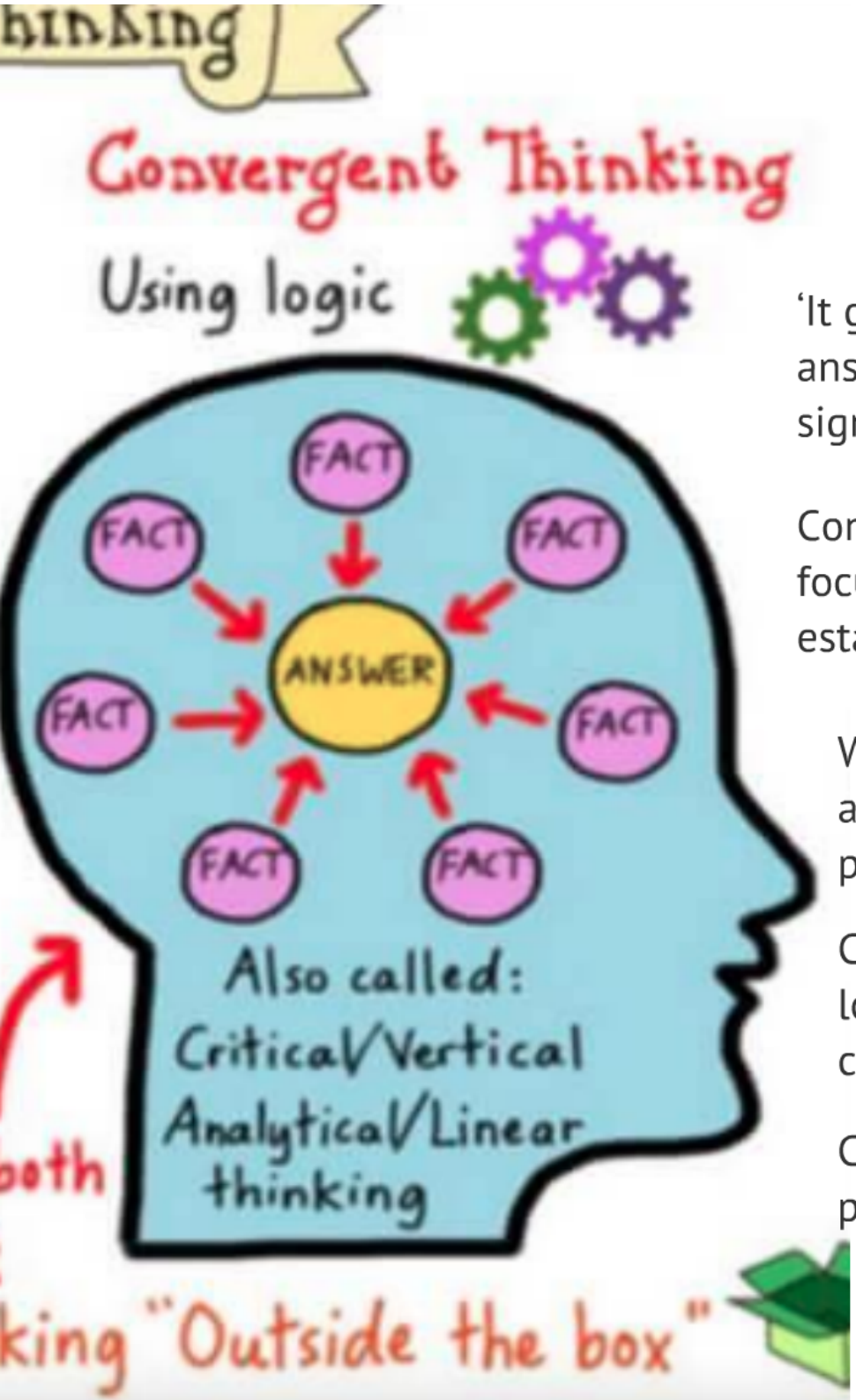
When an individual is using
a problem they consciously
probabilities to make judgr

Convergent thinking, follow
logical steps to arrive at on
cases is a 'correct' solution.

Convergent thinking is use
problem-solving.



Joy Paul Guilford coined the phrases.



'It generally means the ability to give the "correct" answer to standard questions that do not require significant creativity.

Convergent thinking is the type of thinking that focuses on coming up with the single, well-established answer to a problem.

When an individual is using critical thinking to solve a problem they consciously use standards or probabilities to make judgments.

Convergent thinking, follows a particular set of logical steps to arrive at one solution, which in some cases is a 'correct' solution.

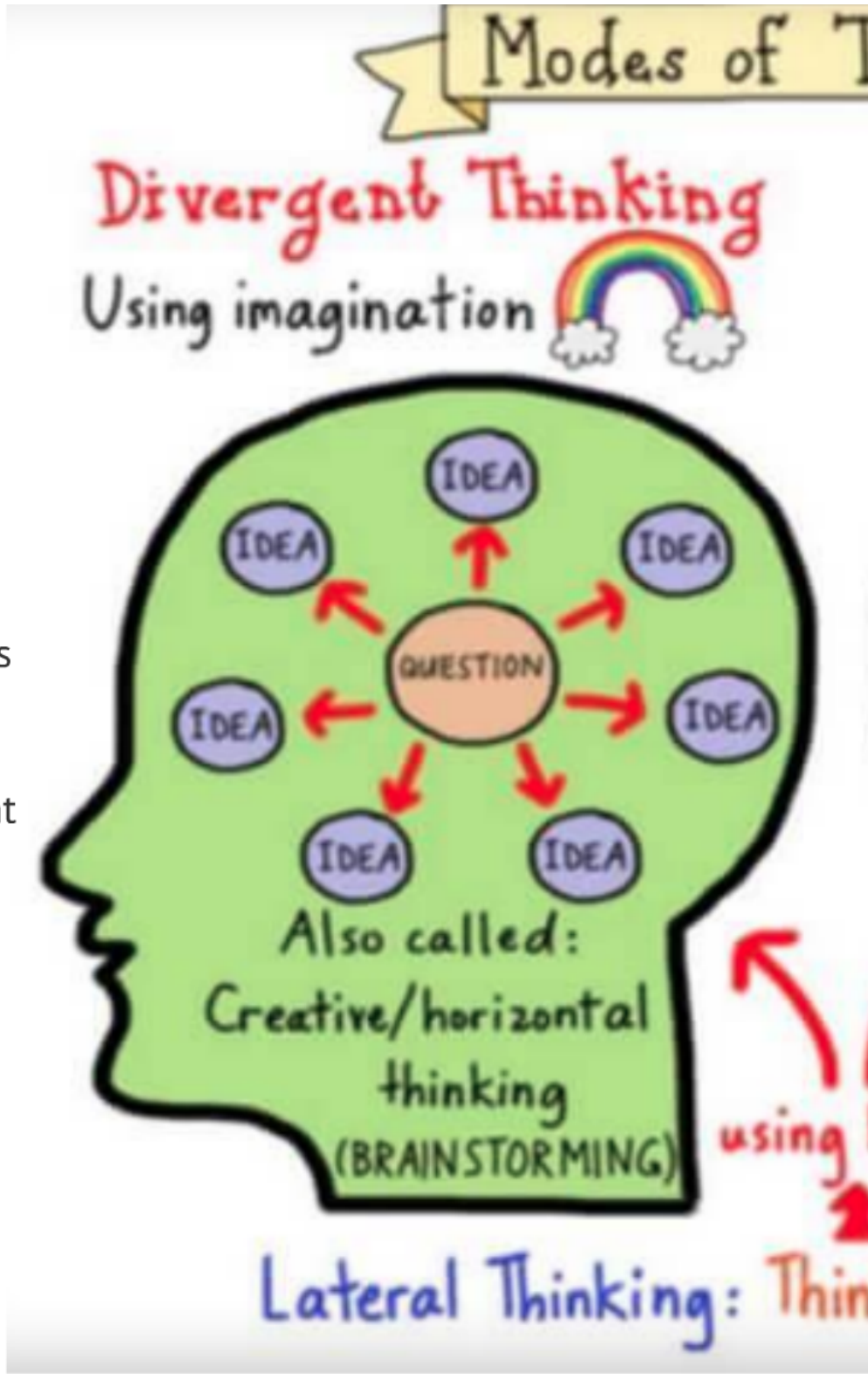
Convergent thinking is used as a tool in creative problem-solving.

Divergent thinking is a thought process or method used to generate creative ideas by exploring many possible solutions.

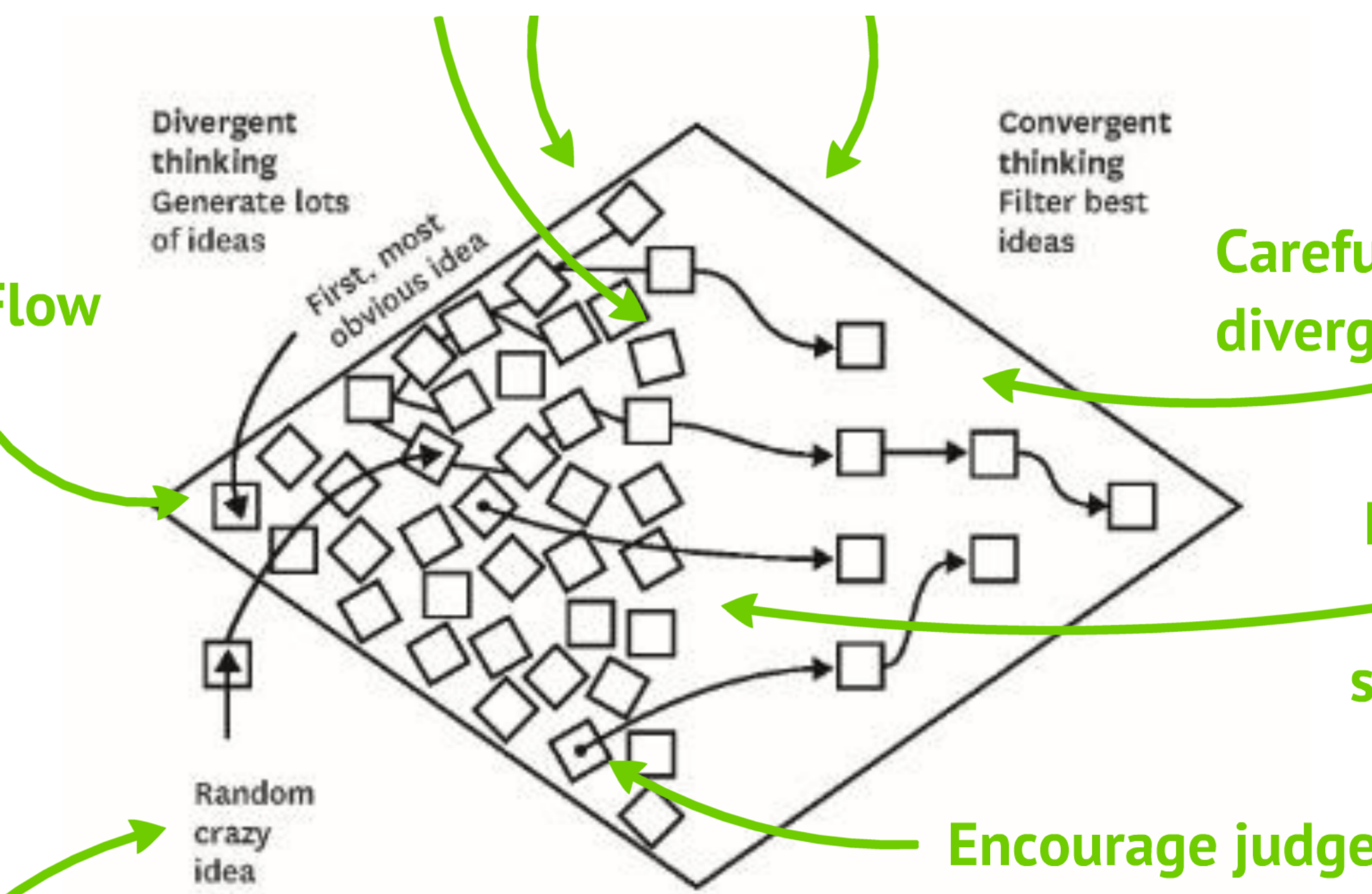
Divergent thinking typically occurs in a spontaneous, free-flowing, 'non-linear' manner, such that many ideas are generated in an emergent cognitive fashion.

Many possible solutions are explored in a short amount of time, and unexpected connections are drawn.

After the process of divergent thinking has been completed, ideas and information are organised and structured using convergent thinking.'





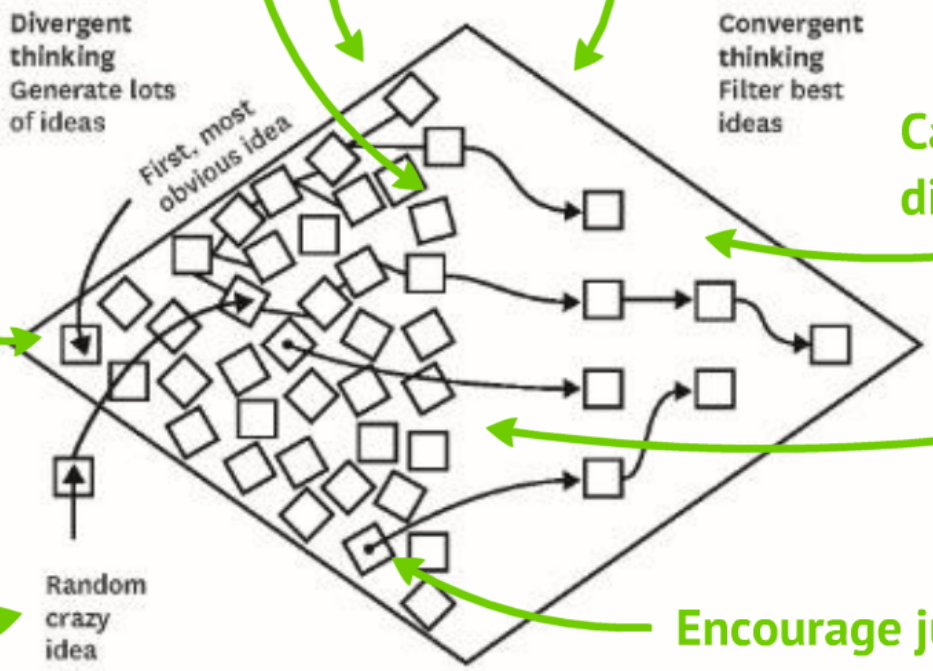


Divergence and Convergence

What could you do to help?

Different Environments?

Retaining creative seeds (baby / bath water)



Strategies for Flow and quantity

Carefully manage additional divergence here

Incubation and separation?

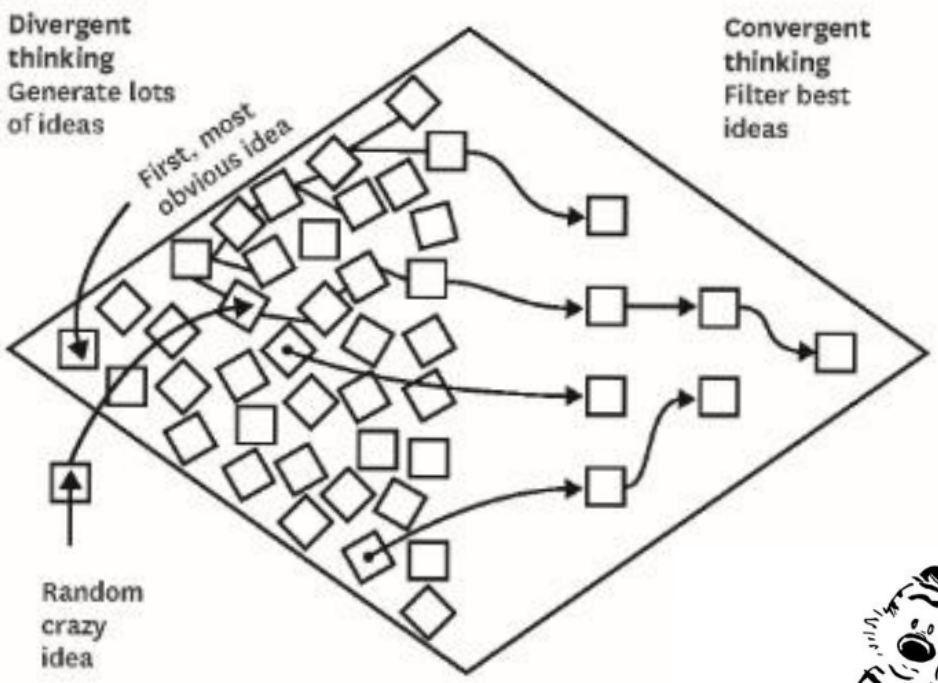
Encourage judgement and selection

Divergence and Convergence

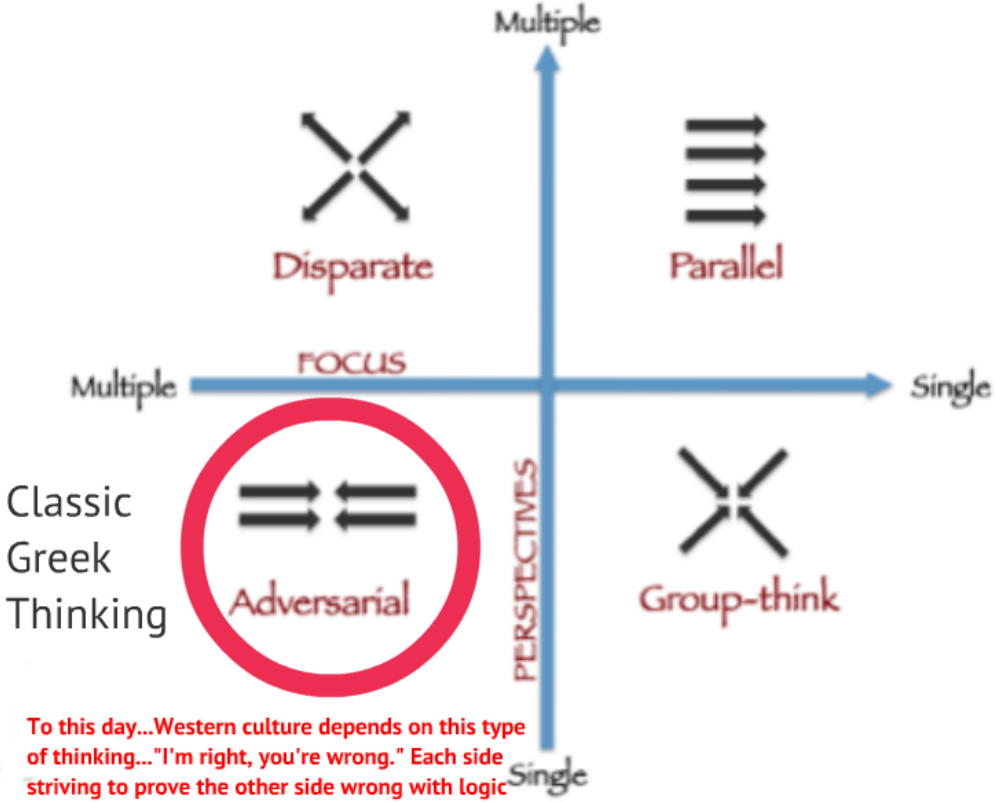
Avoid ridicule

Different groups?

Could "parallel thinking" help?





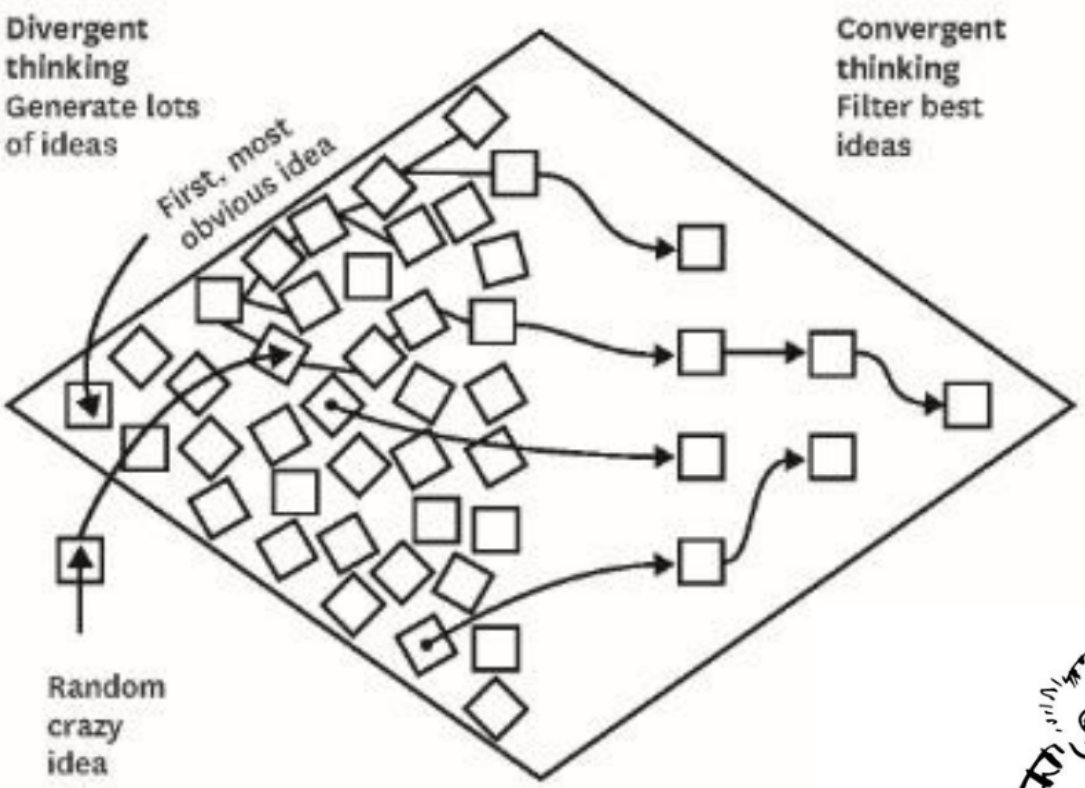


To this day...Western culture depends on this type of thinking..."I'm right, you're wrong." Each side striving to prove the other side wrong with logic and reason.

Where could "parallel thinking" help?

n

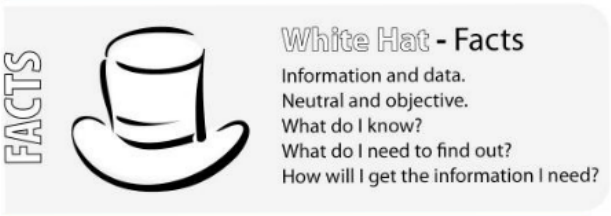
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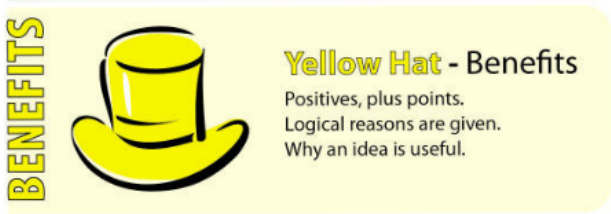
Six Thinking Hats®
Quick Summary







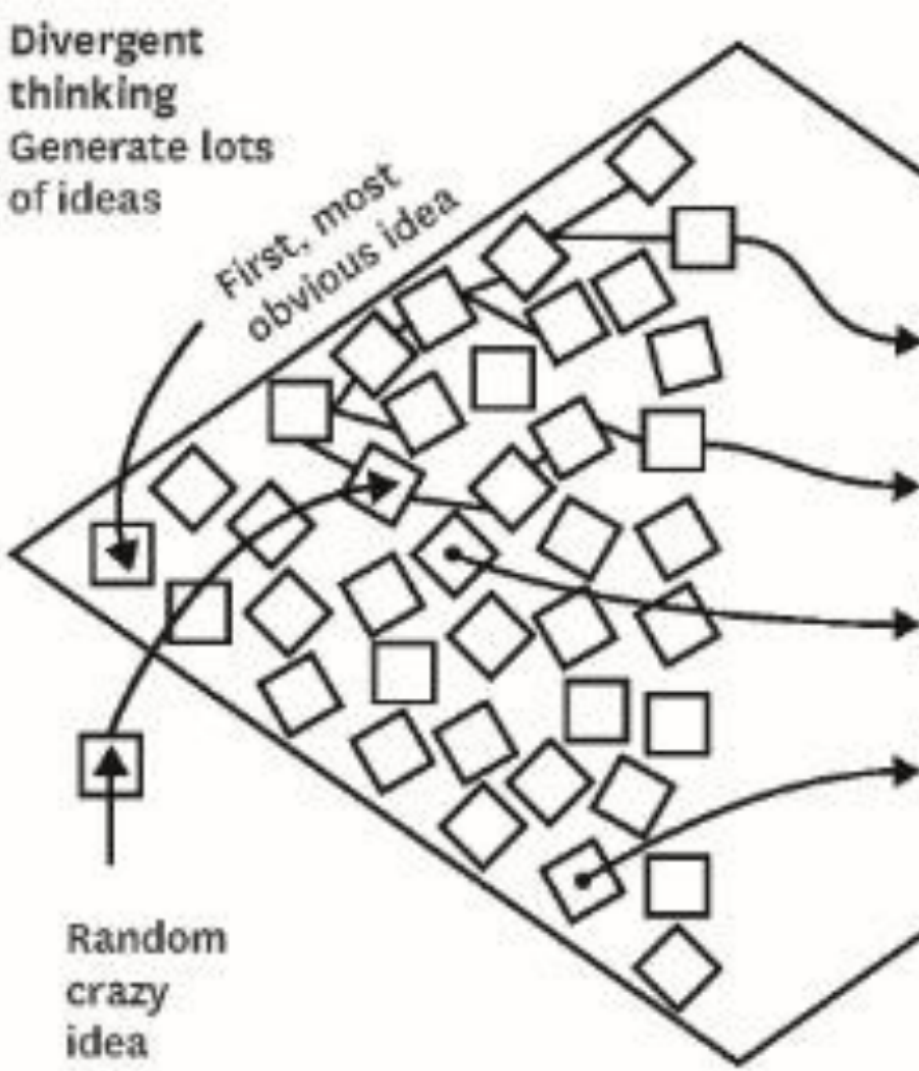


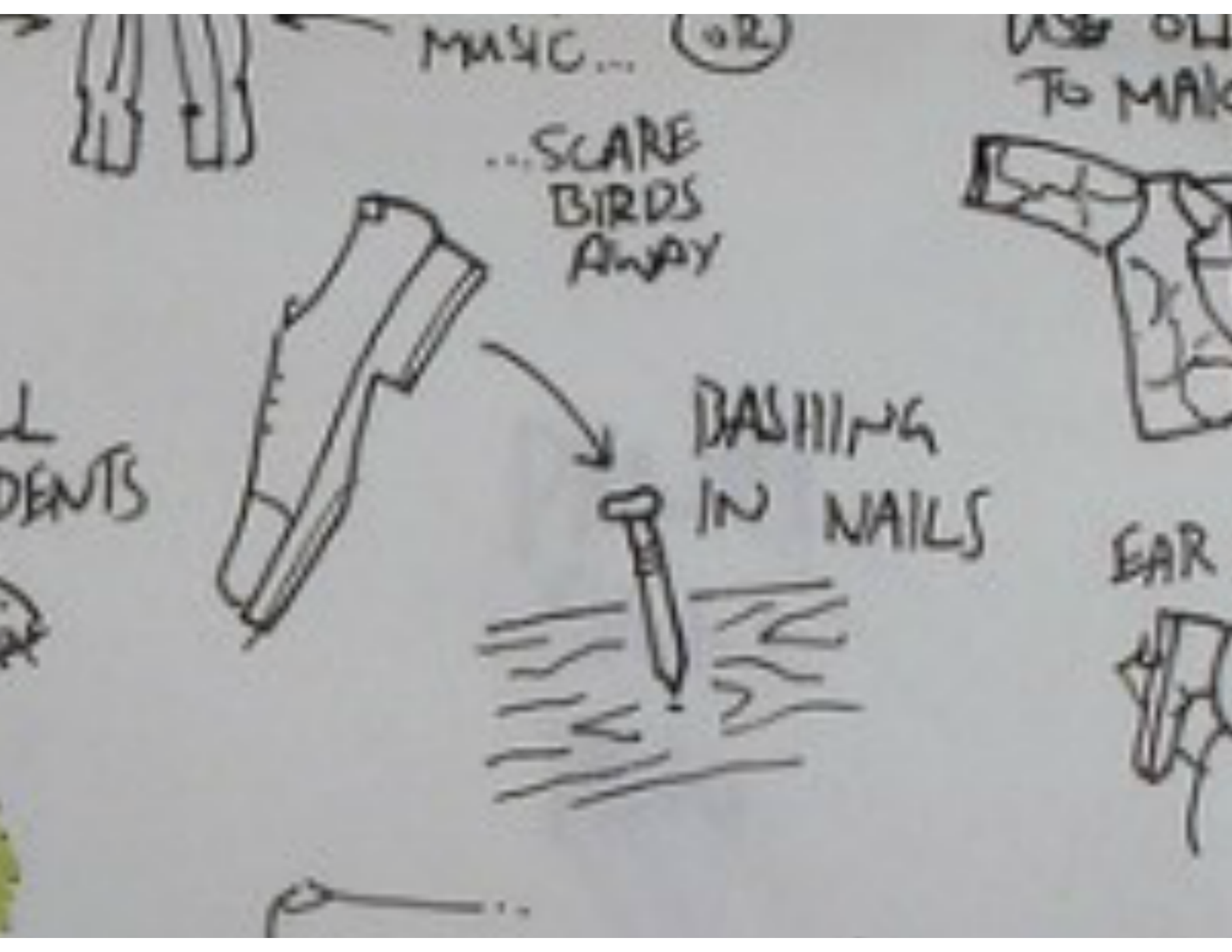




thinking" he

Tom, I get all this 'need to develop divergence' but can you give me a practical example of how?




MAGIC...
...SCARE BIRDS AWAY
BASHING IN NAILS
EAR

NEVER GIVE UP!

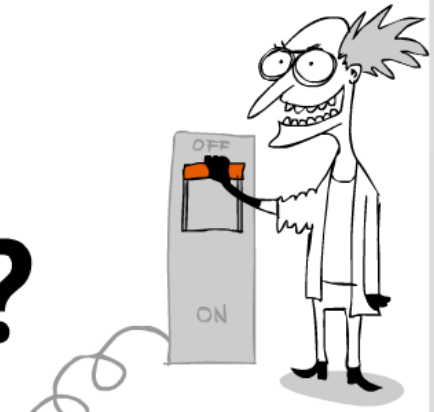


Who?

What?

Why?

How many?

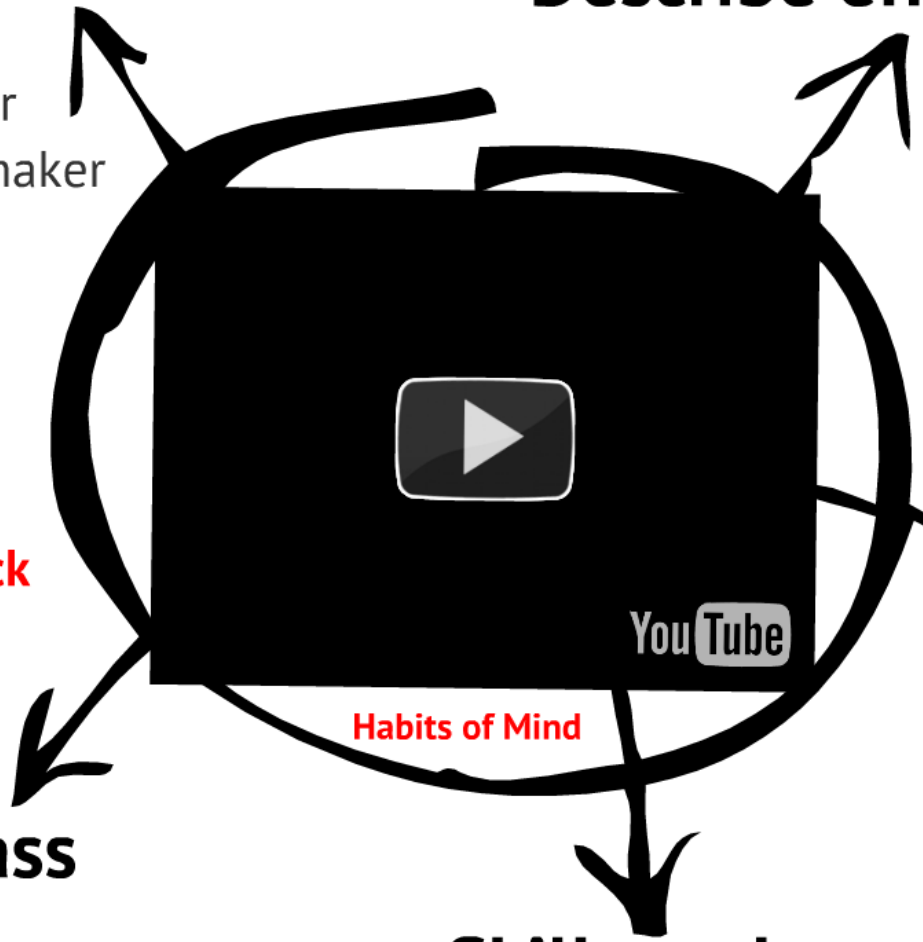


Habits of Mind

Set of dispositions

- Expert problem solver
- Thoughtful decison maker
- Creative thinker

Describe effective thinkers



Art Costa + Bena Kallick

Guide decisions in day to day life

Internal compass

- Solving problems
- Resolving conflict

Skills and strategies used when the answer is not known

Not only are we interested in how many answers students know, but also in knowing how to behave when they DON'T know.

Habits of Mind are performed in response to those questions and problems the answers to which are NOT immediately known.

The 16 Habits of Mind


















The 16 Habits of Mind

1. Persisting



2. Managing Impulsivity



3. Listening with understanding & empathy



4. Thinking Flexibly



5. Thinking about thinking (metacognition)



6. Striving for accuracy



7. Questioning and posing problems



8. Applying past knowledge to new situations



9. Thinking & communicating with clarity and precision



10. Gathering data through all senses



11. Creating, imagining, innovating



12. Responding with wonderment and awe



13. Taking responsible risks



14. Finding humour



15. Thinking interdependently



16. Remaining open to continuous learning



Can you make connections to ANY aspects of session so far?

Can you make connections to ANY aspects of session so far?

1. Persisting



2. Managing Impulsivity



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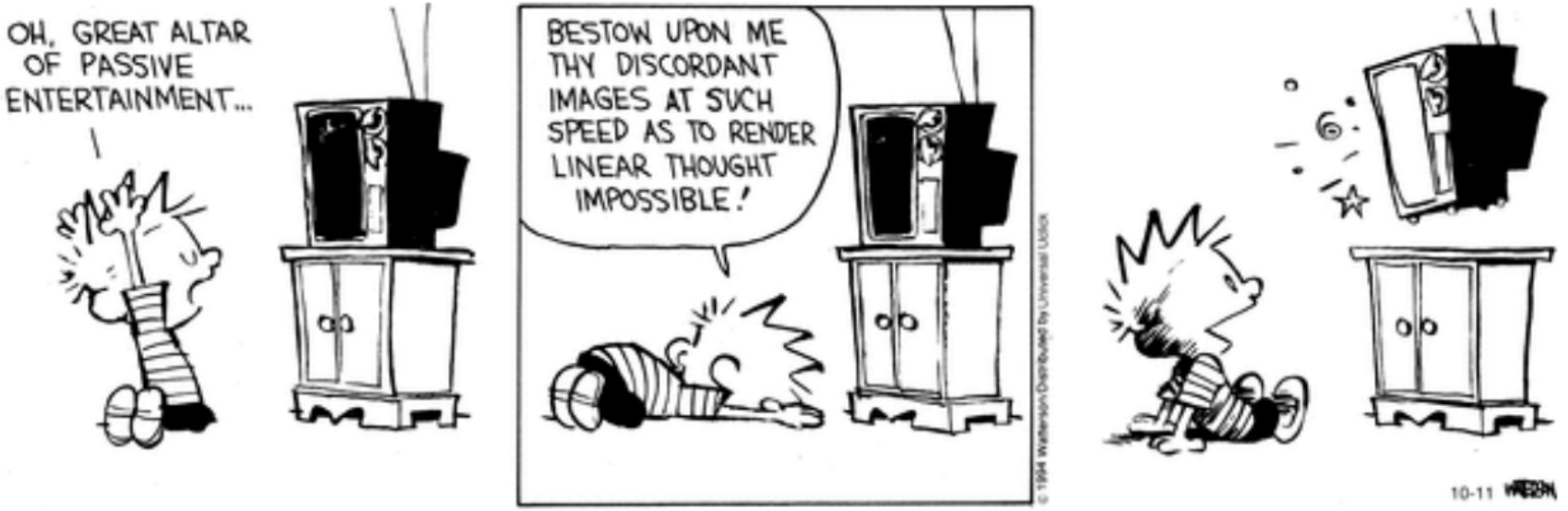


16. Remaining open to continuous learning



Can you make connections to ANY aspects of session so far?

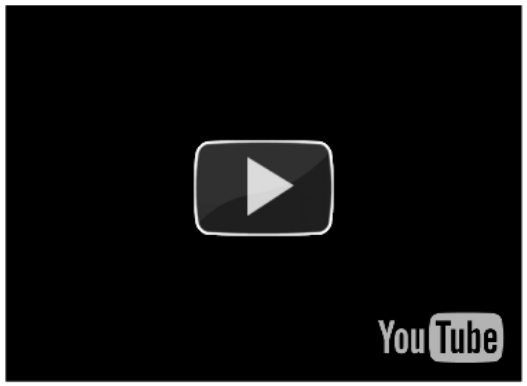
Before next session



4 **"Future Proofing Education – the innovation imperative"**

Education and creative thinking; time to think again? | Andy Penaluna | TEDxSwansea

Andy thought you might like to watch his presentation at TEDx in preparation for his lecture...The toilet roll is genius!



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