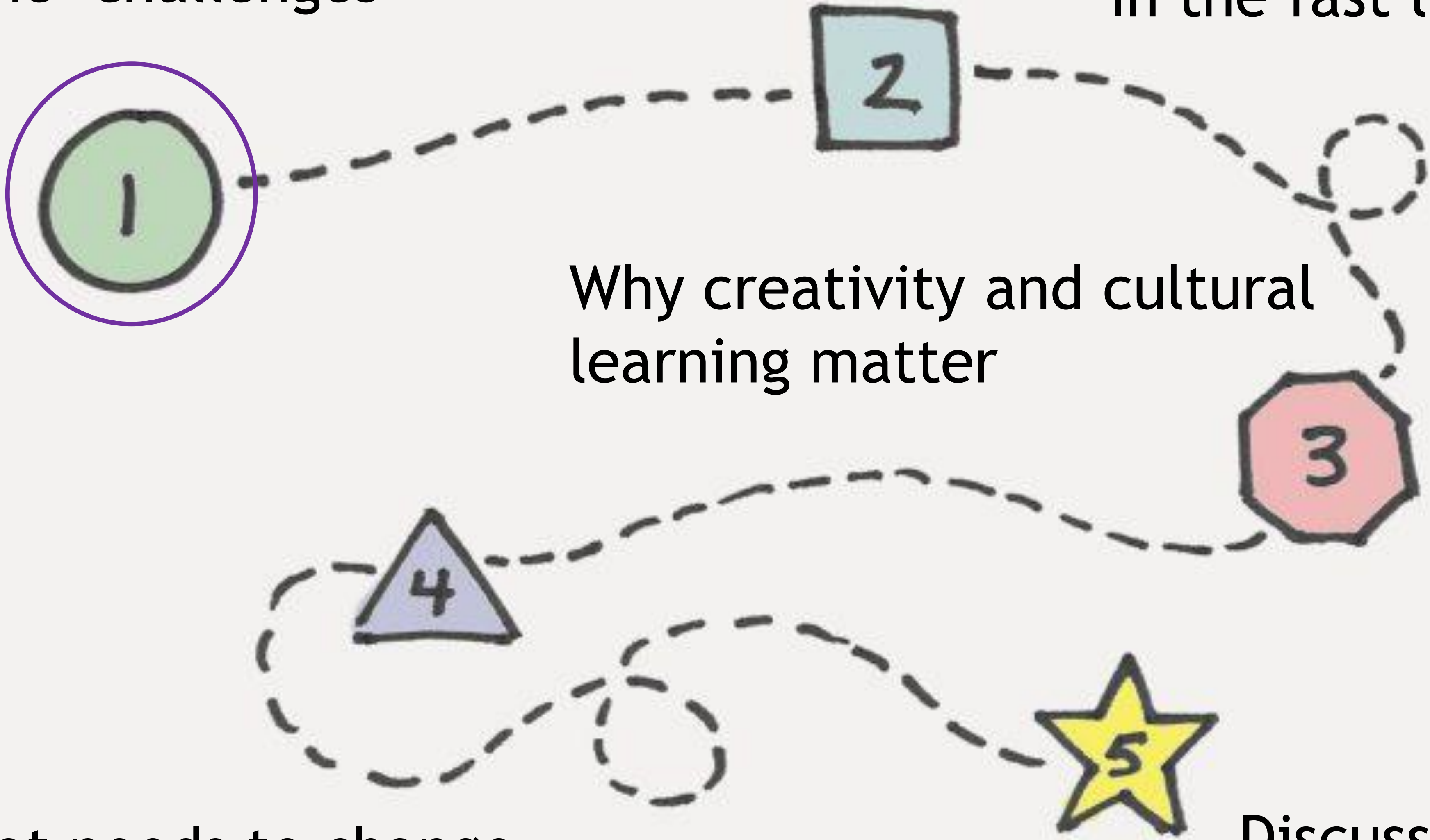
WHAT IS THE ROLE OF CREATIVITY AND CULTURAL LEARNING IN SCHOOLS?

Is England stuck in the slow lane?

Centre for Real-World Learning

Prof Bill Lucas
@LucasLearn

UNIVERSITY OF
WINCHESTER



Some challenges

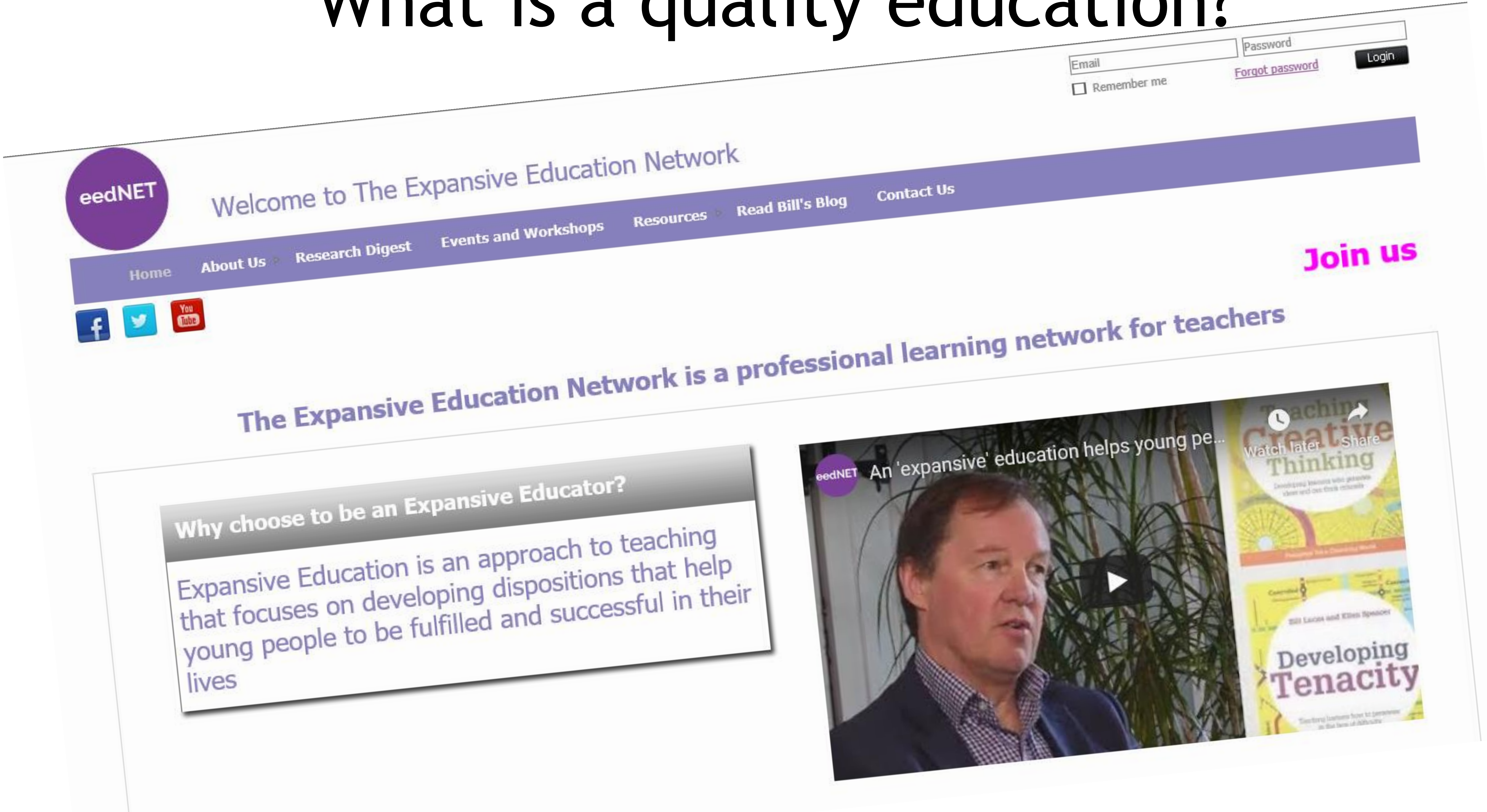
In the fast lane

Why creativity and cultural learning matter

What needs to change

Discussion

What is a quality education?



Welcome to The Expansive Education Network

The Expansive Education Network is a professional learning network for teachers

Why choose to be an Expansive Educator?

Expansive Education is an approach to teaching that focuses on developing dispositions that help young people to be fulfilled and successful in their lives

An 'expansive' education helps young pe...

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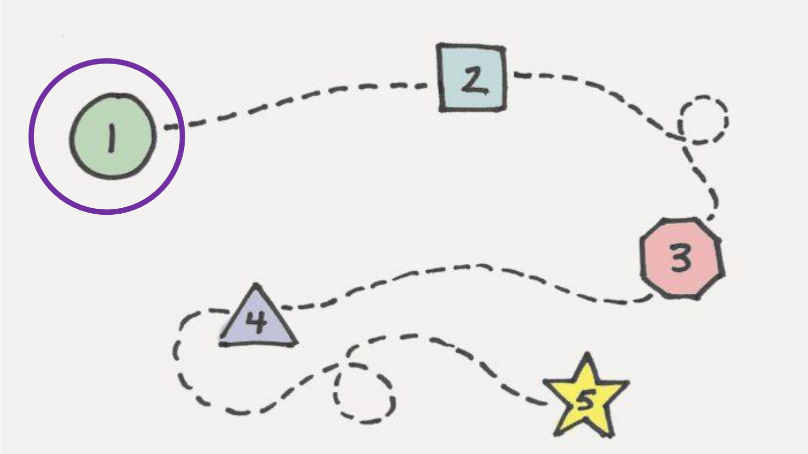
Teaching Creative Thinking
Bill Lucas and Ellen Spencer
Developing Tenacity

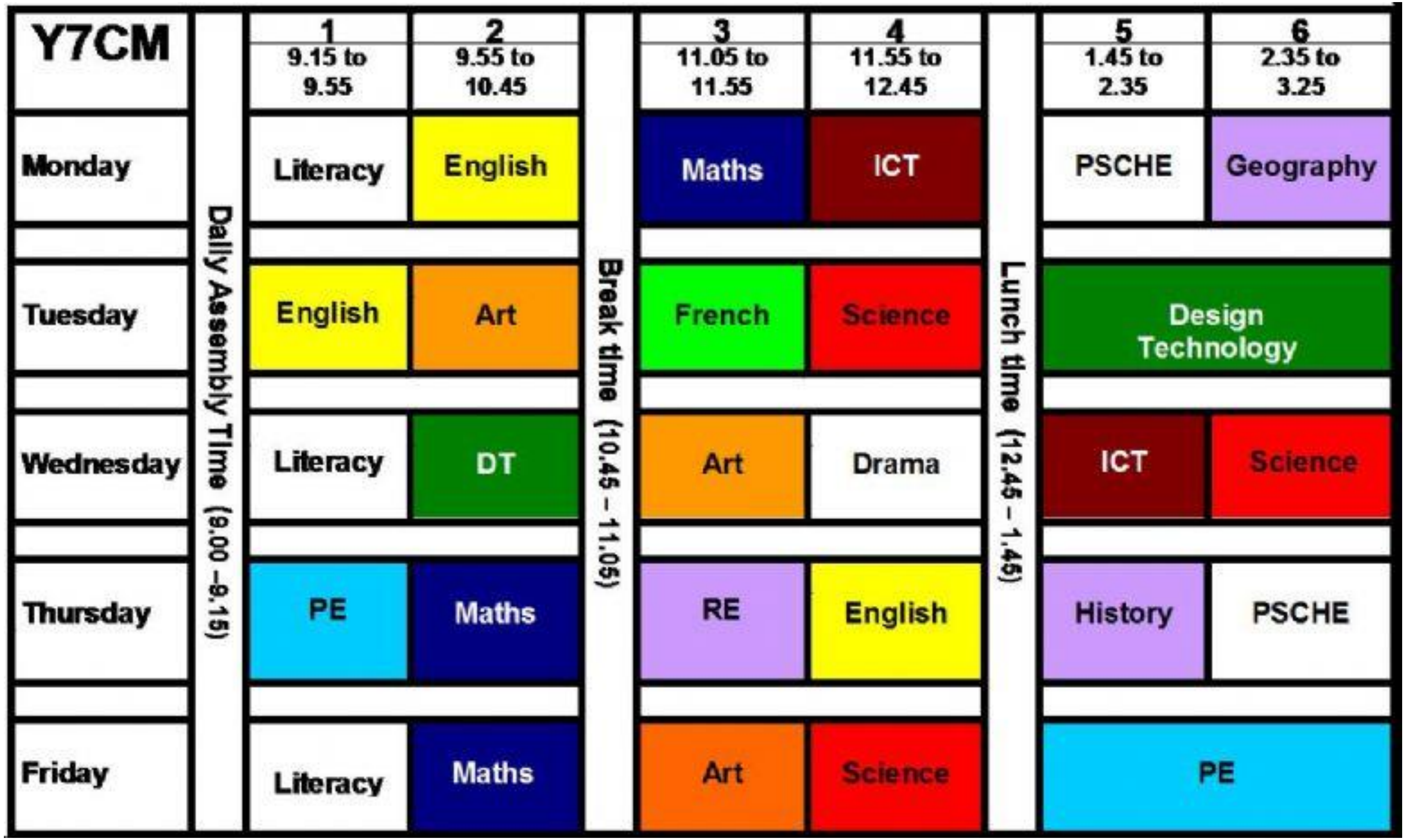


1. Some challenges

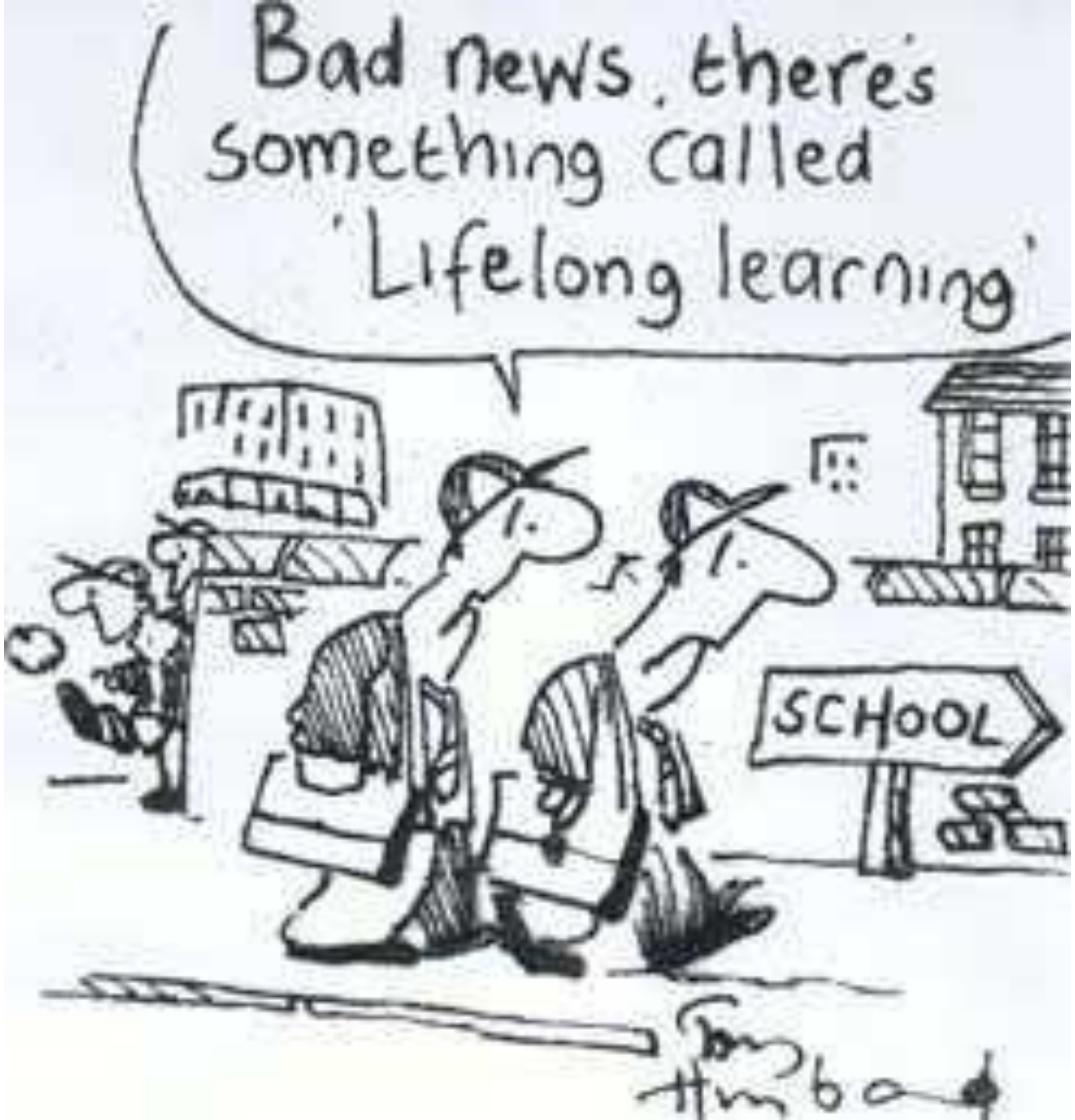
Cultural learning is an active engagement with the creation of our arts and heritage
Cultural Learning Alliance

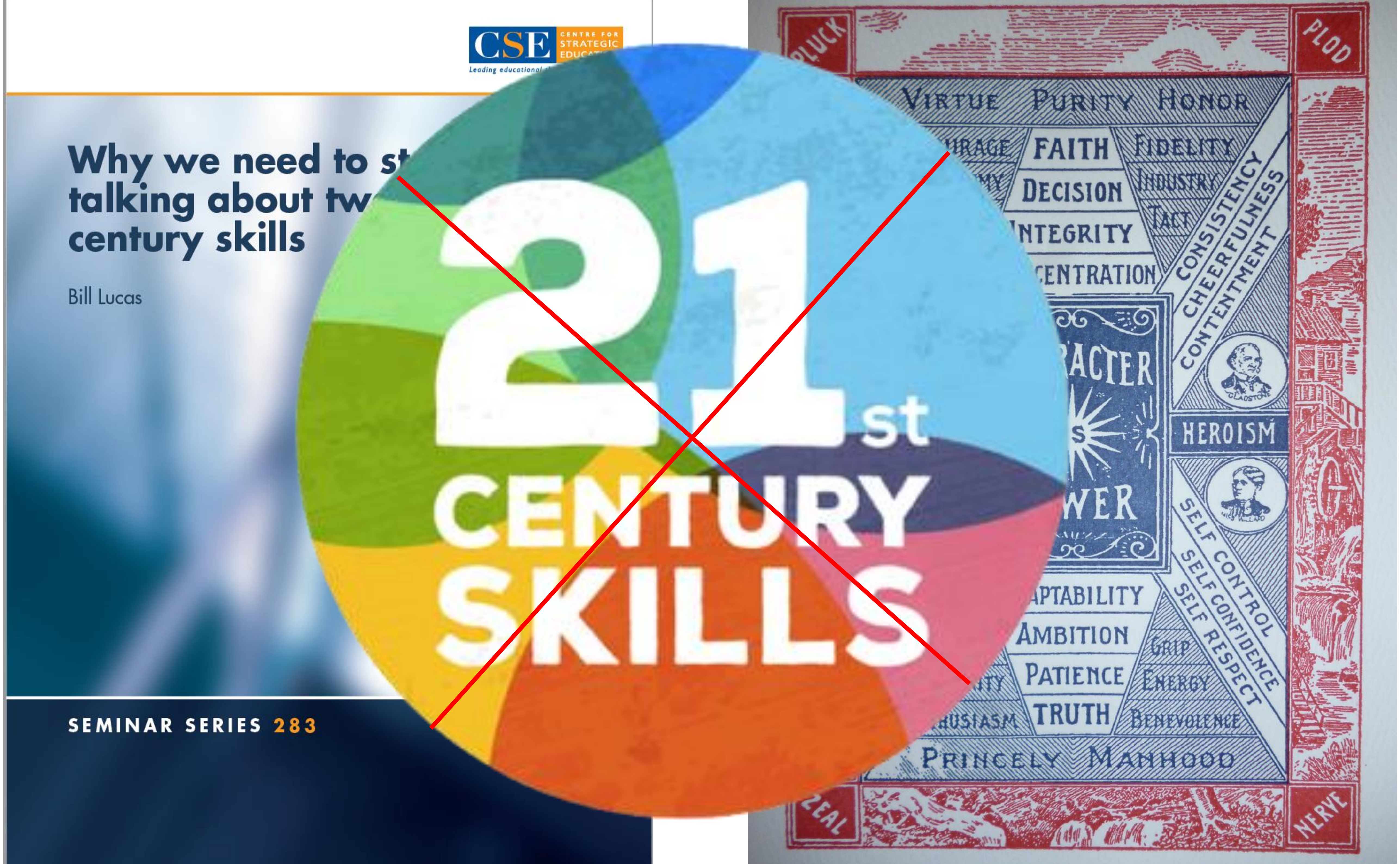
Creativity: The capacity to imagine, conceive, express or make something that was not there before
Durham Commission on Creativity and Education

Creativity and cultural learning on the timetable?



Y7CM		1 9.15 to 9.55	2 9.55 to 10.45		3 11.05 to 11.55	4 11.55 to 12.45		5 1.45 to 2.35	6 2.35 to 3.25
Monday	Daily Assembly Time (9.00 –9.15)	Literacy	English	Break time (10.45 – 11.05)	Maths	ICT	Lunch time (12.45 – 1.45)	PSCHE	Geography
Tuesday		English	Art		French	Science		Design Technology	
Wednesday		Literacy	DT		Art	Drama		ICT	Science
Thursday		PE	Maths		RE	English		History	PSCHE
Friday		Literacy	Maths		Art	Science		PE	


Bad news, there's something called 'Lifelong learning'
SCHOOL
Tom Humbard



CSE CENTRE FOR STRATEGIC EDUC

Leading educational

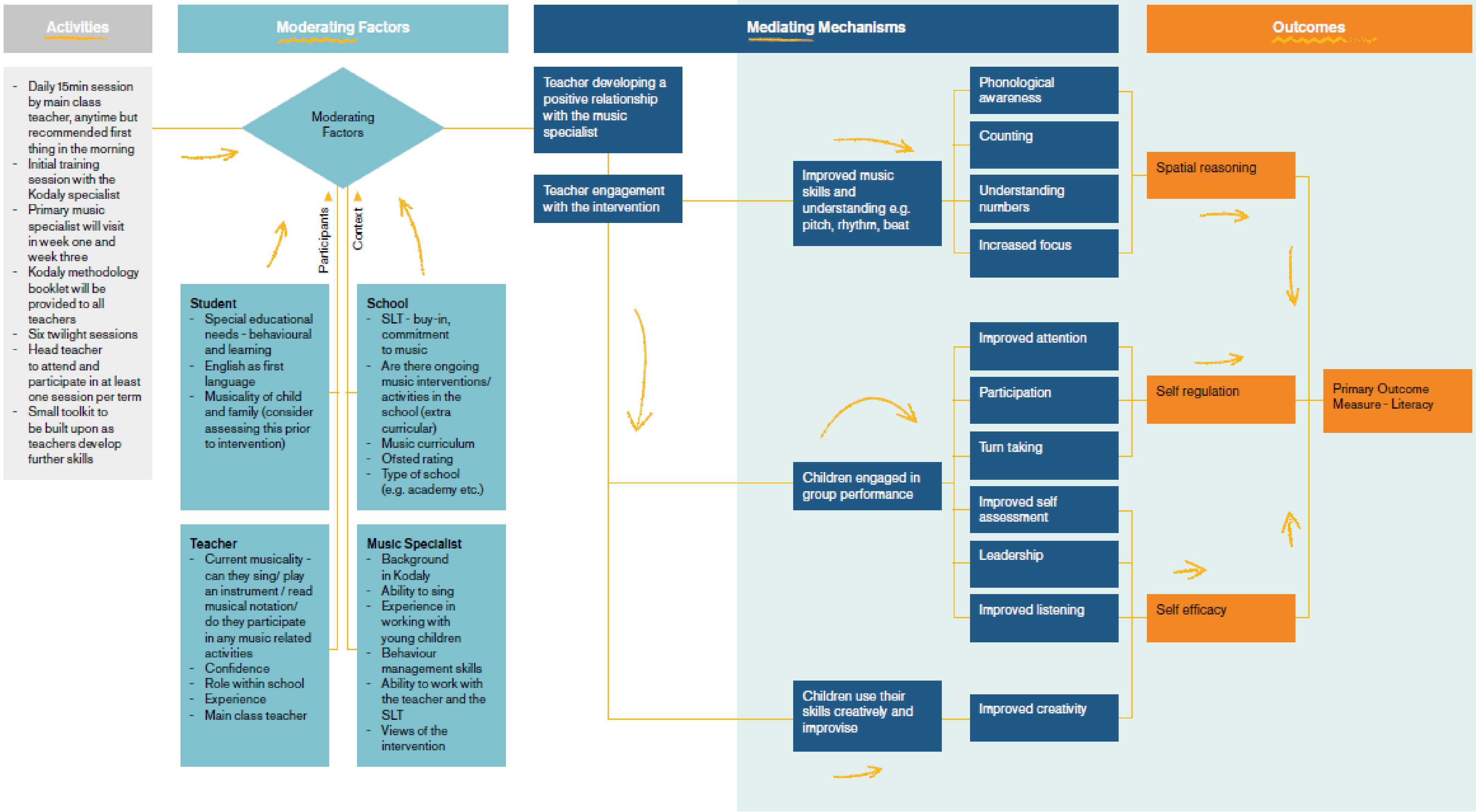
Why we need to st
talking about tw
century skills

Bill Lucas

SEMINAR SERIES 283

21st
CENTURY
SKILLS
PLUCK
PLOD
ZEAL
NERVE
VIRTUE PURITY HONOR
URAGE
FAITH
FIDELITY
MY
DECISION
INDUSTRY
TACT
NTEGRITY
CENTRATION
CONSISTENCY
CHEERFULNESS
CONTENTMENT
ACTER
S
WER
GLADSTONE
HEROISM
WILLARD
SELF CONTROL
SELF CONFIDENCE
SELF RESPECT
APTABILITY
AMBITION
GRIP
PATIENCE
ENERGY
ITY
HUSIASM
TRUTH
BENEVOLENCE
PRINCELY MANHOOD

First Thing Music: Theory of change diagram



Activities

- Daily 15min session by main class teacher, anytime but recommended first thing in the morning
- Initial training session with the Kodaly specialist
- Primary music specialist will visit in week one and week three
- Kodaly methodology booklet will be provided to all teachers
- Six twilight sessions
- Head teacher to attend and participate in at least one session per term
- Small toolkit to be built upon as teachers develop further skills

Moderating Factors

Moderating Factors

Participants

Context

Student
- Special educational needs - behavioural and learning
- English as first language
- Musicality of child and family (consider assessing this prior to intervention)

School
- SLT - buy-in, commitment to music
- Are there ongoing music interventions/ activities in the school (extra curricular)
- Music curriculum
- Ofsted rating
- Type of school (e.g. academy etc.)

Teacher
- Current musicality - can they sing/ play an instrument / read musical notation/ do they participate in any music related activities
- Confidence
- Role within school
- Experience
- Main class teacher

Music Specialist
- Background in Kodaly
- Ability to sing
- Experience in working with young children
- Behaviour management skills
- Ability to work with the teacher and the SLT
- Views of the intervention

Mediating Mechanisms

Teacher developing a positive relationship with the music specialist

Teacher engagement with the intervention

Improved music skills and understanding e.g. pitch, rhythm, beat

Children engaged in group performance

Children use their skills creatively and improvise

Phonological awareness

Counting

Understanding numbers

Increased focus

Improved attention

Participation

Turn taking

Improved self assessment

Leadership

Improved listening

Improved creativity

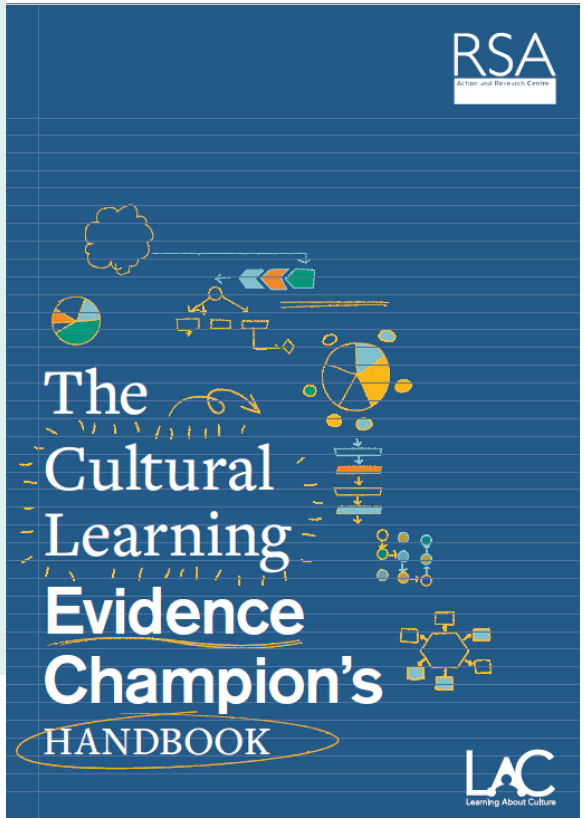
Outcomes

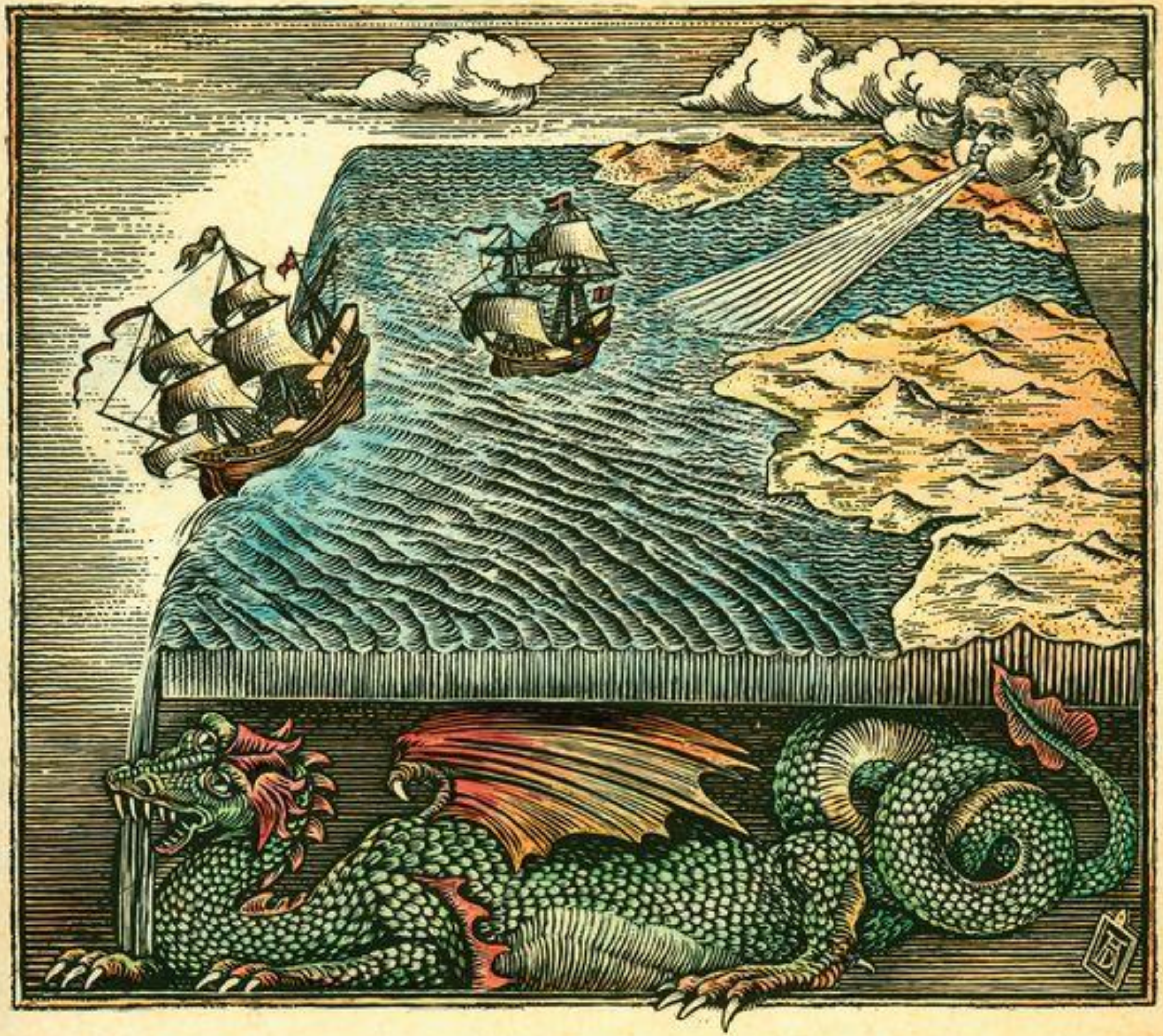
Spatial reasoning

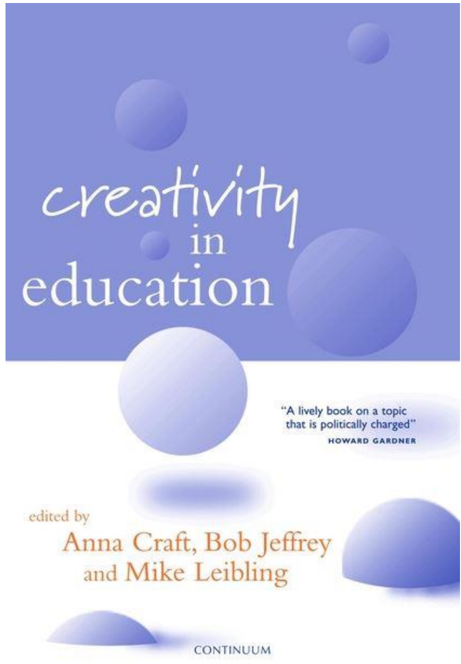
Self regulation

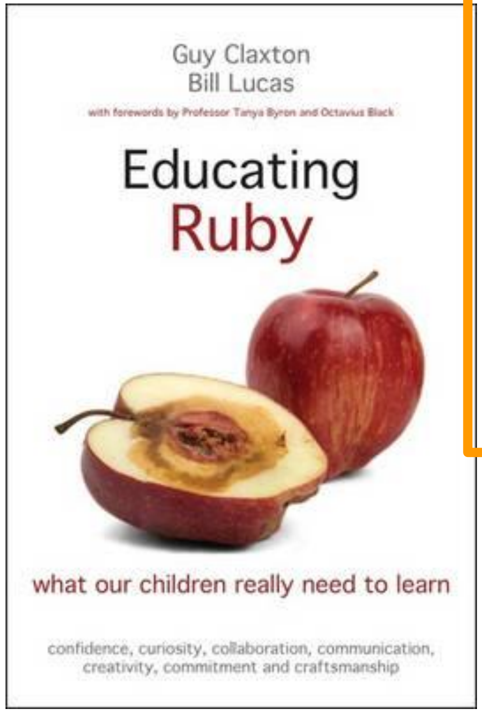
Self efficacy

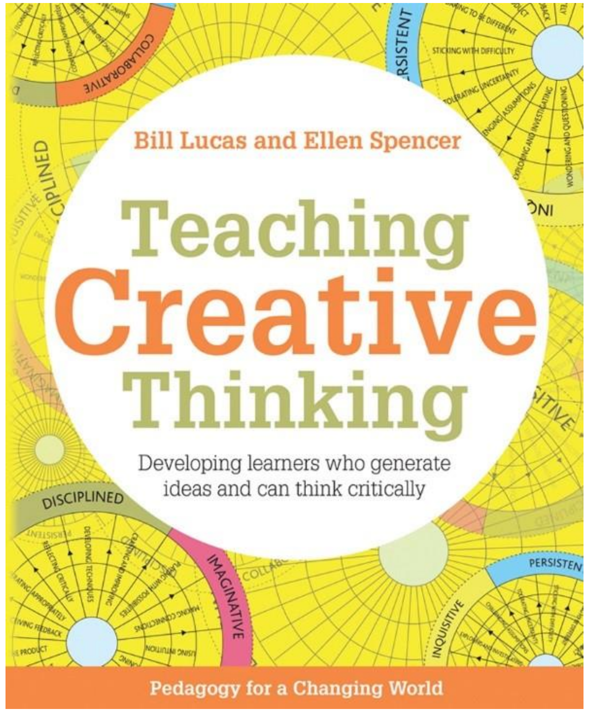
Primary Outcome Measure - Literacy

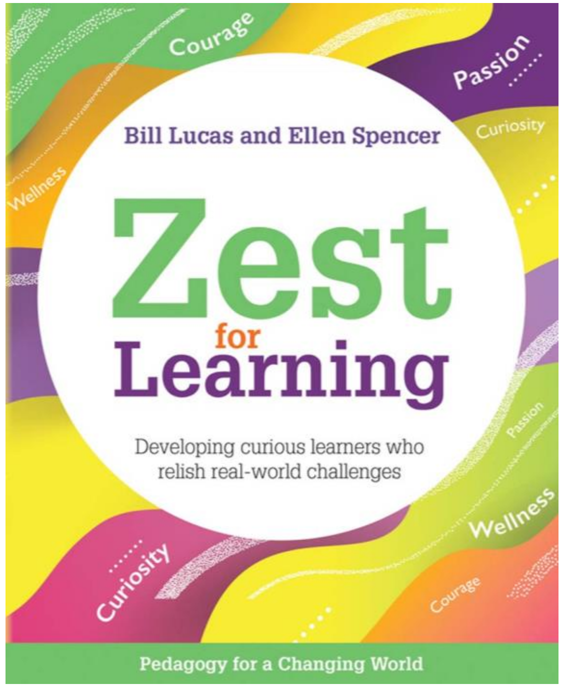


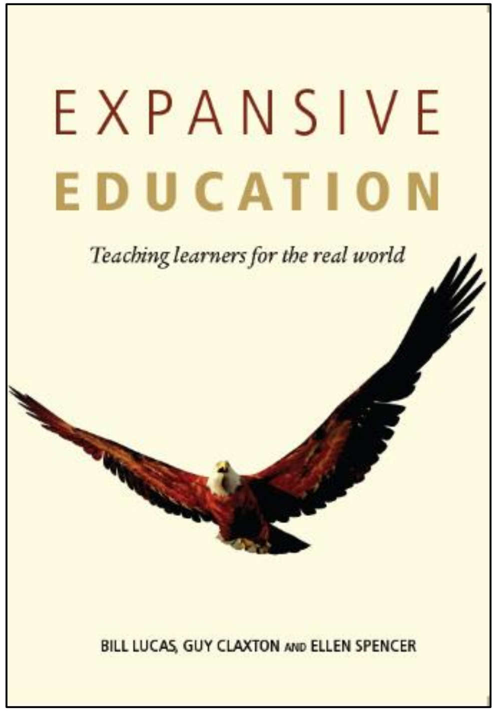


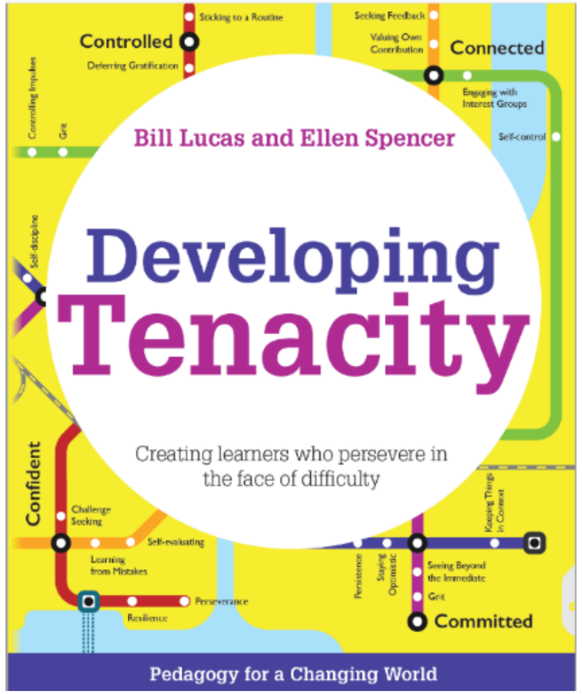

creativity in education
"A lively book on a topic that is politically charged"
HOWARD GARDNER
edited by
Anna Craft, Bob Jeffrey and Mike Leibling
CONTINUUM

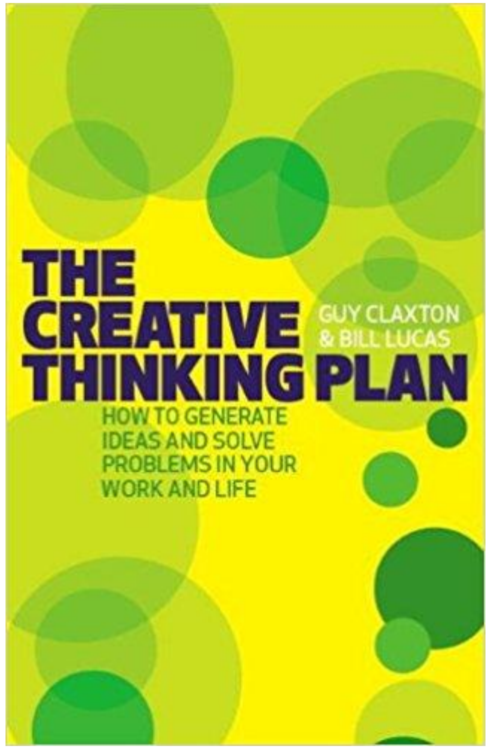

Guy Claxton
Bill Lucas
with forewords by Professor Tanya Byron and Octavius Black
Educating Ruby
what our children really need to learn
confidence, curiosity, collaboration, communication, creativity, commitment and craftsmanship

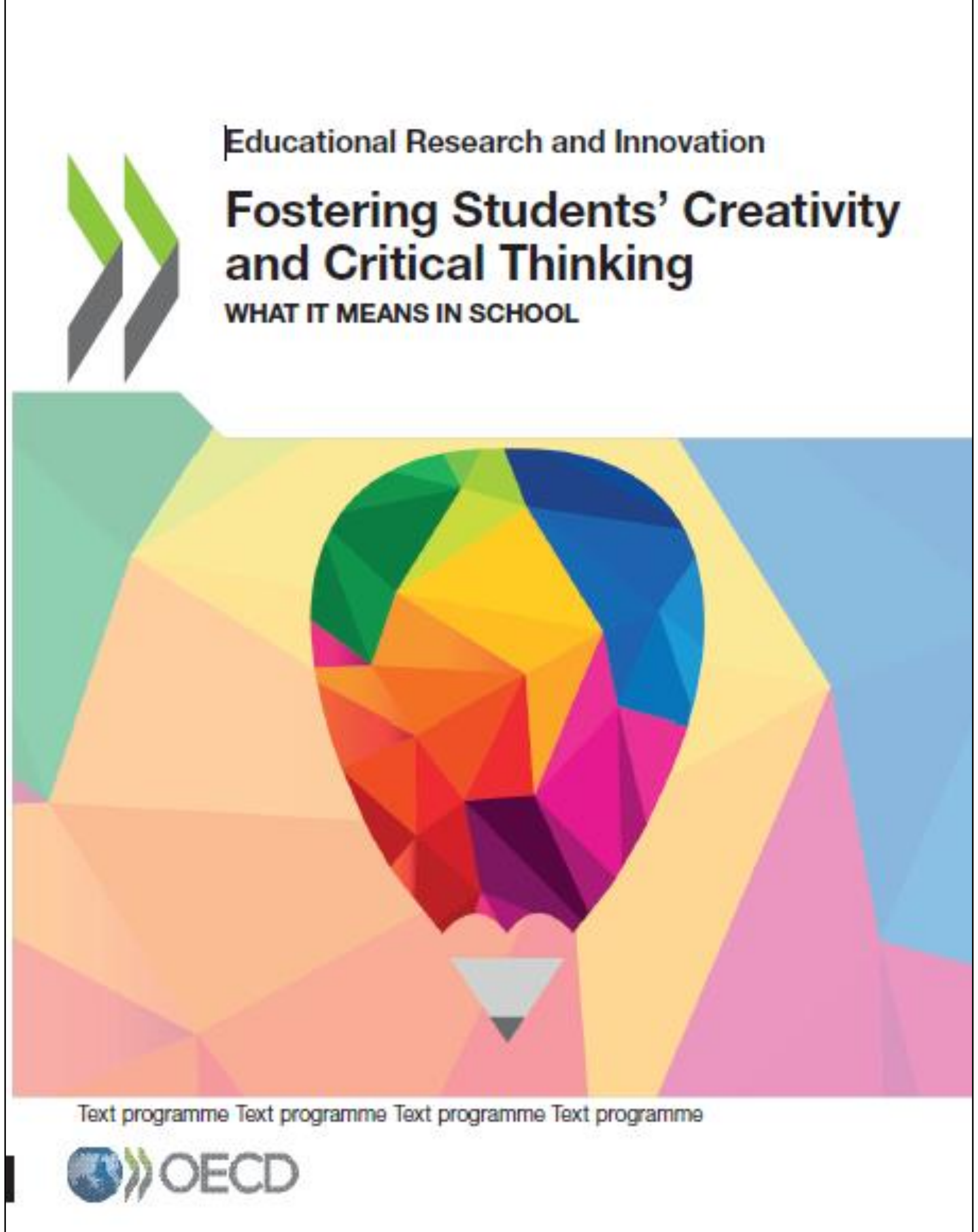

Bill Lucas and Ellen Spencer
Teaching Creative Thinking
Developing learners who generate ideas and can think critically
Pedagogy for a Changing World


Bill Lucas and Ellen Spencer
Zest for Learning
Developing curious learners who relish real-world challenges
Pedagogy for a Changing World


EXPANSIVE EDUCATION
Teaching learners for the real world
BILL LUCAS, GUY CLAXTON AND ELLEN SPENCER


Bill Lucas and Ellen Spencer
Developing Tenacity
Creating learners who persevere in the face of difficulty
Pedagogy for a Changing World


THE CREATIVE THINKING PLAN
GUY CLAXTON & BILL LUCAS
HOW TO GENERATE IDEAS AND SOLVE PROBLEMS IN YOUR WORK AND LIFE



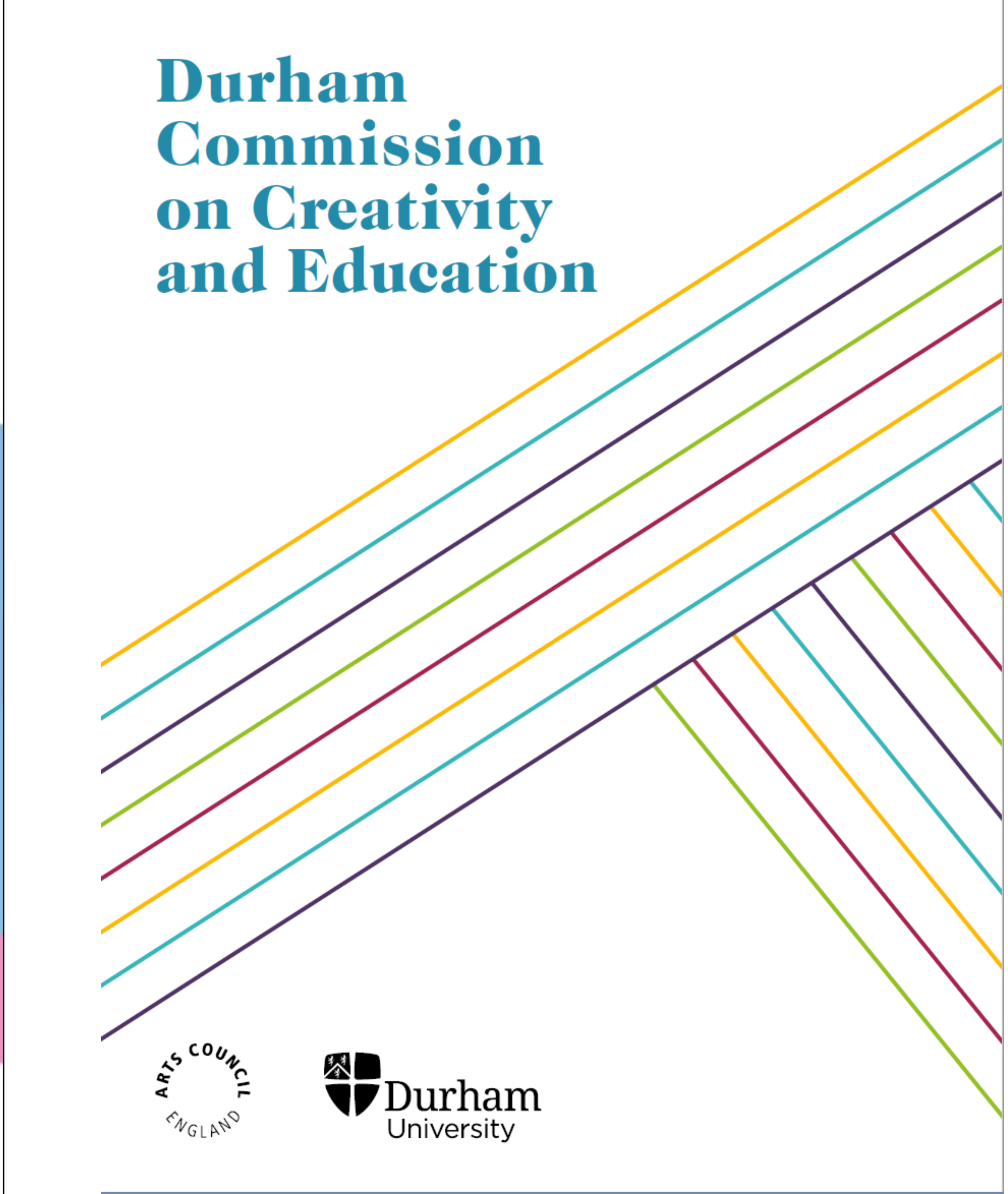
Educational Research and Innovation

Fostering Students' Creativity and Critical Thinking

WHAT IT MEANS IN SCHOOL

Text programme Text programme Text programme Text programme

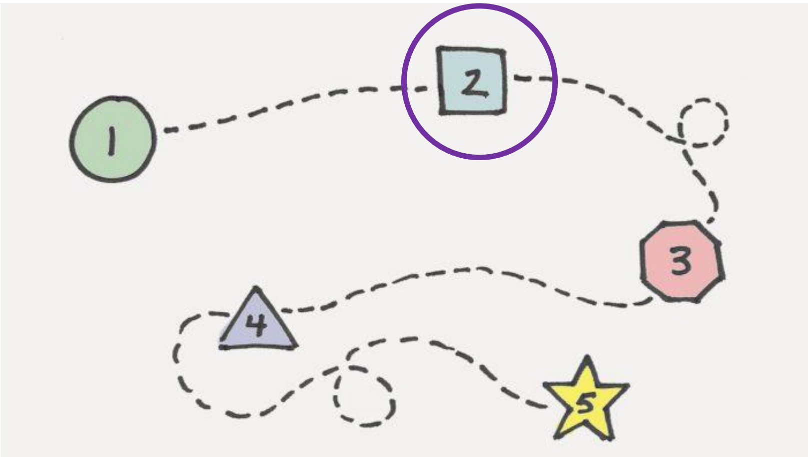
OECD



Durham Commission on Creativity and Education

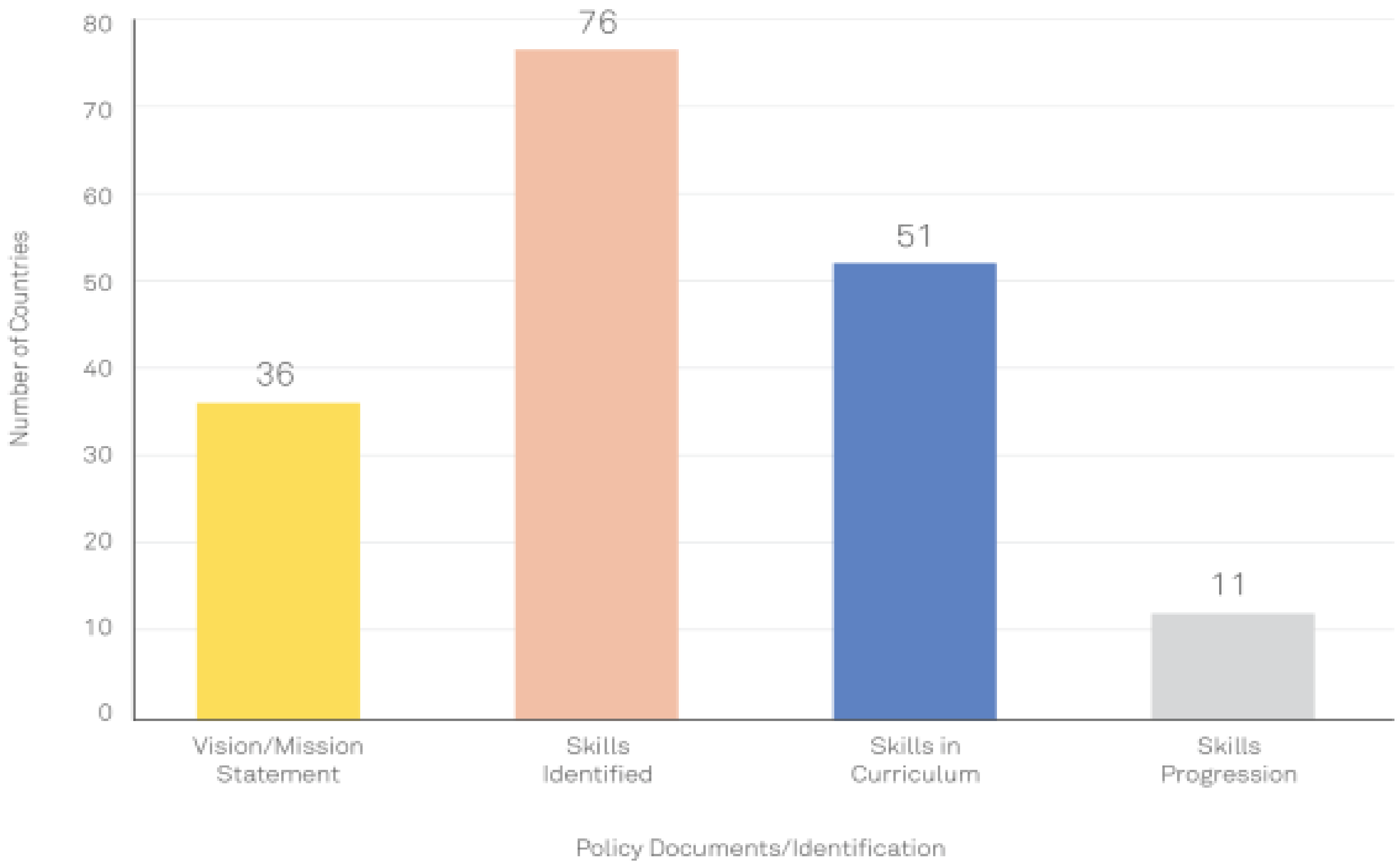
ARTS COUNCIL ENGLAND

Durham University



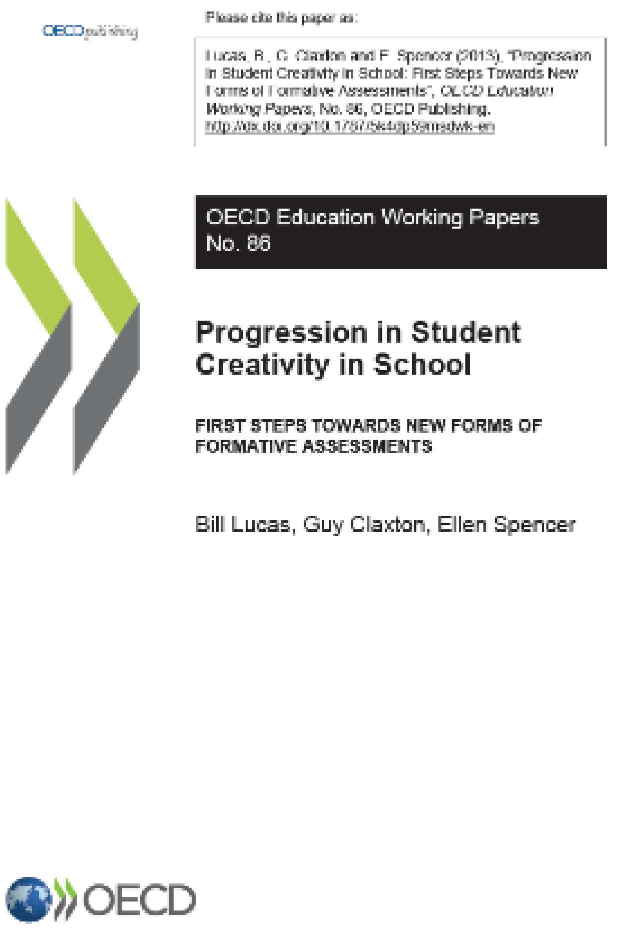
2. In the fast lane

Creativity and cultural education across the world



BROOKINGS

Our model of creativity



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http://dx.doi.org/10.1787/5k4dp59msdwk-en

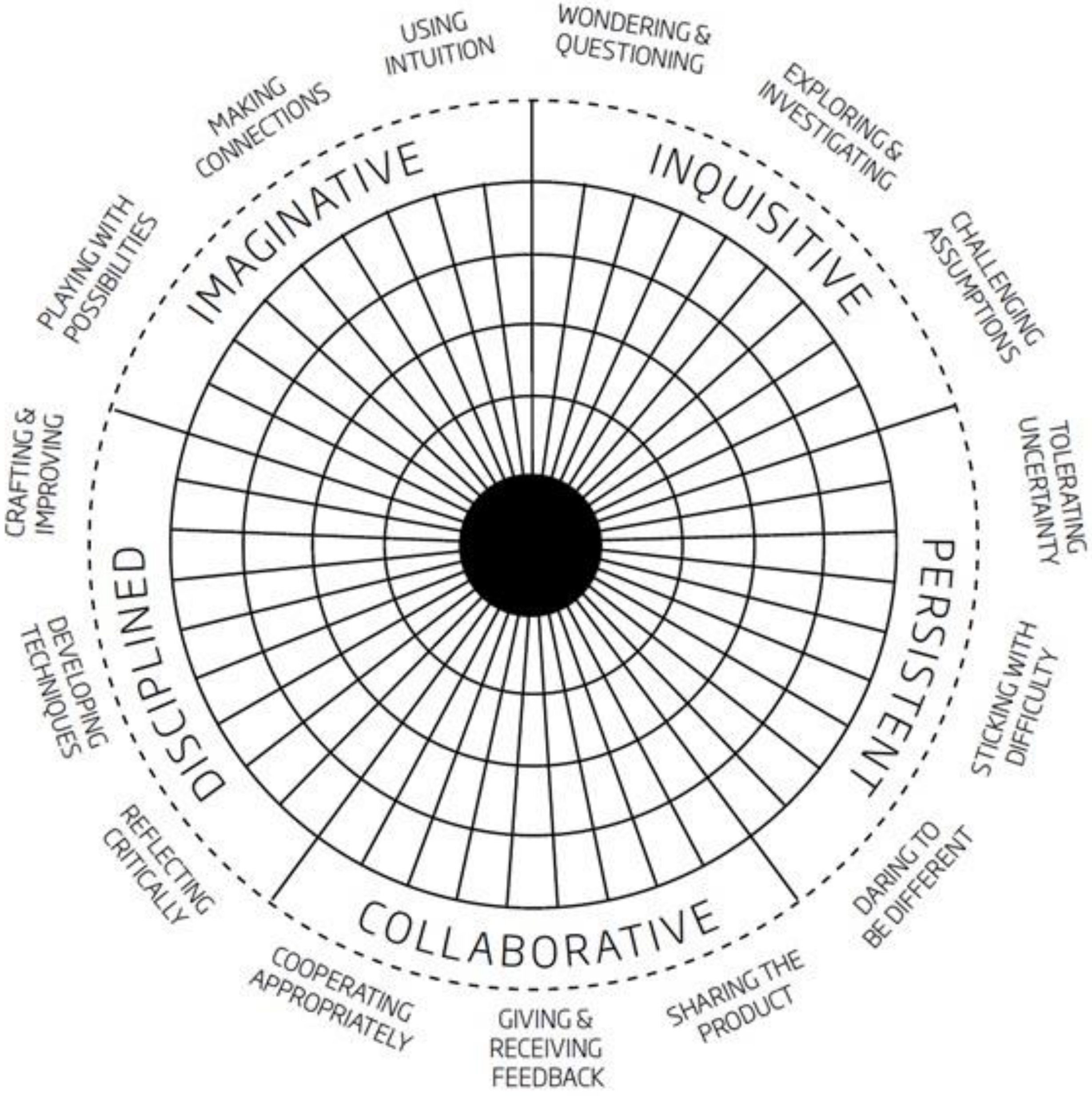
OECD Education Working Papers
No. 86

Progression in Student Creativity in School

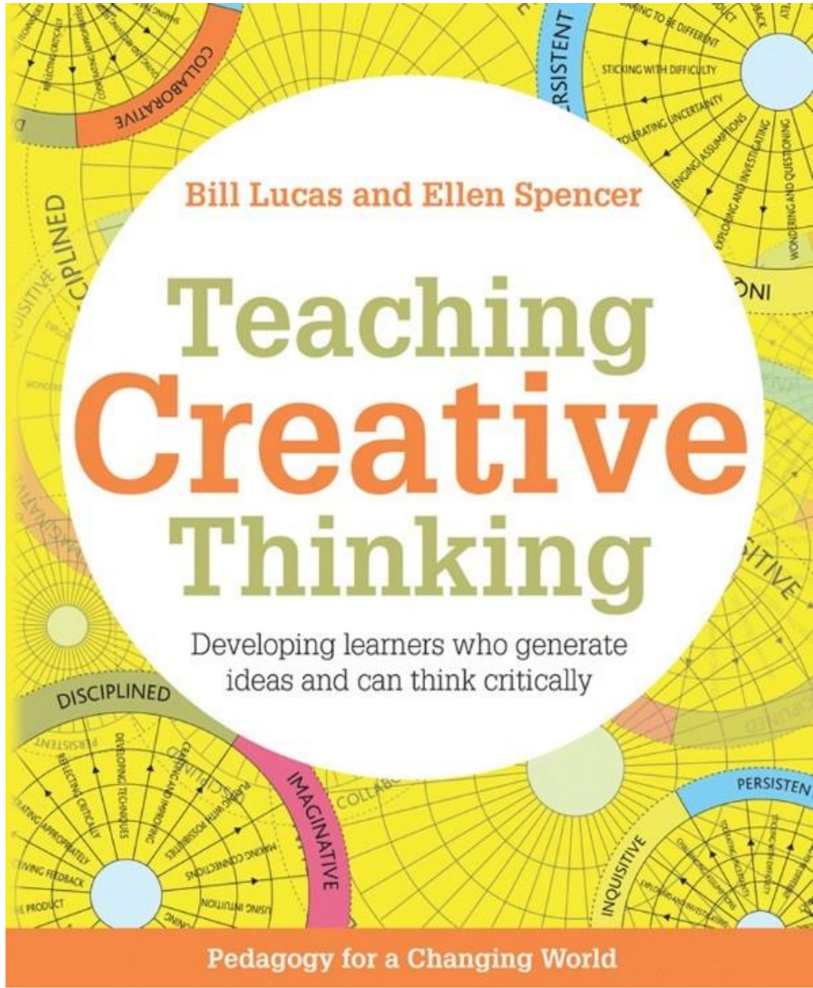
FIRST STEPS TOWARDS NEW FORMS OF FORMATIVE ASSESSMENTS

Bill Lucas, Guy Claxton, Ellen Spencer

OECD publishing
OECD



IMAGINATIVE
INQUISITIVE
PERSISTENT
COLLABORATIVE
DISCIPLINED
USING INTUITION
WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
CHALLENGING ASSUMPTIONS
TOLERATING UNCERTAINTY
STICKING WITH DIFFICULTY
DARING TO BE DIFFERENT
SHARING THE PRODUCT
GIVING & RECEIVING FEEDBACK
COOPERATING APPROPRIATELY
REFLECTING CRITICALLY
DEVELOPING TECHNIQUES
CRAFTING & IMPROVING
PLAYING WITH POSSIBILITIES
MAKING CONNECTIONS



Bill Lucas and Ellen Spencer

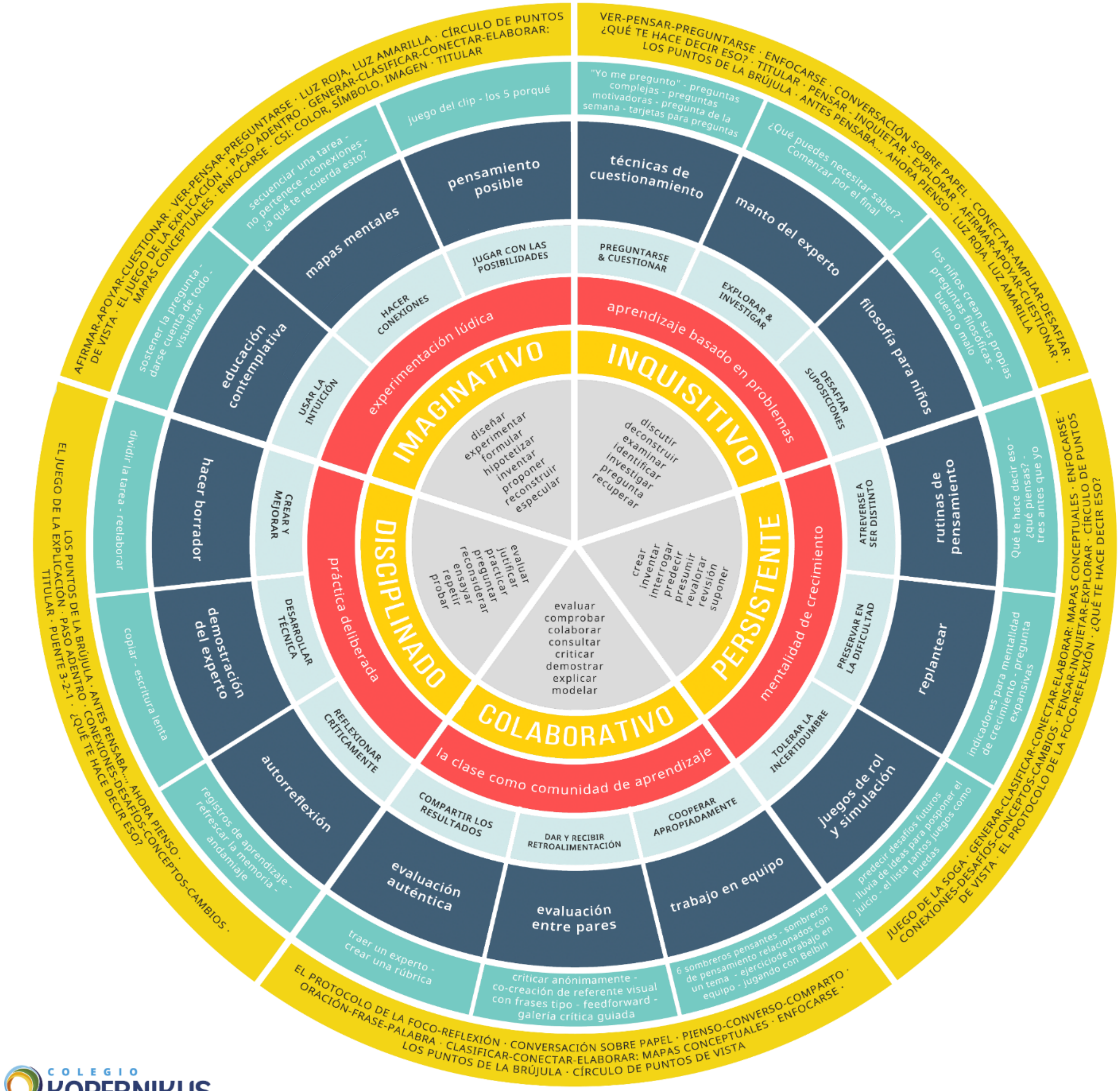
Teaching Creative Thinking

Developing learners who generate ideas and can think critically

Pedagogy for a Changing World

COLLABORATIVE
DISCIPLINED
IMAGINATIVE
PERSISTEN
INQUISITIVE

1. What can we learn from the world?



IMAGINATIVO
diseñar
experimentar
formular
hipotetizar
inventar
proponer
reconstruir
especular

experimentación lúdica

JUGAR CON LAS POSIBILIDADES
HACER CONEXIONES
USAR LA INTUICIÓN

pensamiento posible
mapas mentales
educación contemplativa

juego del clip - los 5 porqué
secuenciar una tarea - no pertenece - conexiones - ¿a qué te recuerda esto?
sostener la pregunta - darse cuenta de todo - visualizar

AFIRMAR-APOYAR-CUESTIONAR · VER-PENSAR-PREGUNTARSE · LUZ ROJA, LUZ AMARILLA · CÍRCULO DE PUNTOS DE VISTA · EL JUEGO DE LA EXPLICACIÓN · PASO ADENTRO · GENERAR-CLASIFICAR-CONECTAR-ELABORAR: MAPAS CONCEPTUALES · ENFOCARSE · CSI: COLOR, SÍMBOLO, IMAGEN · TITULAR

INQUISITIVO
discutir
deconstruir
examinar
identificar
investigar
pregunta
recuperar

aprendizaje basado en problemas

PREGUNTARSE & CUESTIONAR
EXPLORAR & INVESTIGAR
DESAFIAR SUPOSICIONES

técnicas de cuestionamiento
manto del experto
filosofía para niños

"Yo me pregunto" - preguntas complejas - preguntas motivadoras - pregunta de la semana - tarjetas para preguntas
¿Qué puedes necesitar saber? - Comenzar por el final
los niños crean sus propias preguntas filosóficas - bueno o malo

VER-PENSAR-PREGUNTARSE · ENFOCARSE · CONVERSACIÓN SOBRE PAPEL · CONECTAR-AMPLIAR-DESAFIAR · ¿QUÉ TE HACE DECIR ESO? · TITULAR · PENSAR - INQUIETAR - EXPLORAR · AFIRMAR-APOYAR-CUESTIONAR · LOS PUNTOS DE LA BRÚJULA · ANTES PENSABA..., AHORA PIENSO · LUZ ROJA, LUZ AMARILLA

PERSISTENTE
crear
inventar
interrogar
predecir
presumir
revalorar
revisión
suponer

mentalidad de crecimiento

ATREVERSE A SER DISTINTO
PRESERVAR EN LA DIFICULTAD
TOLERAR LA INCERTIDUMBRE

rutinas de pensamiento
replantear
juegos de rol y simulación

Qué te hace decir eso - ¿qué piensas? - tres antes que yo
indicadores para mentalidad de crecimiento - pregunta expansivas
predecir desafíos futuros - lluvia de ideas para posponer el juicio - el lista tantos juegos como puedas

JUEGO DE LA SOGA · GENERAR-CLASIFICAR-CONECTAR-ELABORAR: MAPAS CONCEPTUALES · ENFOCARSE · CONEXIONES-DESAFÍOS-CONCEPTOS-CAMBIOS · PENSAR-INQUIETAR-EXPLORAR · CÍRCULO DE PUNTOS DE VISTA · EL PROTOCOLO DE LA FOCO-REFLEXIÓN · ¿QUÉ TE HACE DECIR ESO?

COLABORATIVO
evaluar
comprobar
colaborar
consultar
criticar
demostrar
explicar
modelar

la clase como comunidad de aprendizaje

COMPARTIR LOS RESULTADOS
DAR Y RECIBIR RETROALIMENTACIÓN
COOPERAR APROPIADAMENTE

evaluación auténtica
evaluación entre pares
trabajo en equipo

traer un experto - crear una rúbrica
criticar anónimamente - co-creación de referente visual con frases tipo - feedforward - galería crítica guiada
6 sombreros pensantes - sombreros de pensamiento relacionados con un tema - ejerciciode trabajo en equipo - jugando con Belbin

EL PROTOCOLO DE LA FOCO-REFLEXIÓN · CONVERSACIÓN SOBRE PAPEL · PIENSO-CONVERSO-COMPARTO · ORACIÓN-FRASE-PALABRA · CLASIFICAR-CONECTAR-ELABORAR: MAPAS CONCEPTUALES · ENFOCARSE · LOS PUNTOS DE LA BRÚJULA · CÍRCULO DE PUNTOS DE VISTA

DISCIPLINADO
evaluar
jutificar
practicar
preguntar
reconsiderar
ensayar
repetir
probar

práctica deliberada

CREAR Y MEJORAR
DESARROLLAR TÉCNICA
REFLEXIONAR CRÍTICAMENTE

hacer borrador
demostración del experto
autorreflexión

dividir la tarea - reelaborar
copiar - escritura lenta
registros de aprendizaje - refrescar la memoria - andamiaje

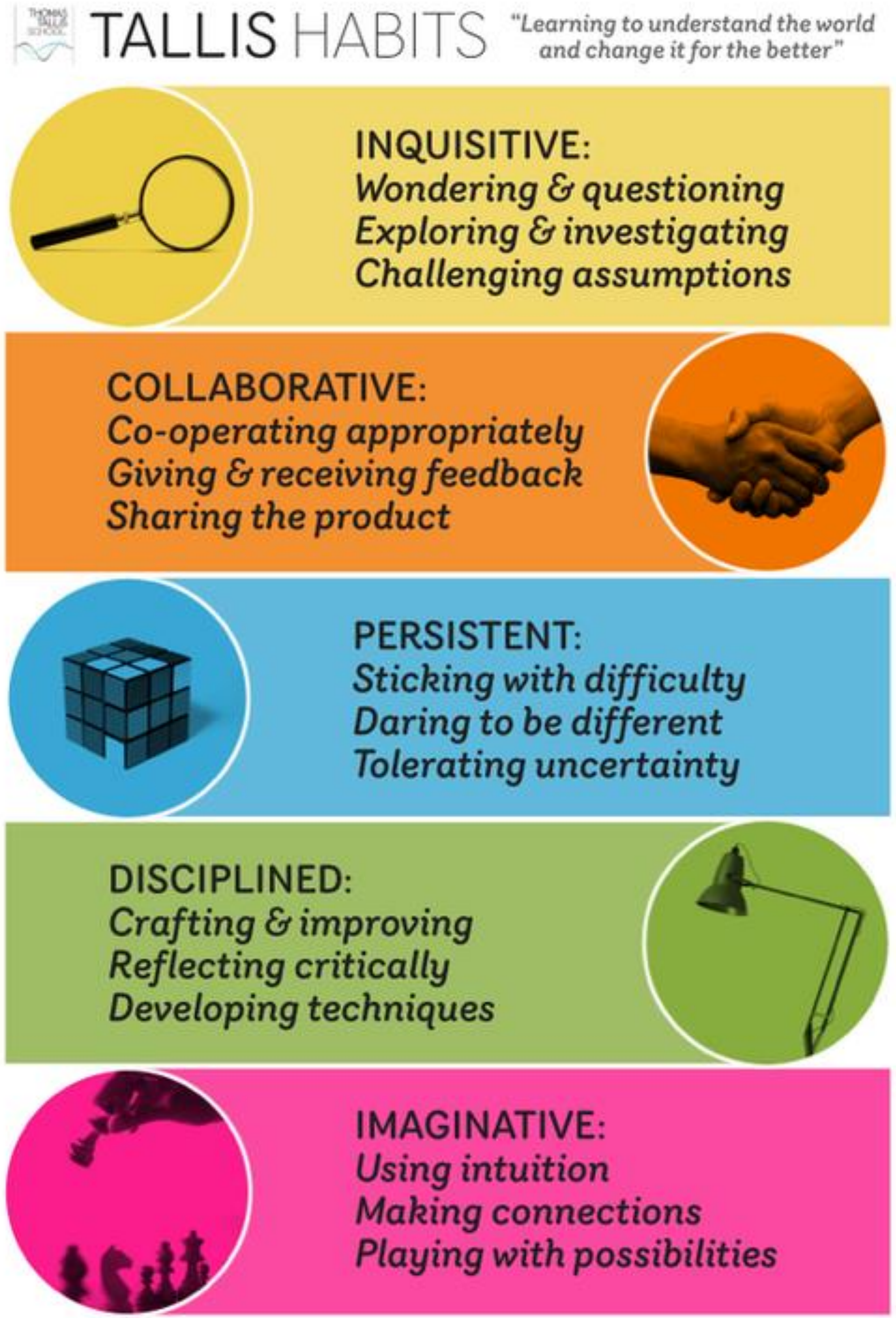
EL JUEGO DE LA EXPLICACIÓN · PASO ADENTRO · CONEXIONES-DESAFÍOS-CONCEPTOS-CAMBIOS · LOS PUNTOS DE LA BRÚJULA · ANTES PENSABA..., AHORA PIENSO · TITULAR · PUENTE 3-2-1 · ¿QUÉ TE HACE DECIR ESO?

COLEGIO KOPERNIKUS

Los **5 hábitos de la mente** estructurado por **Colegio Kopernikus** basado en Lucas, Spencer & Claxton (2013) *Progression in Student Creativity in School* OECO Publishing

ROALD DAHL
Time
five habits of learning
inquisitive
persistent
imaginative
disciplined
collaborative

KINROSS
MARK STEWART
12
6:00PM



TALLIS HABITS

"Learning to understand the world and change it for the better"

INQUISITIVE:
Wondering & questioning
Exploring & investigating
Challenging assumptions

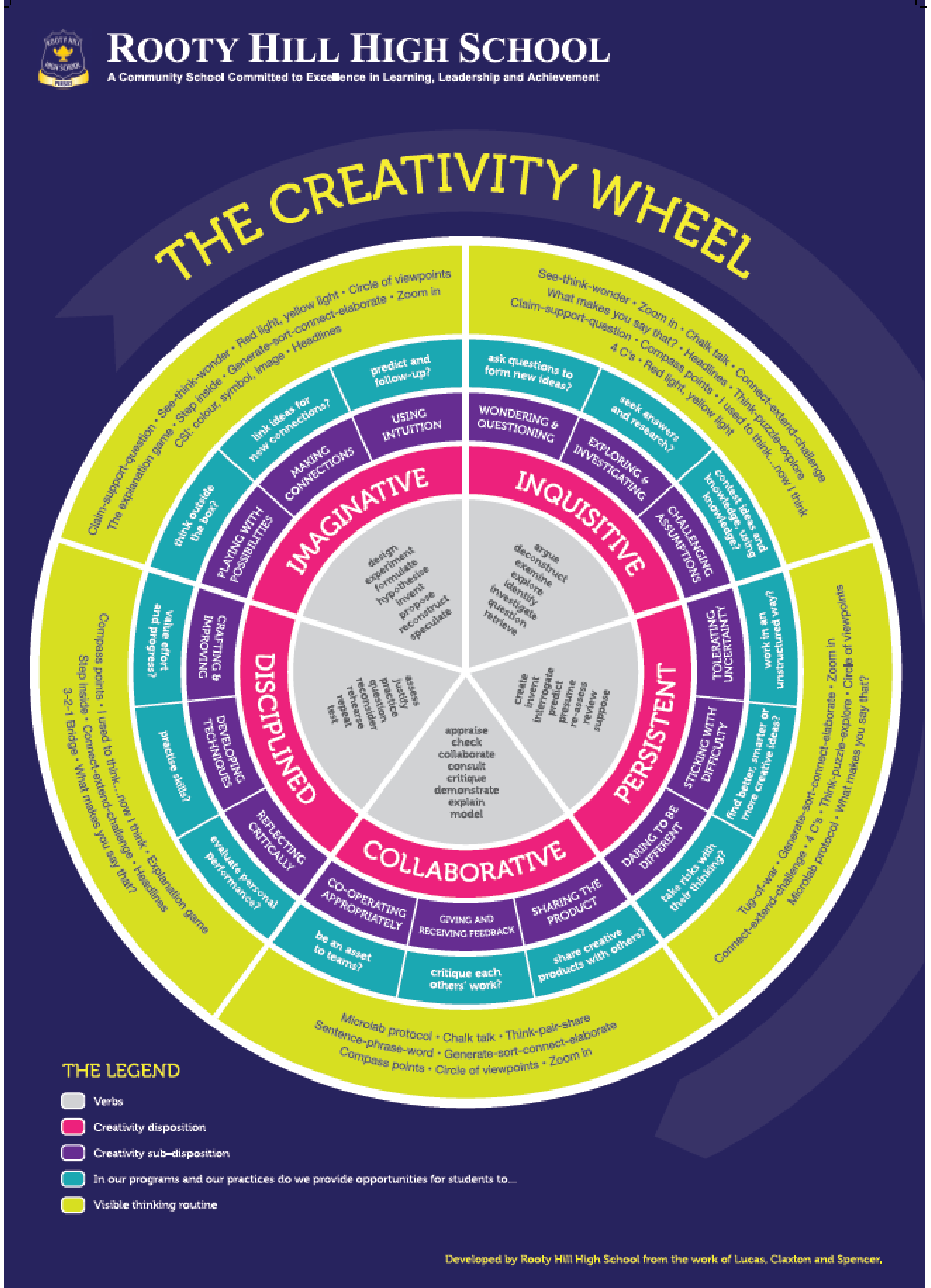
COLLABORATIVE:
Co-operating appropriately
Giving & receiving feedback
Sharing the product

PERSISTENT:
Sticking with difficulty
Daring to be different
Tolerating uncertainty

DISCIPLINED:
Crafting & improving
Reflecting critically
Developing techniques

IMAGINATIVE:
Using intuition
Making connections
Playing with possibilities

The **Tallis Habits** are based on Bill Lucas, Ellen Spencer, and Guy Claxton (2013) 'Progression in Student Creativity in School: First steps towards new forms of formative assessment' *OECD Education Working Papers No 86*. Paris: OECD Publishing.



ROOTY HILL HIGH SCHOOL

A Community School Committed to Excellence in Learning, Leadership and Achievement

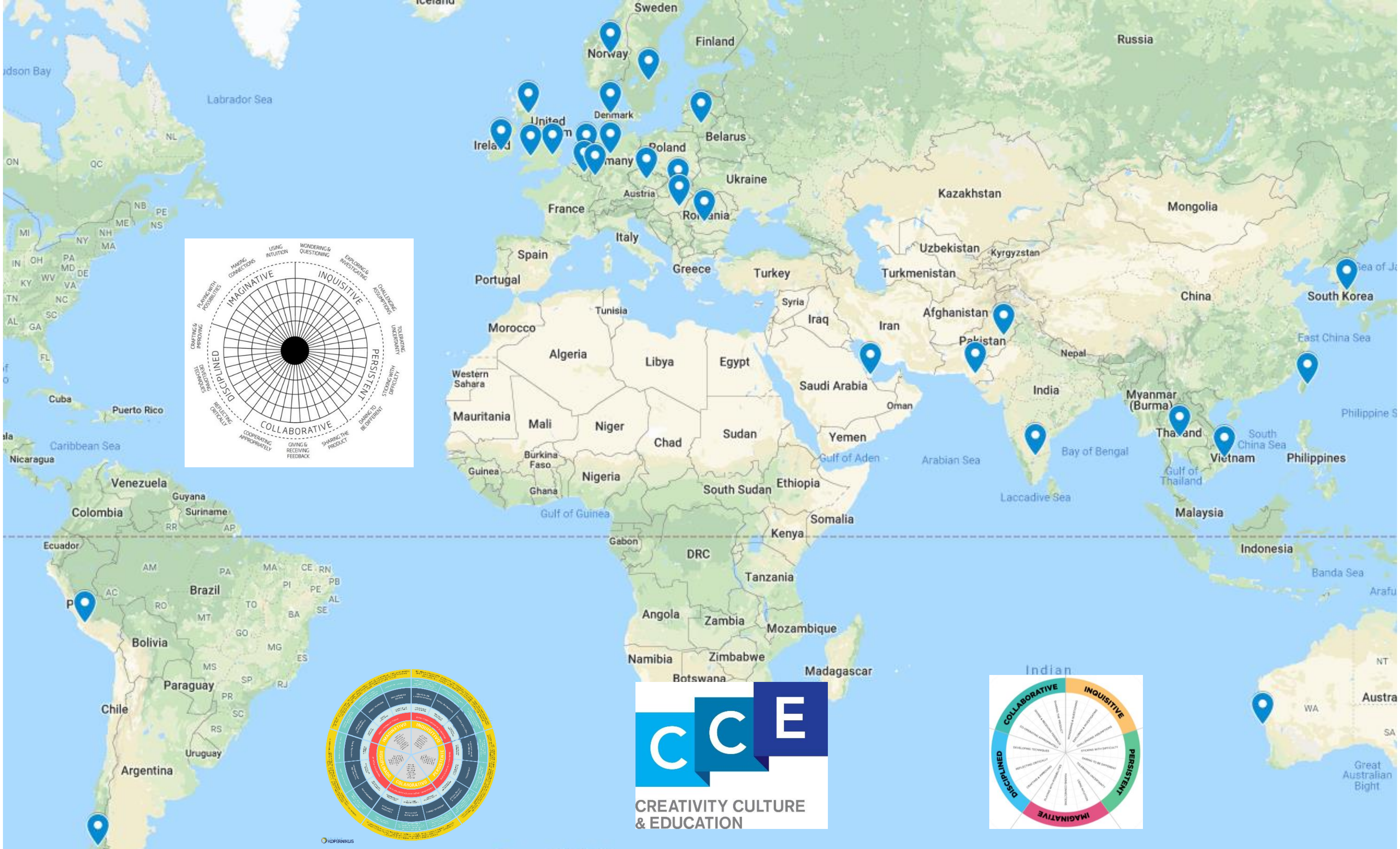
THE CREATIVITY WHEEL

IMAGINATIVE
design experiment formulate hypothesise invent propose reconstruct speculate
USING INTUITION
MAKING CONNECTIONS
PLAYING WITH POSSIBILITIES
predict and follow-up?
link ideas for new connections?
think outside the box?
Claim-support-question • See-think-wonder • Red light, yellow light • Circle of viewpoints
The explanation game • Step inside • Generate-sort-connect-elaborate • Zoom in
CSI: colour, symbol, image • Headlines
INQUISITIVE
argue deconstruct examine explore identify investigate question retrieve
WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
CHALLENGING ASSUMPTIONS
ask questions to form new ideas?
seek answers and research?
contest ideas and knowledge, using knowledge?
See-think-wonder • Zoom in • Chalk talk • Connect-extend-challenge
What makes you say that? • Headlines • Think-puzzle-explore
Claim-support-question • Compass points • I used to think...now I think
4 C's • Red light, yellow light
PERSISTENT
create invent interrogate predict presume re-assess review suppose
TOLERATING UNCERTAINTY
STICKING WITH DIFFICULTY
DARING TO BE DIFFERENT
work in an unstructured way?
find better, smarter or more creative ideas?
take risks with their thinking?
Tug-of-war • Generate-sort-connect-elaborate • Zoom in
Connect-extend-challenge • 4 C's • Think-puzzle-explore • Circle of viewpoints
Microlab protocol • What makes you say that?
COLLABORATIVE
appraise check collaborate consult critique demonstrate explain model
CO-OPERATING APPROPRIATELY
GIVING AND RECEIVING FEEDBACK
SHARING THE PRODUCT
be an asset to teams?
critique each others' work?
share creative products with others?
Microlab protocol • Chalk talk • Think-pair-share
Sentence-phrase-word • Generate-sort-connect-elaborate
Compass points • Circle of viewpoints • Zoom in
DISCIPLINED
assess justify practice question reconsider rehearse repeat test
CRAFTING & IMPROVING
DEVELOPING TECHNIQUES
REFLECTING CRITICALLY
value effort and progress?
practise skills?
evaluate personal performance?
Compass points • I used to think...now I think • Explanation game
Step inside • Connect-extend-challenge • Headlines
3-2-1 Bridge • What makes you say that?

THE LEGEND

- ⬜ Verbs
- 🟥 Creativity disposition
- 🟪 Creativity sub-disposition
- 🟦 In our programs and our practices do we provide opportunities for students to...
- 🟨 Visible thinking routine

Developed by Rooty Hill High School from the work of Lucas, Claxton and Spencer.


Iceland
Sweden
Finland
Russia
Norway
Denmark
United Kingdom
Ireland
Belarus
Poland
Germany
Ukraine
Austria
Romania
France
Italy
Spain
Portugal
Greece
Turkey
Kazakhstan
Mongolia
Uzbekistan
Kyrgyzstan
Turkmenistan
Syria
Iraq
Iran
Afghanistan
Pakistan
Nepal
China
South Korea
Sea of Japan
East China Sea
Tunisia
Morocco
Algeria
Libya
Egypt
Saudi Arabia
Oman
India
Myanmar (Burma)
Thailand
Vietnam
Philippines
Philippine Sea
South China Sea
Western Sahara
Mauritania
Mali
Niger
Chad
Sudan
Yemen
Gulf of Aden
Arabian Sea
Bay of Bengal
Gulf of Thailand
Laccadive Sea
Malaysia
Indonesia
Banda Sea
Arafura
Burkina Faso
Guinea
Ghana
Nigeria
South Sudan
Ethiopia
Somalia
Gulf of Guinea
Kenya
Gabon
DRC
Tanzania
Angola
Zambia
Mozambique
Namibia
Zimbabwe
Botswana
Madagascar
Indian
Austra
WA
NT
SA
Great Australian Bight
Hudson Bay
Labrador Sea
NL
ON
QC
NB
PE
NS
ME
NH
MA
NY
MI
PA
OH
IN
MD
DE
WV
VA
KY
NC
TN
SC
AL
GA
FL
Cuba
Puerto Rico
Caribbean Sea
Nicaragua
Venezuela
Guyana
Suriname
Colombia
RR
AP
Ecuador
AM
PA
MA
CE
RN
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PI
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AL
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TO
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SC
RS
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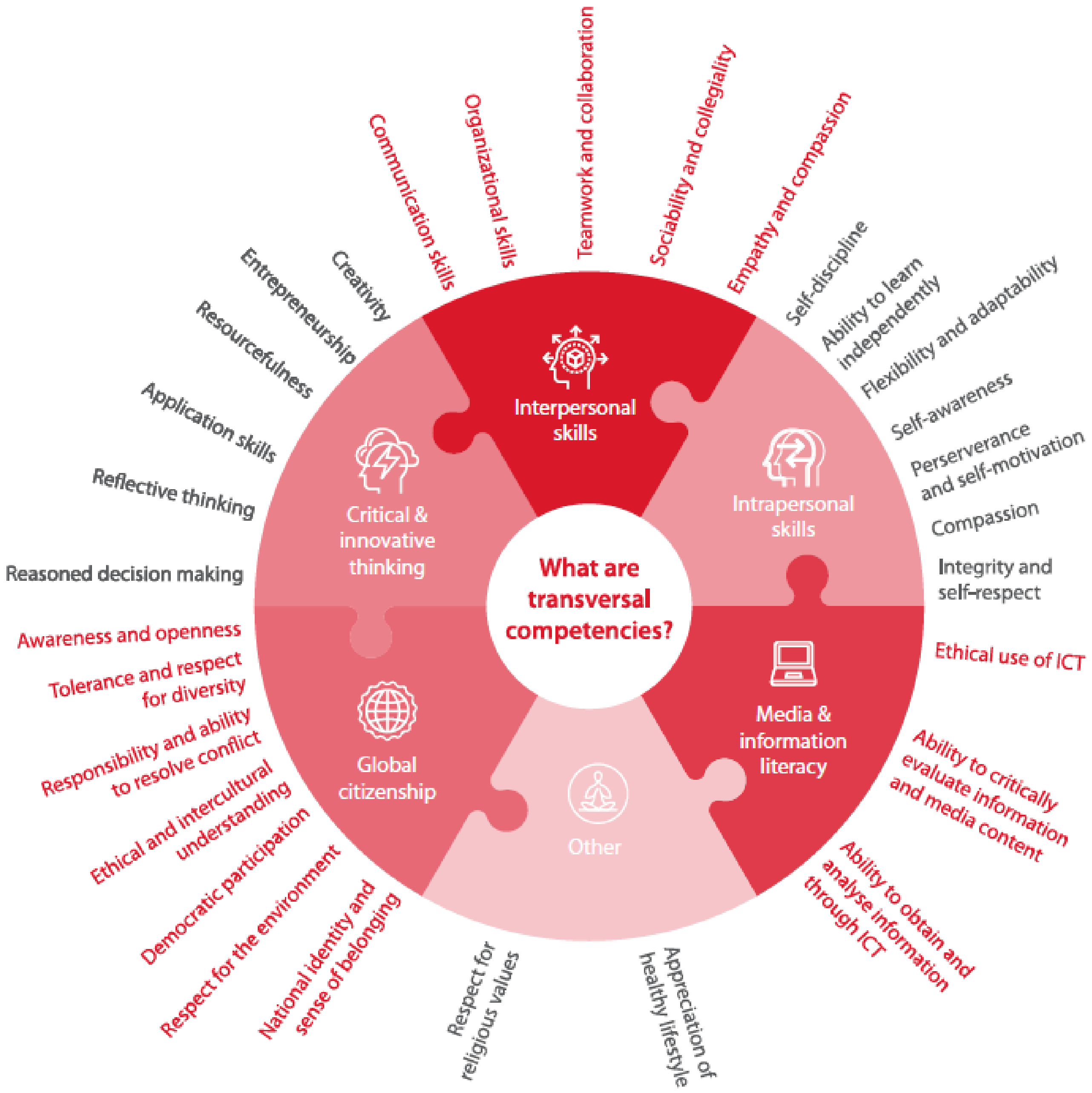
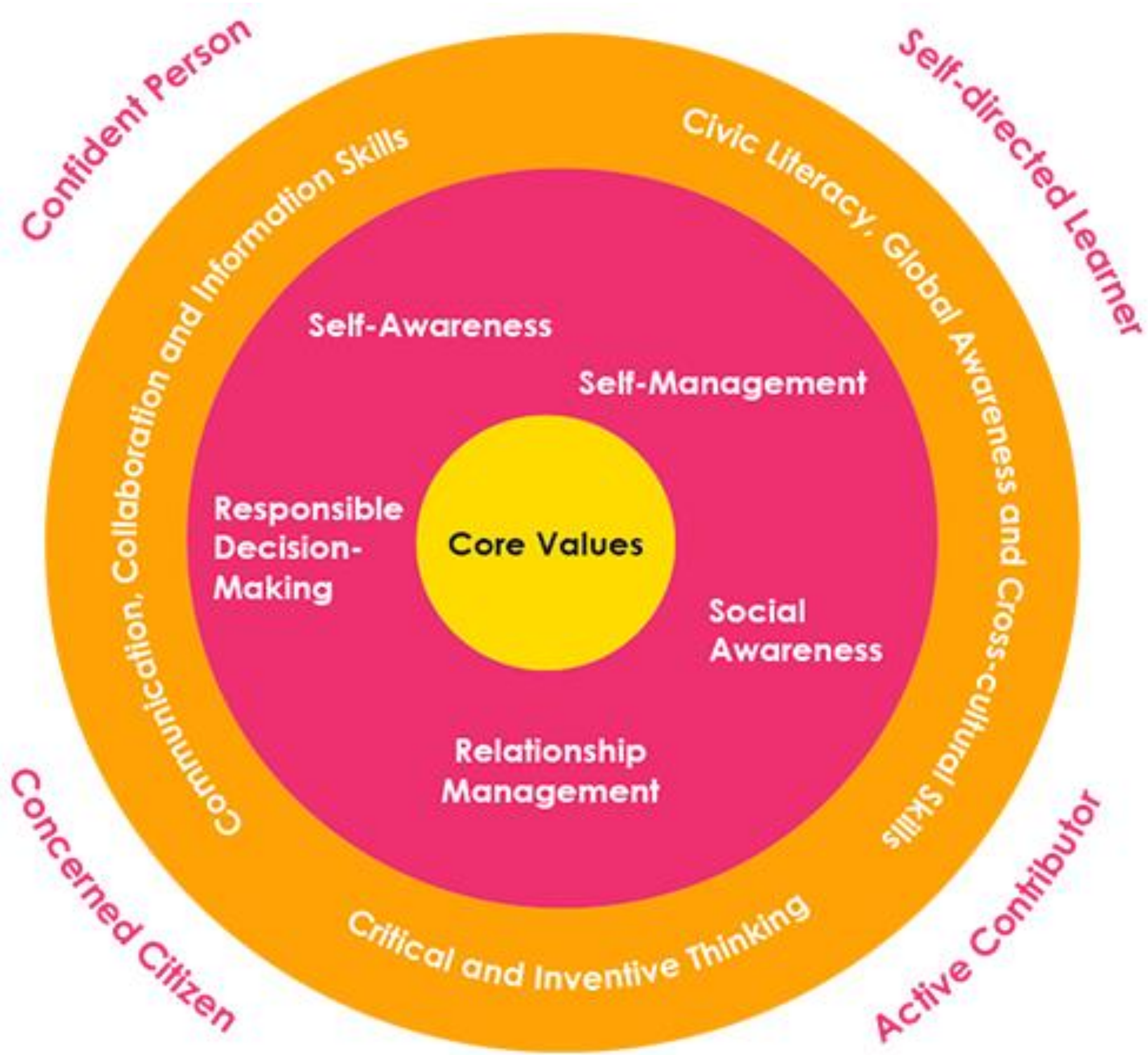
Uruguay
Argentina
IMAGINATIVE
INQUISITIVE
PERSISTENT
COLLABORATIVE
DISCIPLINED
USING INTUITION
WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
CHALLENGING ASSUMPTIONS
TOLERATING UNCERTAINTY
STICKING WITH DIFFICULTY
DARING TO BE DIFFERENT
SHARING THE PRODUCT
GIVING & RECEIVING FEEDBACK
COOPERATING APPROPRIATELY
REFLECTING CRITICALLY
DEVELOPING TECHNIQUES
CRAFTING & IMPROVING
PLAYING WITH POSSIBILITIES
MAKING CONNECTIONS
IMAGINATIVO
INQUISITIVO
PERSISTENTE
COLLABORATIVO
DISCIPLINATO
KOPERNIKUS
COLLABORATIVE
INQUISITIVE
PERSISTENT
IMAGINATIVE
DISCIPLINED

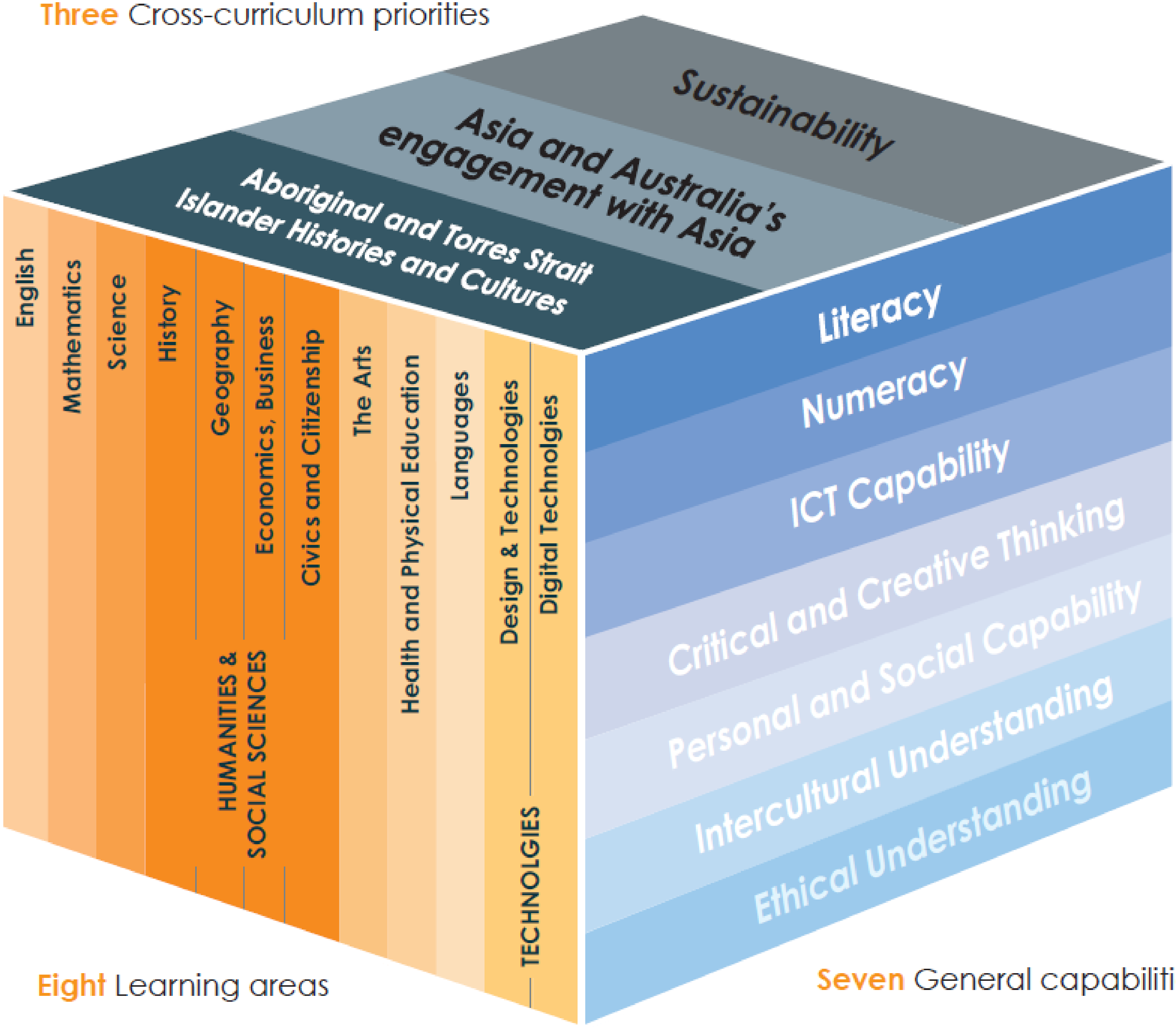
CREATIVITY CULTURE & EDUCATION

Asia-Pacific


What are transversal competencies?
Interpersonal skills
Intrapersonal skills
Media & information literacy
Other
Global citizenship
Critical & innovative thinking
Communication skills
Organizational skills
Teamwork and collaboration
Sociability and collegiality
Empathy and compassion
Self-discipline
Ability to learn independently
Flexibility and adaptability
Self-awareness
Perserverance and self-motivation
Compassion
Integrity and self-respect
Ethical use of ICT
Ability to critically evaluate information and media content
Ability to obtain and analyse information through ICT
Appreciation of healthy lifestyle
Respect for religious values
National identity and sense of belonging
Respect for the environment
Democratic participation
Ethical and intercultural understanding
Responsibility and ability to resolve conflict
Tolerance and respect for diversity
Awareness and openness
Reasoned decision making
Reflective thinking
Application skills
Resourcefulness
Entrepreneurship
Creativity

Singapore


Confident Person
Self-directed Learner
Concerned Citizen
Active Contributor
Communication, Collaboration and Information Skills
Civic Literacy, Global Awareness and Cross-cultural Skills
Critical and Inventive Thinking
Self-Awareness
Self-Management
Responsible Decision-Making
Core Values
Social Awareness
Relationship Management



Three Cross-curriculum priorities

Sustainability

Asia and Australia's engagement with Asia

Aboriginal and Torres Strait Islander Histories and Cultures

Eight Learning areas

English

Mathematics

Science

History

Geography

Economics, Business

Civics and Citizenship

HUMANITIES & SOCIAL SCIENCES

The Arts

Health and Physical Education

Languages

Design & Technologies

Digital Technologies

TECHNOLOGIES

Seven General capabilities

Literacy

Numeracy

ICT Capability

Critical and Creative Thinking

Personal and Social Capability

Intercultural Understanding

Ethical Understanding

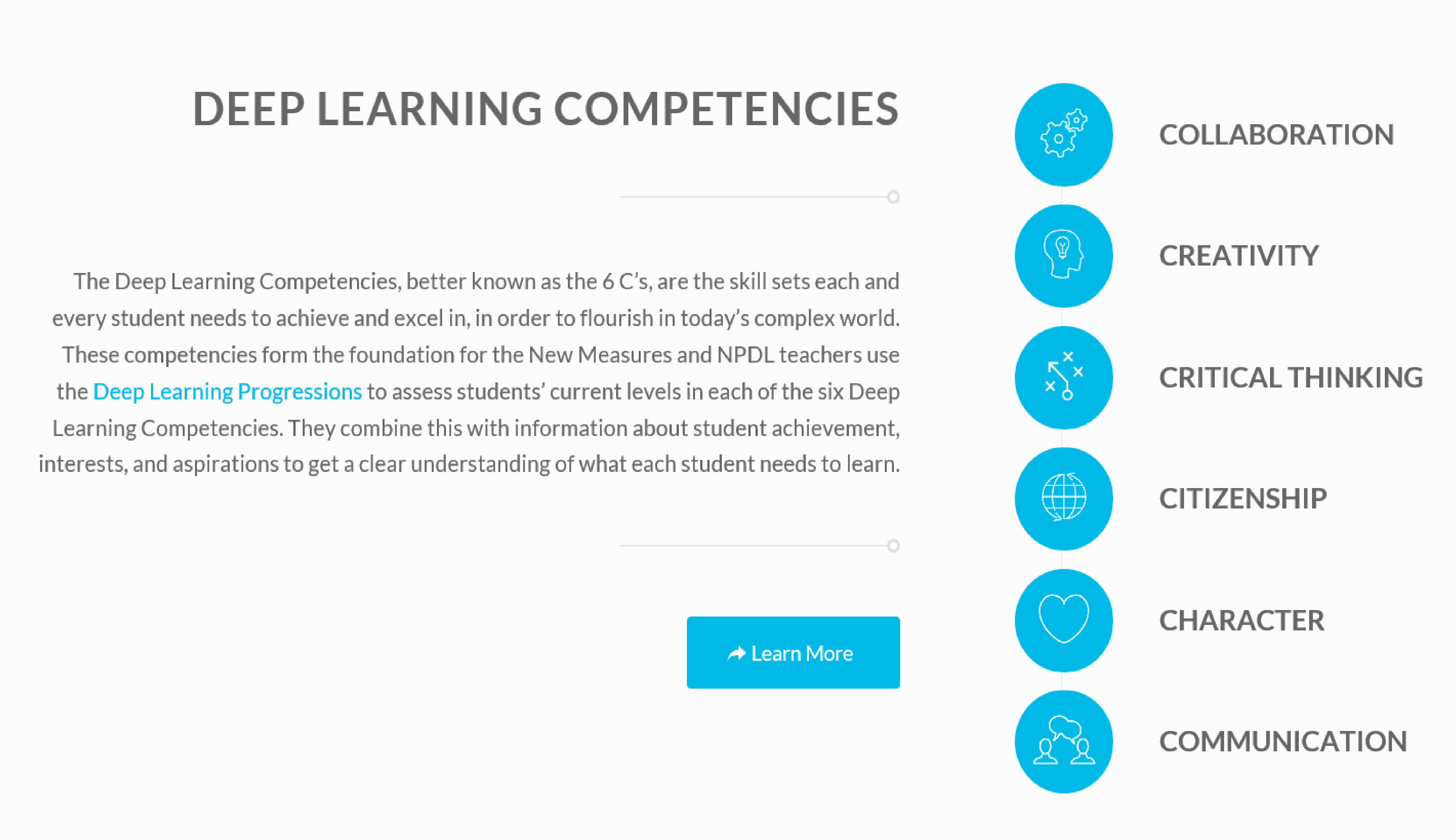
Australian Government

Through Growth to Achievement

Report of the Review to Achieve Educational Excellence in Australian Schools

March 2018

Canada

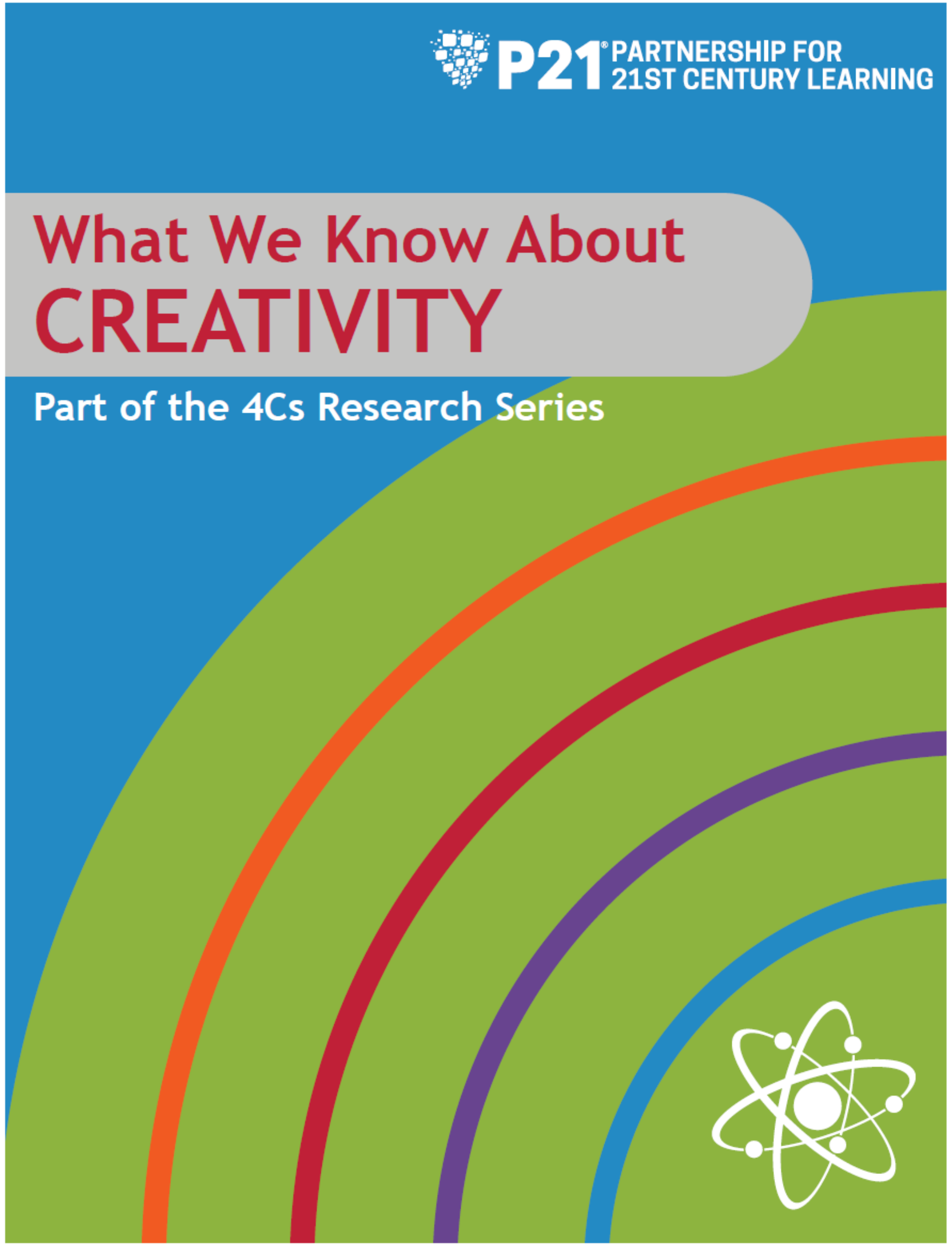


DEEP LEARNING COMPETENCIES

The Deep Learning Competencies, better known as the 6 C's, are the skill sets each and every student needs to achieve and excel in, in order to flourish in today's complex world. These competencies form the foundation for the New Measures and NPDL teachers use the Deep Learning Progressions to assess students' current levels in each of the six Deep Learning Competencies. They combine this with information about student achievement, interests, and aspirations to get a clear understanding of what each student needs to learn.

- COLLABORATION
- CREATIVITY
- CRITICAL THINKING
- CITIZENSHIP
- CHARACTER
- COMMUNICATION

USA



P21 PARTNERSHIP FOR 21ST CENTURY LEARNING

What We Know About
CREATIVITY

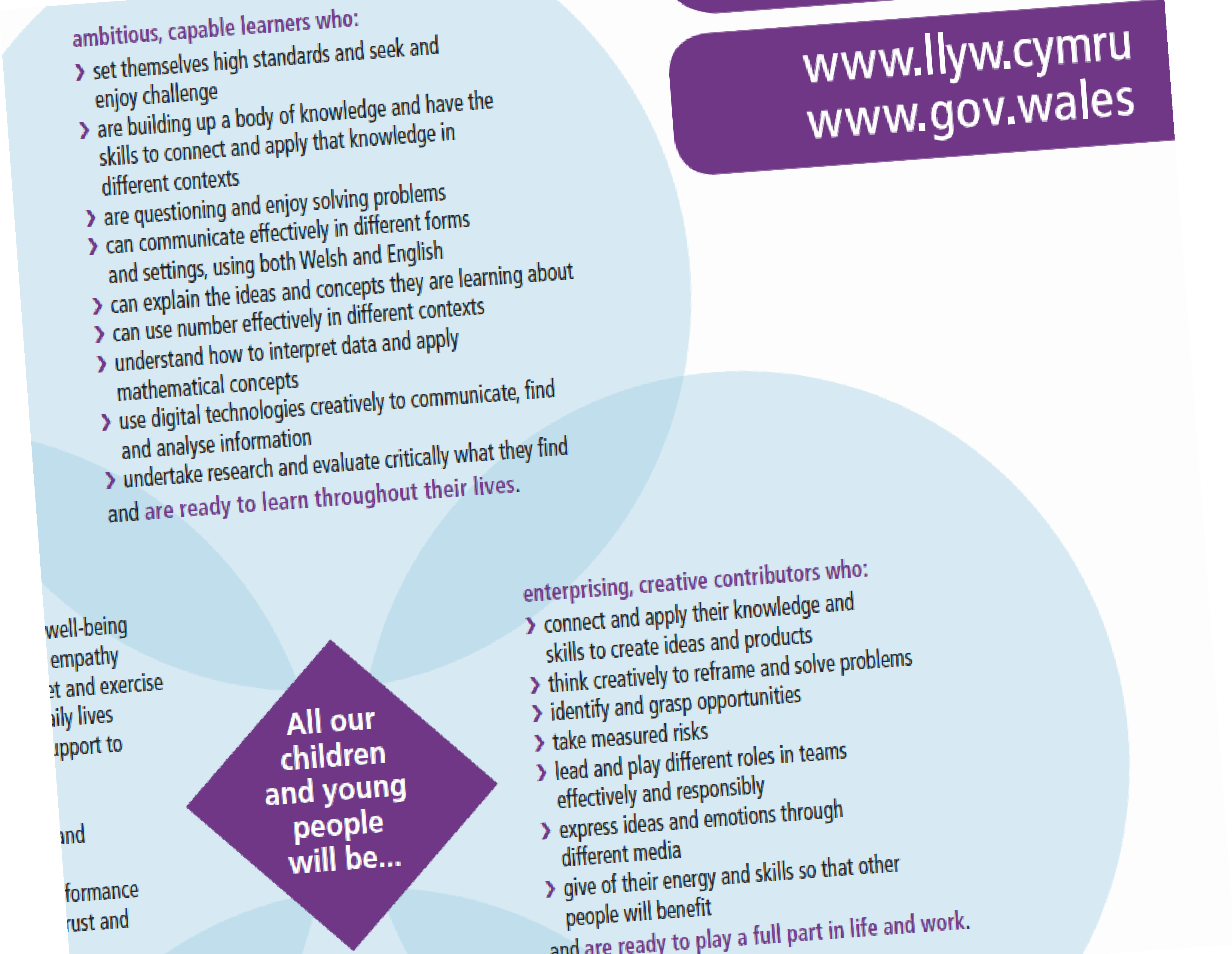
Part of the 4Cs Research Series

What We Know About
COLLABORATION

Part of the 4Cs Research Series

P21 PARTNERSHIP FOR 21ST CENTURY LEARNING

Wales



ambitious, capable learners who:

- set themselves high standards and seek and enjoy challenge
- are building up a body of knowledge and have the skills to connect and apply that knowledge in different contexts
- are questioning and enjoy solving problems
- can communicate effectively in different forms and settings, using both Welsh and English
- can explain the ideas and concepts they are learning about
- can use number effectively in different contexts
- understand how to interpret data and apply mathematical concepts
- use digital technologies creatively to communicate, find and analyse information
- undertake research and evaluate critically what they find

and are ready to learn throughout their lives.

www.llyw.cymru
www.gov.wales

well-being
empathy
t and exercise
ily lives
upport to

nd

formance
rust and

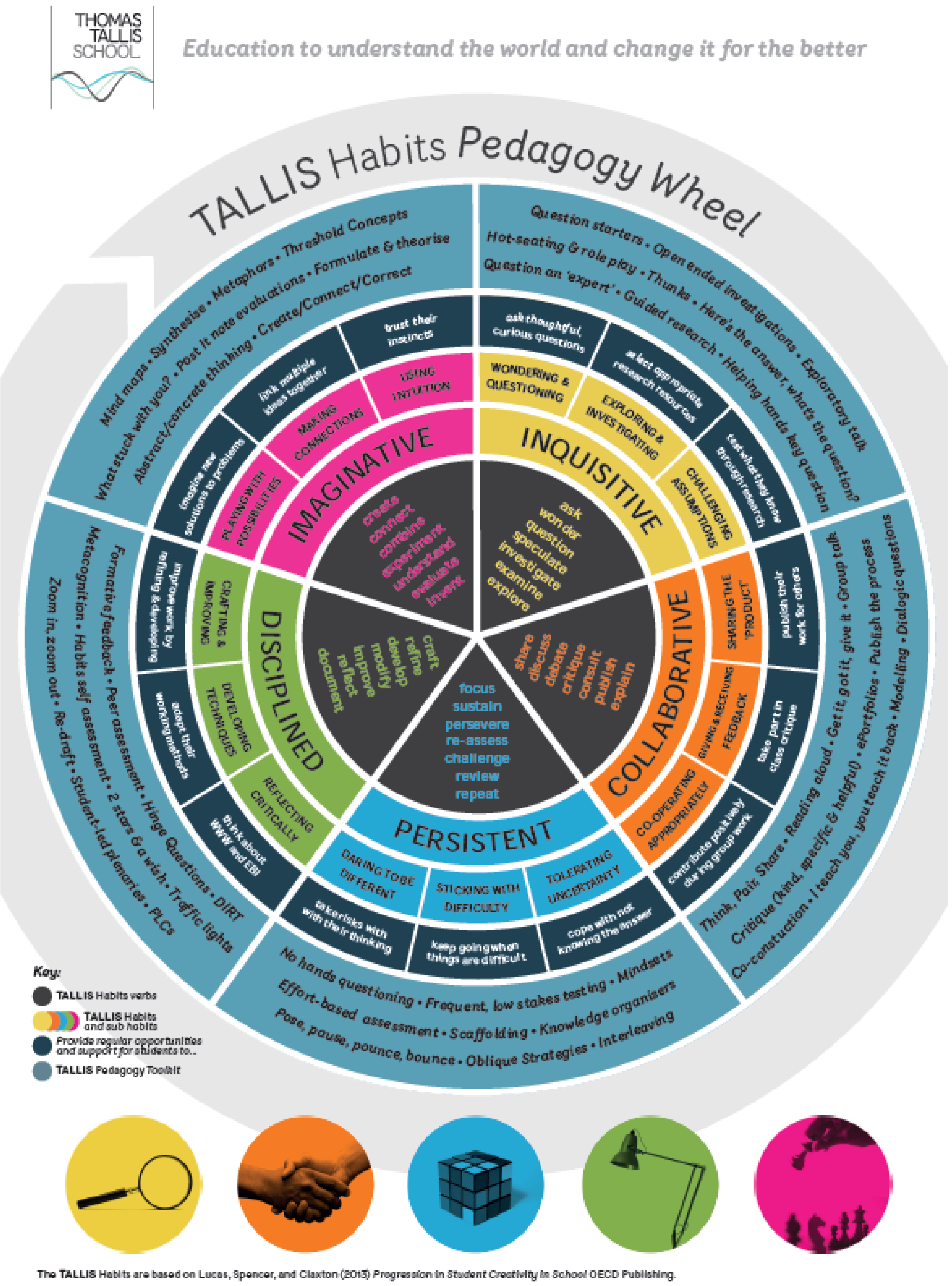
All our children and young people will be...

enterprising, creative contributors who:

- connect and apply their knowledge and skills to create ideas and products
- think creatively to reframe and solve problems
- identify and grasp opportunities
- take measured risks
- lead and play different roles in teams effectively and responsibly
- express ideas and emotions through different media
- give of their energy and skills so that other people will benefit

and are ready to play a full part in life and work.

…and finally England?


THOMAS TALLIS SCHOOL
Education to understand the world and change it for the better
TALLIS Habits Pedagogy Wheel
Mind maps • Synthesise • Metaphors • Threshold Concepts
What stuck with you? • Post it note evaluations • Formulate & theorise
Abstract/concrete thinking • Create/Connect/Correct
Question starters • Open ended investigations • Exploratory talk
Hot-seating & role play • Thunks • Here's the answer, whats the question?
Question an 'expert' • Guided research • Helping hands key question
Think, Pair, Share • Reading aloud • Get it, got it, give it • Group talk
Critique (kind, specific & helpful) • ePortfolios • Publish the process
Co-constuction • I teach you, you teach it back • Modelling • Dialogic questions
No hands questioning • Frequent, low stakes testing • Mindsets
Effort-based assessment • Scaffolding • Knowledge organisers
Pose, pause, pounce, bounce • Oblique Strategies • Interleaving
Metacognition • Habits self assessment • 2 stars & a wish • Traffic lights
Formative feedback • Peer assessment • Hinge Questions • DIRT
Zoom in, zoom out • Re-draft • Student-led plenaries • PLCs
trust their instincts
link multiple ideas together
imagine new solutions to problems
ask thoughtful, curious questions
select appropriate research resources
test what they know through research
publish their work for others
take part in class critique
contribute positively during group work
cope with not knowing the answer
keep going when things are difficult
take risks with their thinking
think about WWW and EBI
adapt their working methods
improve work by refining & developing
USING INTUITION
MAKING CONNECTIONS
PLAYING WITH POSSIBILITIES
WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
CHALLENGING ASSUMPTIONS
SHARING THE 'PRODUCT'
GIVING & RECEIVING FEEDBACK
CO-OPERATING APPROPRIATELY
TOLERATING UNCERTAINTY
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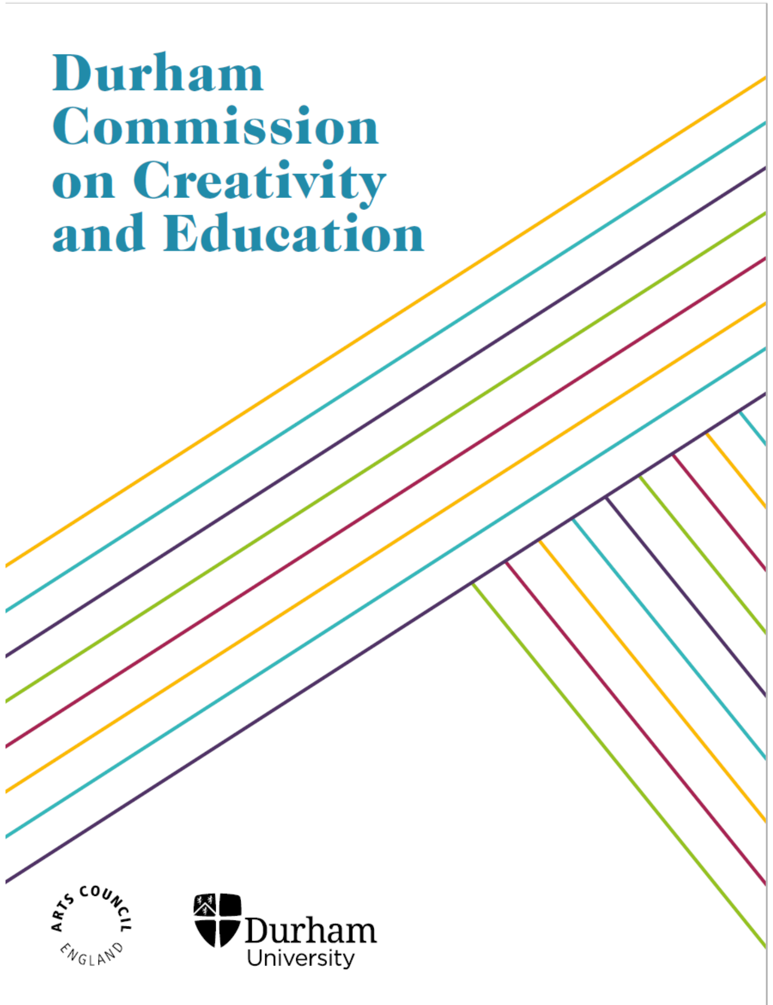
DARING TO BE DIFFERENT
REFLECTING CRITICALLY
DEVELOPING TECHNIQUES
CRAFTING & IMPROVING
IMAGINATIVE
INQUISITIVE
COLLABORATIVE
PERSISTENT
DISCIPLINED
create connect combine experiment understand evaluate invent
ask wonder question speculate investigate examine explore
share discuss debate critique consult publish explain
focus sustain persevere re-assess challenge review repeat
craft refine develop modify improve reflect document
Key:
TALLIS Habits verbs
TALLIS Habits and sub habits
Provide regular opportunities and support for students to…
TALLIS Pedagogy Toolkit
The TALLIS Habits are based on Lucas, Spencer, and Claxton (2013) Progression in Student Creativity in School OECD Publishing.

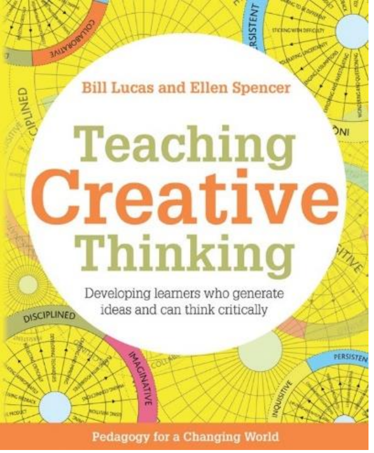


Durham Commission on Creativity and Education

ARTS COUNCIL ENGLAND

Durham University

Ruby - a role model for students in England?

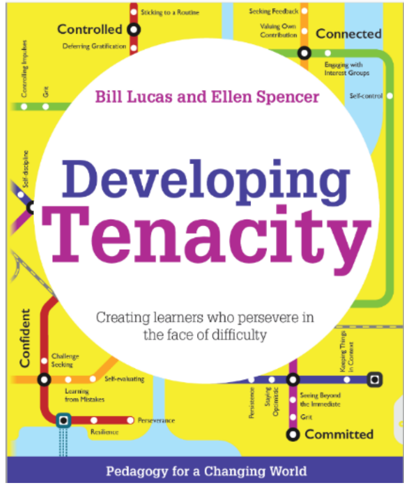

Bill Lucas and Ellen Spencer

Teaching Creative Thinking

Developing learners who generate ideas and can think critically

Pedagogy for a Changing World

DISCIPLINED
IMAGINATIVE
INQUISITIVE
PERSISTENT
COLLABORATIVE


Bill Lucas and Ellen Spencer

Developing Tenacity

Creating learners who persevere in the face of difficulty

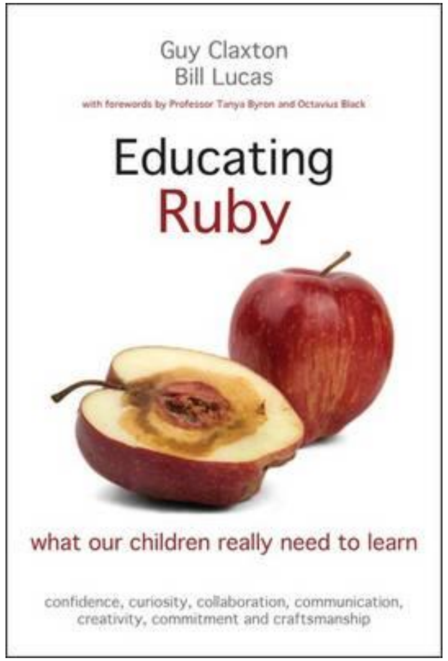
Pedagogy for a Changing World

Controlled
Connected
Confident
Committed

Craftsmanship

Confidence

Commitment


Guy Claxton
Bill Lucas

with forewords by Professor Tanya Byron and Octavius Black

Educating Ruby

what our children really need to learn

confidence, curiosity, collaboration, communication, creativity, commitment and craftsmanship

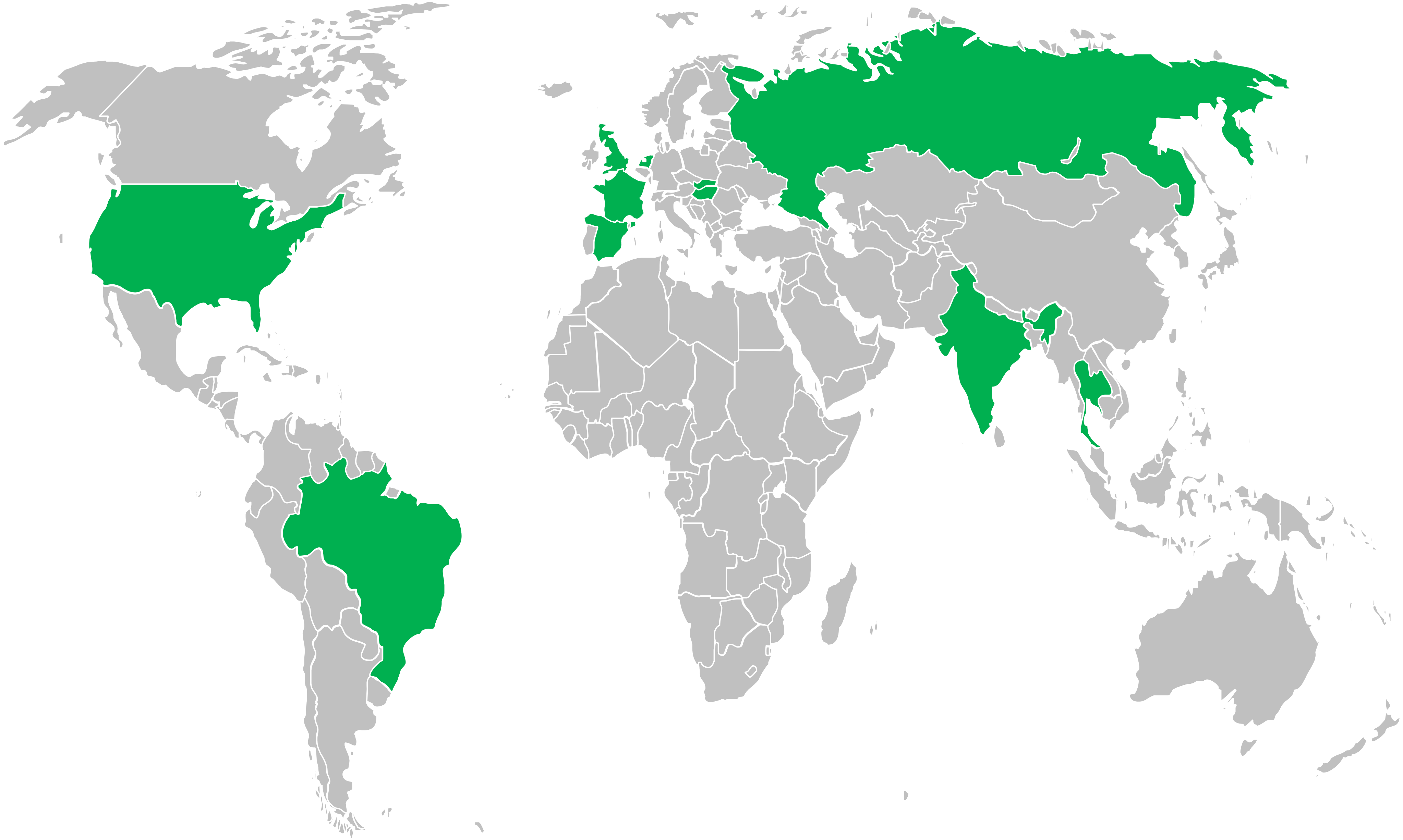
Curiosity

Creativity

Collaboration

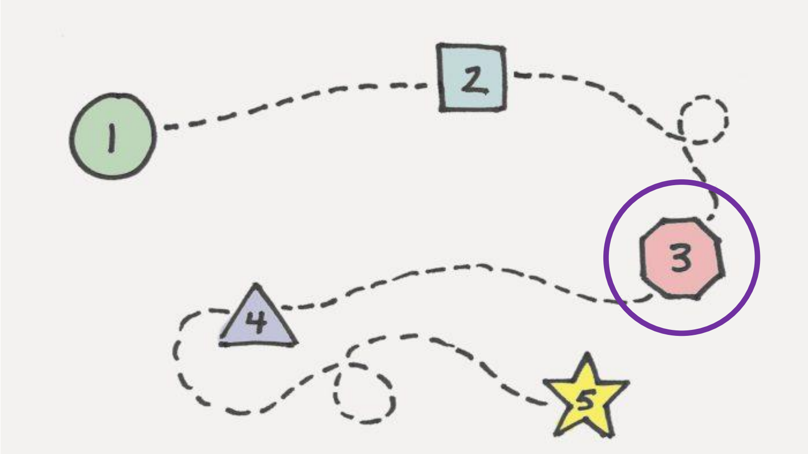
Communication

An OECD study over 2 school years in 11 countries with 800 teachers and 20,000 students in 320 primary and secondary schools

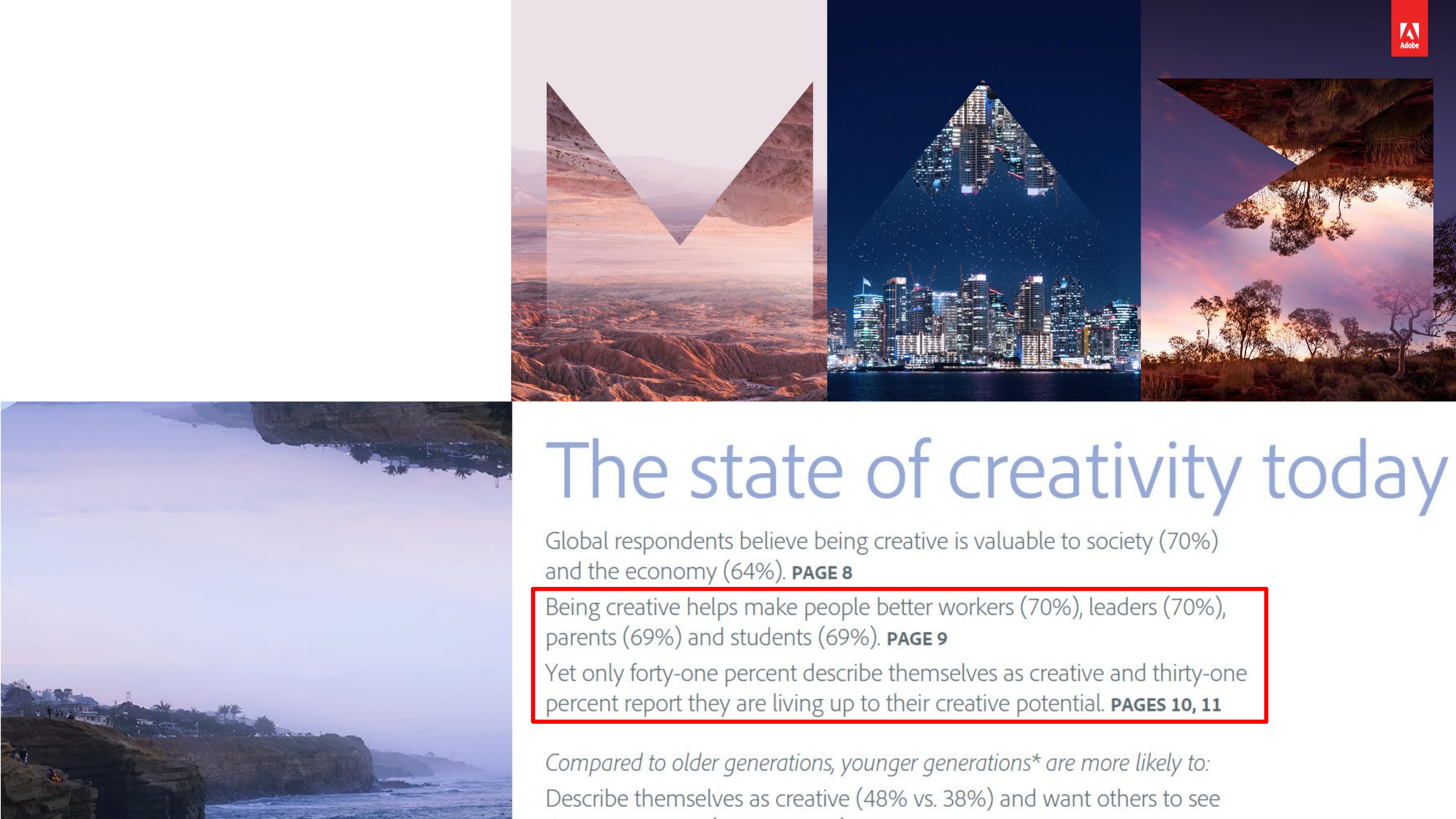


Round 1 (2015-16): Brazil, France, India, Hungary, Netherlands, Russia, Slovakia, Thailand, United States

Round 2 (2016-17): Brazil, France, India, Hungary, Russia, Spain, Thailand, Wales, United States



3. Why creativity and culture matter?



The state of creativity today

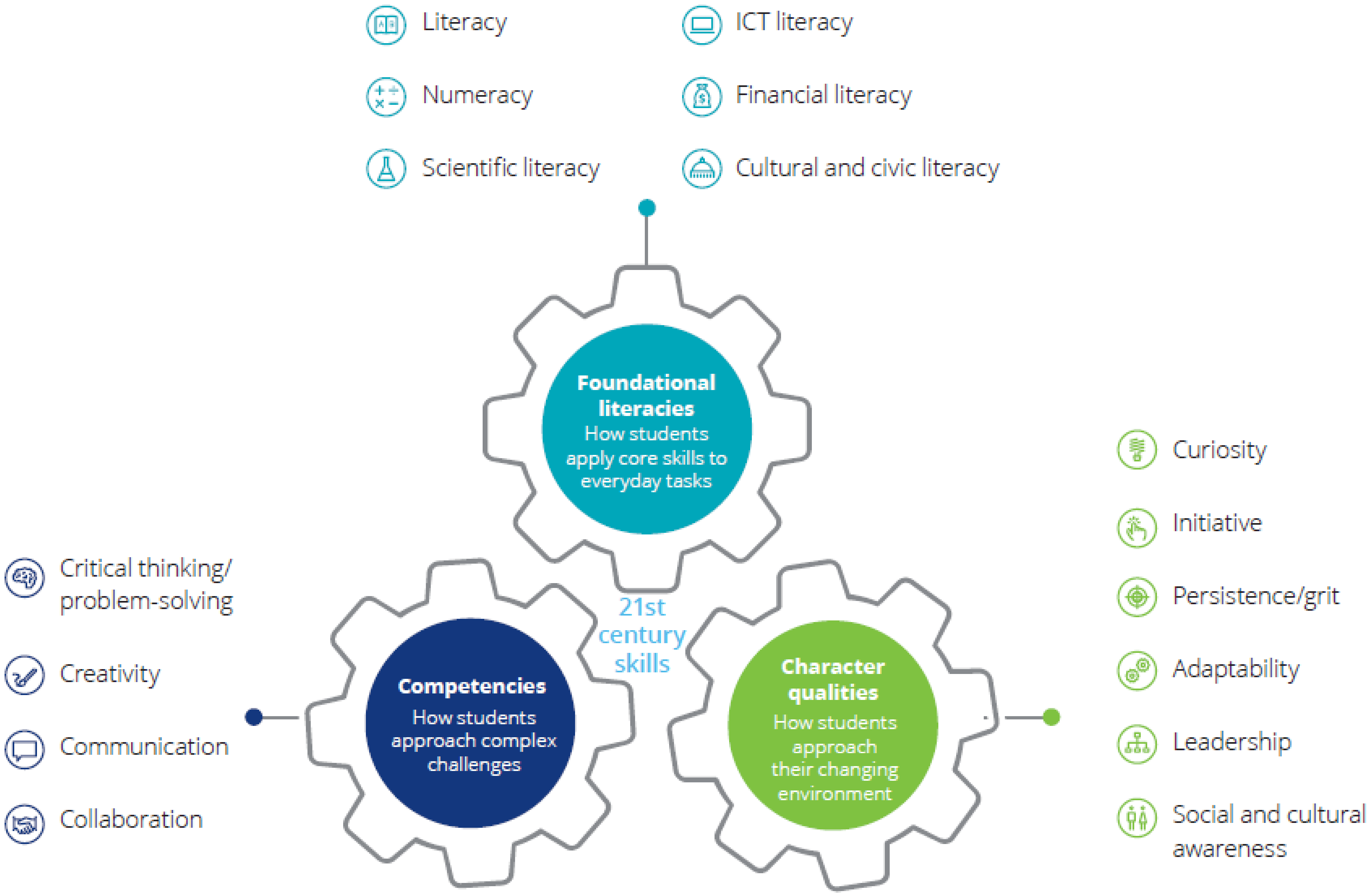
Global respondents believe being creative is valuable to society (70%) and the economy (64%). **PAGE 8**

Being creative helps make people better workers (70%), leaders (70%), parents (69%) and students (69%). **PAGE 9**

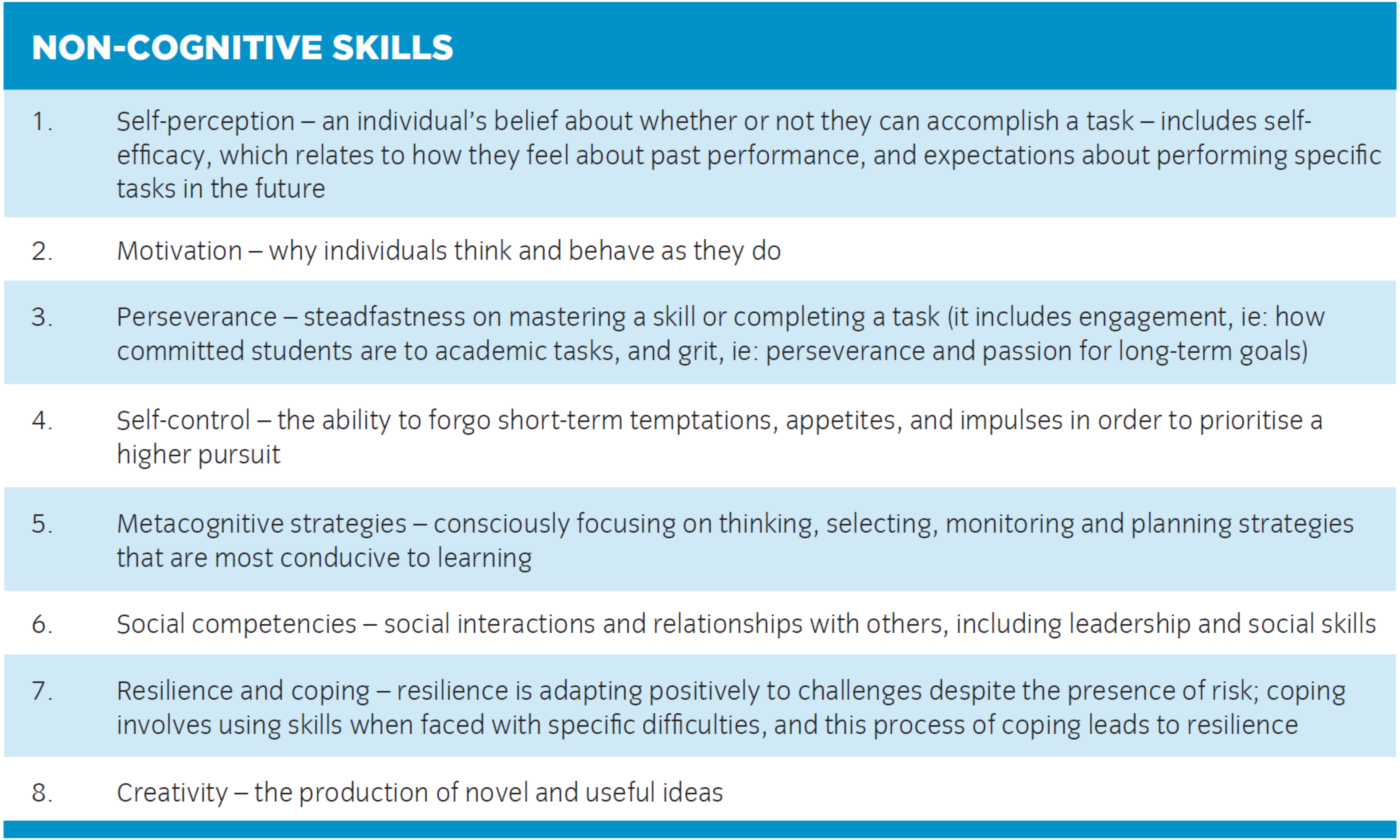
Yet only forty-one percent describe themselves as creative and thirty-one percent report they are living up to their creative potential. **PAGES 10, 11**

Compared to older generations, younger generations are more likely to:*

Describe themselves as creative (48% vs. 38%) and want others to see


Literacy
Numeracy
Scientific literacy
ICT literacy
Financial literacy
Cultural and civic literacy
Foundational literacies
How students apply core skills to everyday tasks
21st century skills
Competencies
How students approach complex challenges
Critical thinking/ problem-solving
Creativity
Communication
Collaboration
Character qualities
How students approach their changing environment
Curiosity
Initiative
Persistence/grit
Adaptability
Leadership
Social and cultural awareness

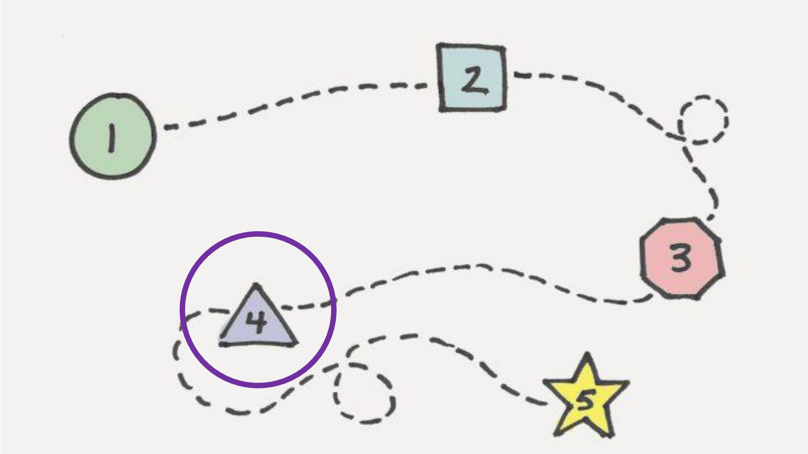
Source: World Economic Forum (2015)



NON-COGNITIVE SKILLS	
1.	Self-perception – an individual's belief about whether or not they can accomplish a task – includes self-efficacy, which relates to how they feel about past performance, and expectations about performing specific tasks in the future
2.	Motivation – why individuals think and behave as they do
3.	Perseverance – steadfastness on mastering a skill or completing a task (it includes engagement, ie: how committed students are to academic tasks, and grit, ie: perseverance and passion for long-term goals)
4.	Self-control – the ability to forgo short-term temptations, appetites, and impulses in order to prioritise a higher pursuit
5.	Metacognitive strategies – consciously focusing on thinking, selecting, monitoring and planning strategies that are most conducive to learning
6.	Social competencies – social interactions and relationships with others, including leadership and social skills
7.	Resilience and coping – resilience is adapting positively to challenges despite the presence of risk; coping involves using skills when faced with specific difficulties, and this process of coping leads to resilience
8.	Creativity – the production of novel and useful ideas

Leslie Gutman & Ingrid Schoon (2013)

The impact of non-cognitive skills on outcomes for young people.



4. What needs to change

To Do List

☐ ____________________

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To Do List

☑ AGREE A CLEAR DEFINITION

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‘Imaginative activity fashioned so as to produce outcomes that are both original and of value.’

UK National Advisory Committee on Creative and Cultural Education, 1999

‘Creative Thinking in PISA 2021 is defined as the competence to engage productively in an iterative process involving the generation, evaluation and improvement of ideas, that can result in novel and effective solutions. Creative thinking is enabled by domain knowledge, curiosity, confidence, goal orientation and task motivation, as well as by external conditions, and it can be both an individual and collaborative endeavour.’

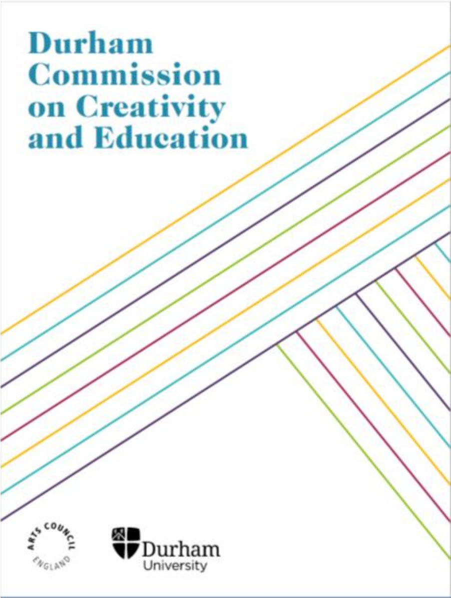
OECD Directorate for Education and Skills, PISA 2021 Creative Thinking

DURHAM COMMISSION DEFINITIONS

Creativity: The capacity to imagine, conceive, express, or make something that was not there before.

Creative thinking: A process through which knowledge, intuition and skills are applied to imagine, express or make something novel or individual in its contexts. Creative thinking is present in all areas of life. It may appear spontaneous, but it can be underpinned by perseverance, experimentation, critical thinking and collaboration.

Teaching for creativity: Explicitly using pedagogies and practices that cultivate creativity in young people.



Durham
Commission
on Creativity
and Education

To Do List

☑ AGREE A CLEAR DEFINITION

☑ AGREE HOW IT FITS WITH FORMAL AND INFORMAL CURRICULA

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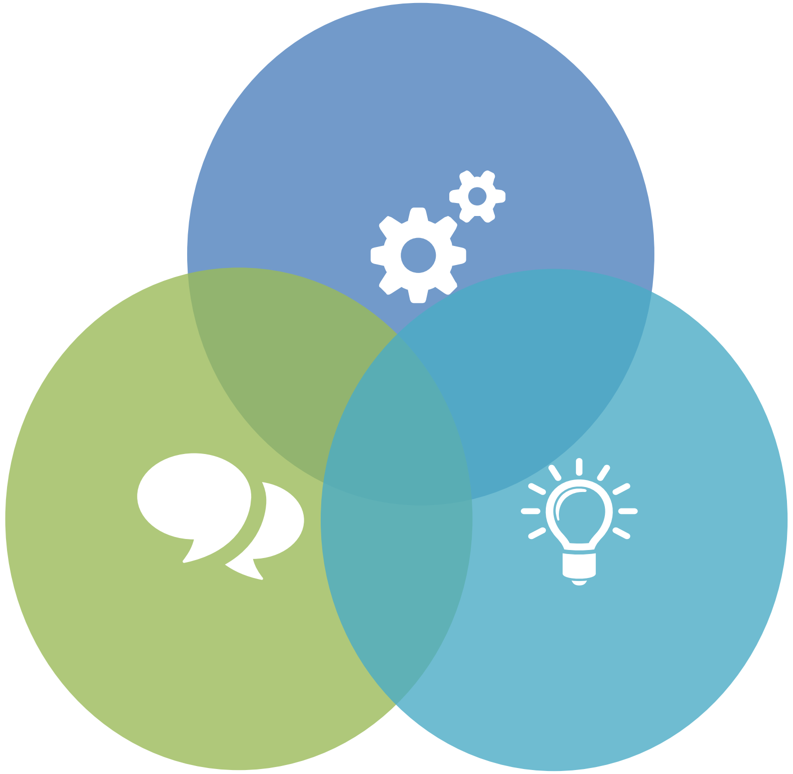
What skills should education systems foster according to OECD?



Technical skills

Know-what and know-how

Behavioural and social skills

Self-confidence, energy, perseverance, passion, leadership, collaboration, communication

Creativity and critical thinking skills

Creativity, critical thinking, inquiry, imagination, curiosity, ability to make connections, metacognition…

Teaching more than just sailing

GET ONBOARD

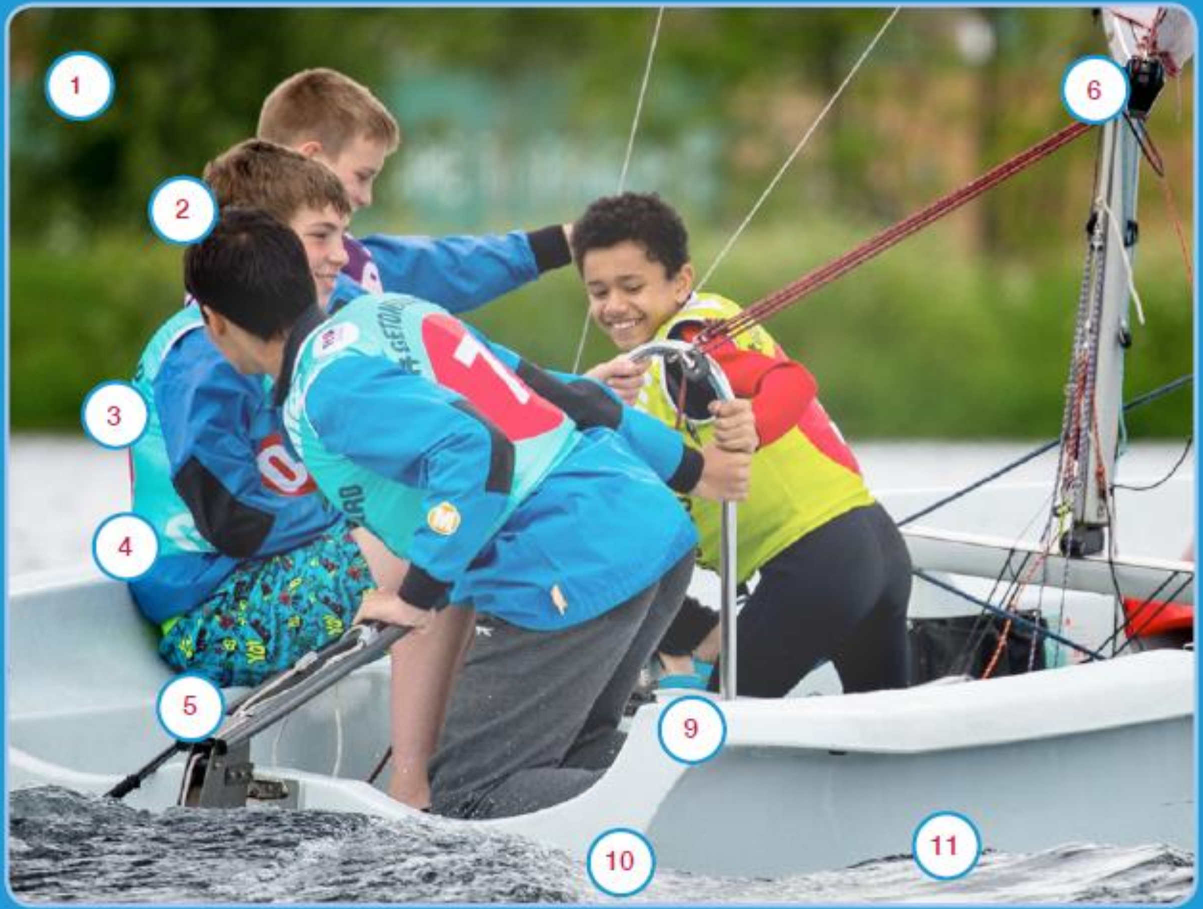
WEATHER 1
KS 3 Geography
Understands key process in weather and climate

SAILOR 2
KS 3&4 PE
Take part in outdoor and adventurous activities which present intellectual and physical challenges and be encouraged to work in a team, building on trust and developing skills to solve problems, either individually or as a group
KS 1&2 English
Ask relevant questions to extend their understanding and knowledge

WEIGHT OF SAILOR VS FORCE OF WIND 3
KS 3 Science
Opposing forces and equilibrium

BOAT AND PERSONAL BUOYANCY 4
KS 3 Science
Floating and sinking

STEERING & RUDDER 5
RUDDER
KS 3 Science
Forces as pushes or pulls, arising from the interaction between two objects
STEERING
KS 1&2 Maths
"Pupils use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts"
KS 1 Geography
Use simple compass directions (North, South, East and West)



6. SAIL
FORCE OF WIND ON SAIL
KS 2 Science
Identify the effects of air resistance, water resistance and friction, which act between moving surfaces
KICKER AND/OR MAINSHEET
KS 2&3 Science
Recognise that some mechanisms, including levers, pulleys and gears give bigger force but at the expense of smaller movement

7. BOAT MOVING FORWARDS
KS 3 – Science
Speed and the quantitative relationship between average speed, distance and time (speed = distance/time)

8. ANGLES USED IN SAILING
KS 1&2 Maths
Identify angles and recognise they are measured in degrees. Use measurements to describe turns

9. HULL OF BOAT
KS 2 Science
Identify the effects of air resistance, water resistance and friction that act between moving surfaces

10. DAGGER BOARD
KS 3 Design and Technology
Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions

11. WAVES
KS 3 Science
Waves on water as undulations which travel through water with transverse motion

CREATIVITY

JO GOODE, HEADTEACHER
"Sailing teaches pupils how to read situations and solve problems from an early age. We see these skills of practical application translate into academic learning. The natural surroundings inspire creative young minds to better understand and appreciate the environment too."

TEAMWORK

SIAN, AGE 17
"The opportunities to develop personal leadership skills through sailing have been very significant for Sian. As a volunteer activities leader, she takes on responsibility that has enabled her to operate calmly and effectively under pressure and has provided her with strong teamwork and leadership skills."

DETERMINATION

DAI, AGE 22
"Sailing has grown me into the young man I am. After my parents divorced, I felt lost and abandoned. But encouraged by my mum and dad and club I became an Assistant Dinghy Instructor. Teaching sailing then overtook my life and became my passion."

COMMUNICATION

JACK, AGE 14
"Sailing and helping at the club has enabled my son to become friends with people of all ages, young and old, he can know chat to anyone. He has become a real team player and is able to think on his feet."

INDEPENDENCE

DAVID, AGE 17
"David was born with 50% sight; he was shy with low self-esteem. When he joined the sailing school group his confidence grew, the difference in him was enormous, as was the impact on his schoolwork and social life."

CONFIDENCE

HARRY, AGE 13
"Our son shied away from 'traditional' sports. Sailing made him realise that sport doesn't have to be competitive; he just enjoys being out on the water. He has gained so much confidence though sailing he now does other outdoor pursuits too."

For more information or to search for your nearest club or centre please visit rya.org.uk/onboard | E. onboard@rya.org.uk T. 023 8060 4100 | Insta @RYAOnBoard

To Do List

- ☑ AGREE A CLEAR DEFINITION
- ☑ AGREE HOW IT FITS WITH FORMAL AND INFORMAL CURRICULA
- ☑ AGREE CULTURAL IMPLICATIONS
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Design criteria for good lessons

1. Create students' **need/interest to learn**
2. Be **challenging**
3. **Develop clear technical knowledge** in one domain or more
4. Include the **development of a "product"**
5. Have **students co-design part of** the product/solution or problem
6. Deal with **problems that can be looked at from different perspectives**
7. Leave **room for the unexpected**
8. Include **space and time for students to reflect** and give/receive feedback

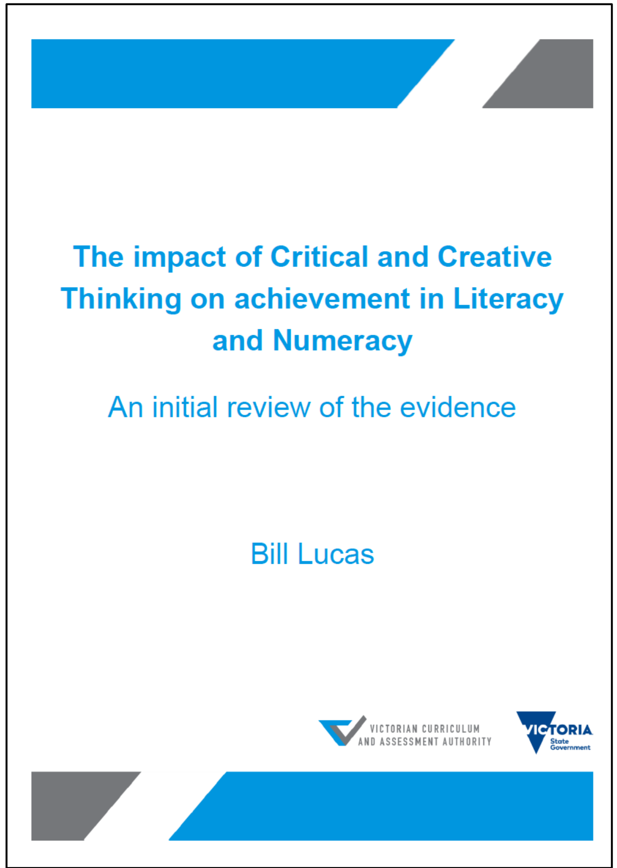
Ten principles for a hospitable eco-system

1. Learning almost always framed by engaging questions which have no one right answer
2. Space for activities which are curious, authentic, extended in length, sometimes beyond school, collaborative and reflective
3. The opportunity for play and experimentation
4. Opportunity for generative thought, where ideas are greeted openly
5. Opportunity for critical reflection in a supportive environment
6. Respect for difference and the creativity of others
7. Makes creative processes visible and valued
8. Actively engages students as co-designers
9. Integrates a range of assessment practices within teaching
10. Leaves space for the unexpected

No **Sometimes** **Mostly** **Yes**

Marshalling the arguments

Focus	Type of study	Authors and date	Effect size
Critical Thinking	Meta-analysis	Abrami et al., 2015	medium
Critical Thinking	Meta-analysis	Higgins et al., 2005	large
Creativity	Meta-analysis	Gajda et al., 2016	small
Lucas, Bill (2019)			



The impact of Critical and Creative Thinking on achievement in Literacy and Numeracy

An initial review of the evidence

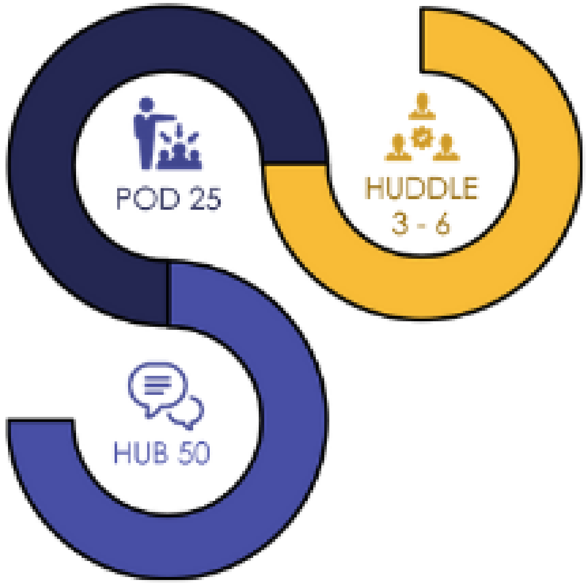
Bill Lucas

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

VICTORIA State Government

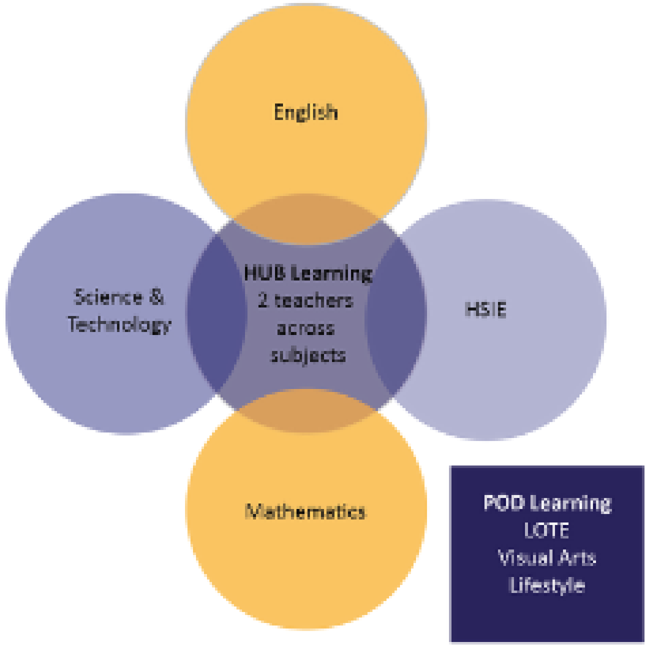
To Do List

- ☑ Agree a clear definition
- ☑ Agree how it fits with formal and informal curricula
- ☑ Agree cultural implications
- ☑ Timetabling
- ☑
- ☑
- ☑
- ☑
- ☐
- ☐


POD 25

HUDDLE 3 - 6

HUB 50


English

Science & Technology

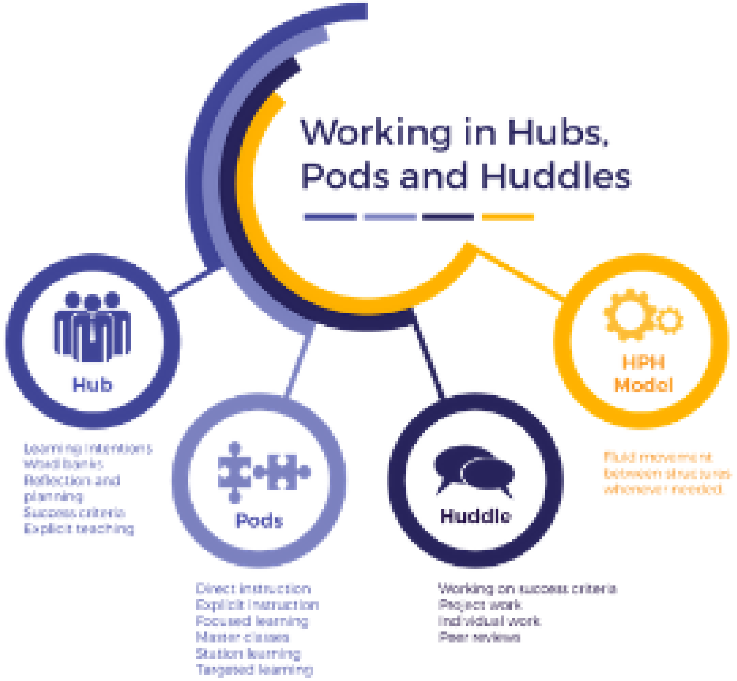
HUB Learning 2 teachers across subjects

HSIE

Mathematics

POD Learning
LOTE
Visual Arts
Lifestyle

Working in HUBs


Working in Hubs, Pods and Huddles

Hub
Learning intentions
Word banks
Reflection and planning
Success criteria
Explicit teaching

Pods
Direct instruction
Explicit Instruction
Focused learning
Master classes
Station learning
Targeted learning

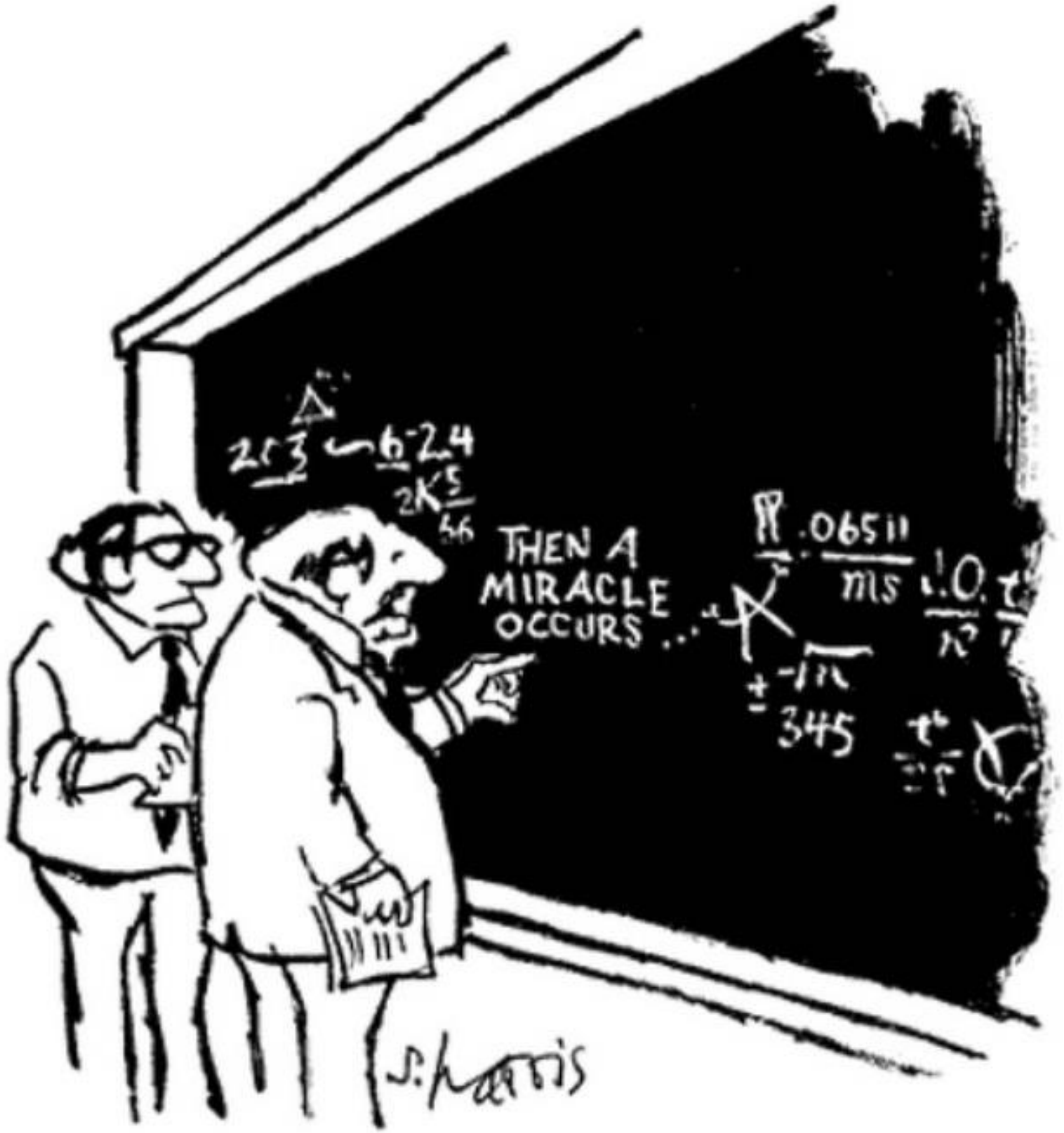
Huddle
Working on success criteria
Project work
Individual work
Peer reviews

HPH Model
Fluid movement between structures whenever needed.

KURRI KURRI
COURAGE HONOUR
SERVICE

To Do List

- ☑ Agree a clear definition
- ☑ Agree how it fits with formal and informal curricula
- ☑ Agree cultural implications
- ☑ Timetabling
- ☑ Pedagogy
- ☐
- ☐
- ☐
- ☐
- ☐



THEN A
MIRACLE
OCCURS
S. Harris

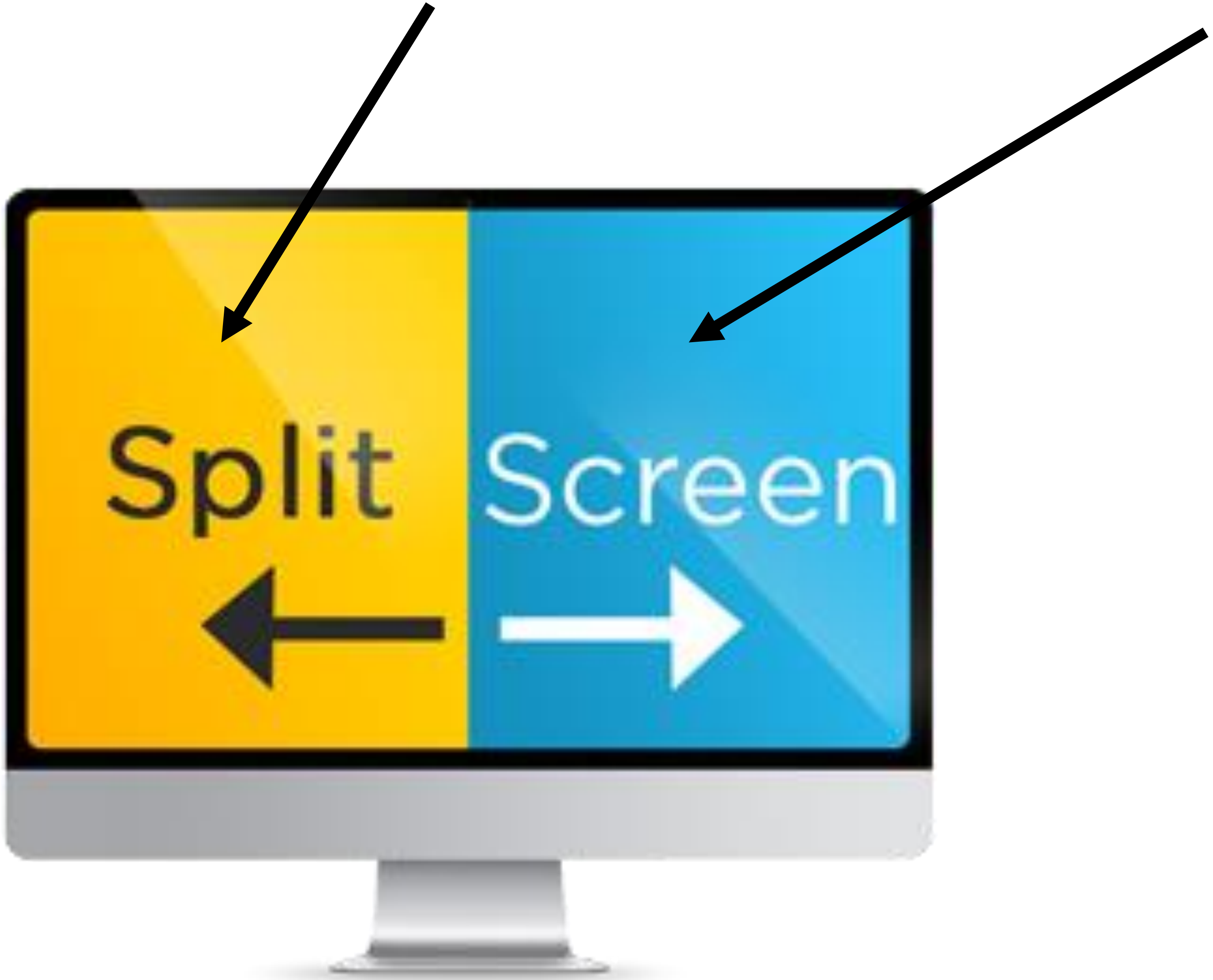
‘I think you should be clearer about step 2!’

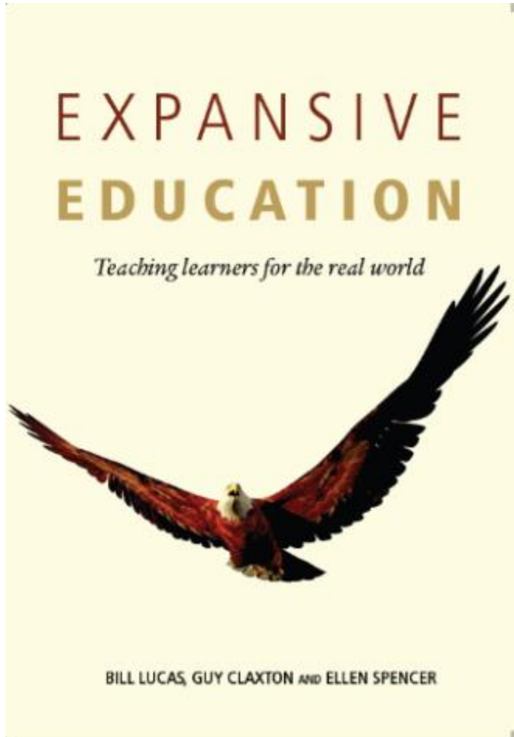
Three key approaches

.

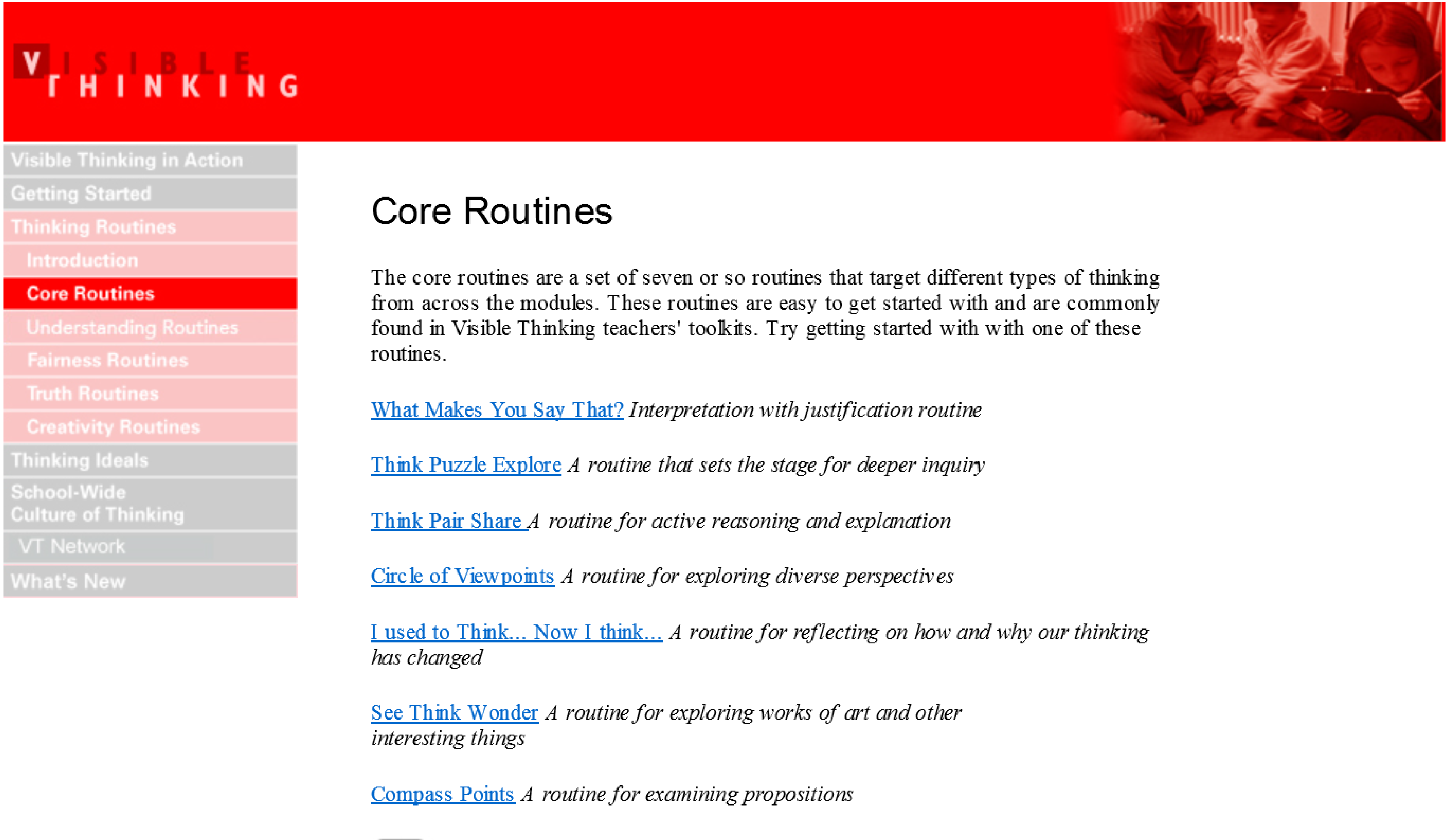
1. Split Screen Teaching
2. Visible Thinking
3. Signature Pedagogies

1. Teach knowledge *and* creativity


Split
Screen


EXPANSIVE
EDUCATION
Teaching learners for the real world
BILL LUCAS, GUY CLAXTON AND ELLEN SPENCER

2. Make creative thinking visible and habitual


VISIBLE THINKING
Visible Thinking in Action
Getting Started
Thinking Routines
Introduction
Core Routines
Understanding Routines
Fairness Routines
Truth Routines
Creativity Routines
Thinking Ideals
School-Wide Culture of Thinking
VT Network
What's New

Core Routines

The core routines are a set of seven or so routines that target different types of thinking from across the modules. These routines are easy to get started with and are commonly found in Visible Thinking teachers' toolkits. Try getting started with with one of these routines.

What Makes You Say That? *Interpretation with justification routine*

Think Puzzle Explore *A routine that sets the stage for deeper inquiry*

Think Pair Share *A routine for active reasoning and explanation*

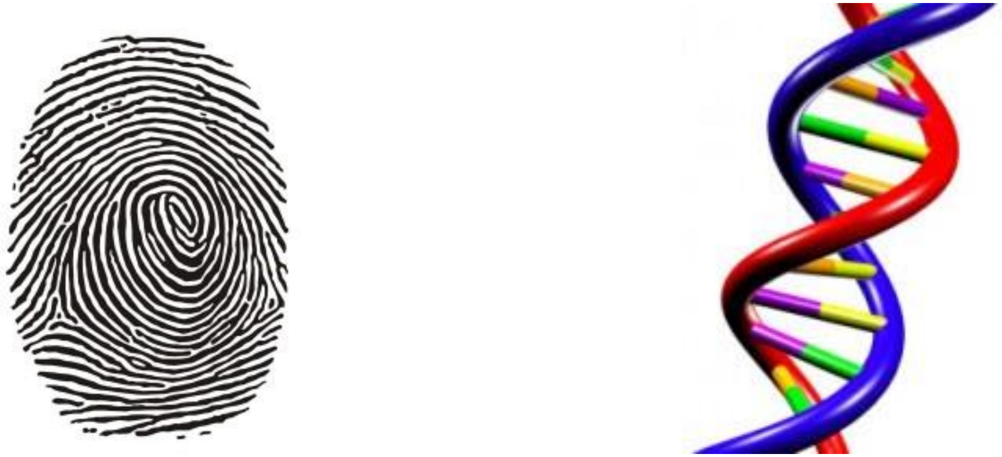
Circle of Viewpoints *A routine for exploring diverse perspectives*

I used to Think... Now I think... *A routine for reflecting on how and why our thinking has changed*

See Think Wonder *A routine for exploring works of art and other interesting things*

Compass Points *A routine for examining propositions*

3. Use signature pedagogies



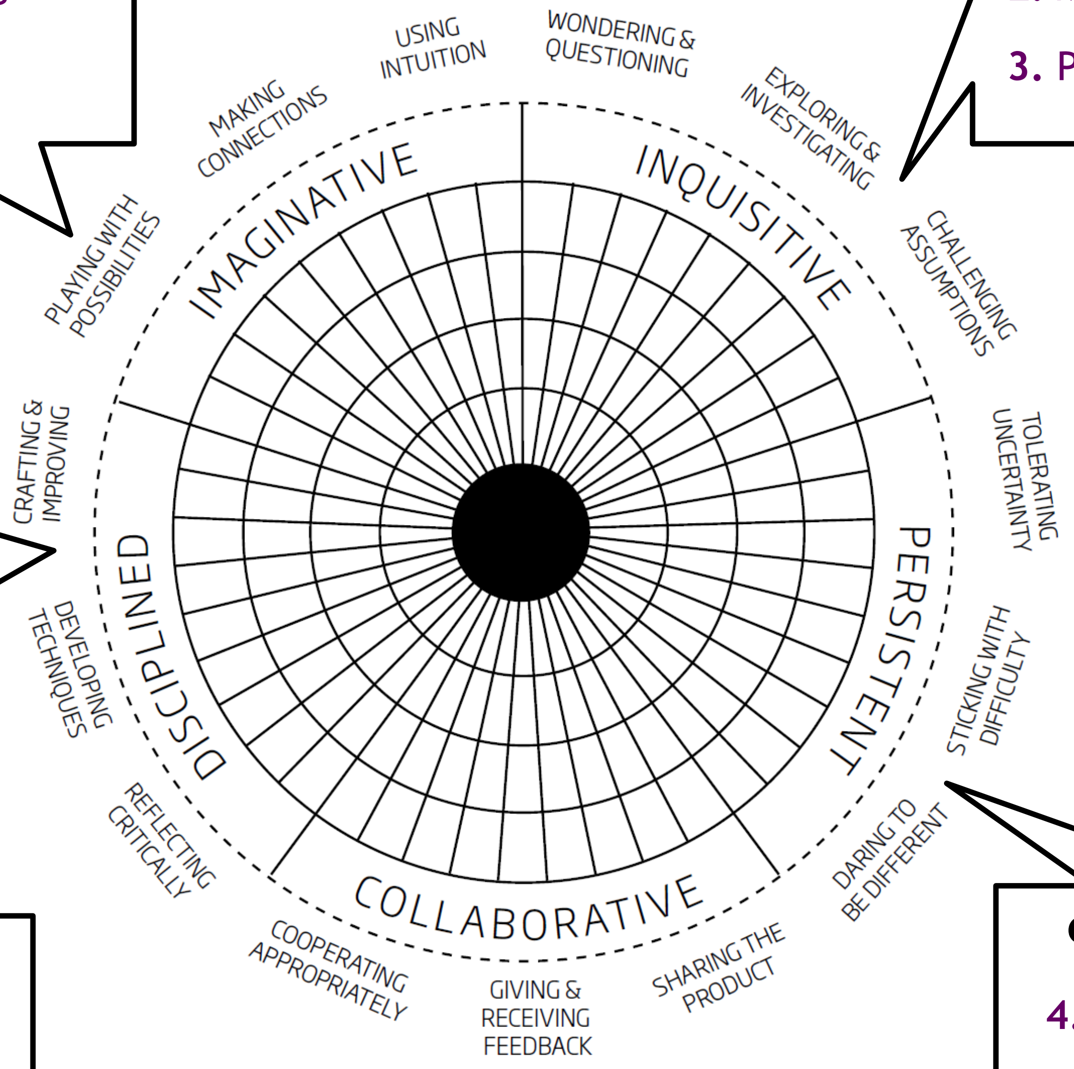
Lee Shulman (2005) Signature pedagogies in the professions. *Daedelus*, 134, 52-59

Playful Experimentation

13. Possibility Thinking
14. Process mapping
15. Meditation

Problem-based Learning

1. Questioning techniques
2. Mantle of the Expert
3. Philosophy for Children


USING INTUITION
WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
INQUISITIVE
CHALLENGING ASSUMPTIONS
TOLERATING UNCERTAINTY
PERSISTENT
STICKING WITH DIFFICULTY
DARING TO BE DIFFERENT
SHARING THE PRODUCT
GIVING & RECEIVING FEEDBACK
COLLABORATIVE
COOPERATING APPROPRIATELY
REFLECTING CRITICALLY
DEVELOPING TECHNIQUES
DISCIPLINED
CRAFTING & IMPROVING
PLAYING WITH POSSIBILITIES
IMAGINATIVE
MAKING CONNECTIONS

Deliberate Practice

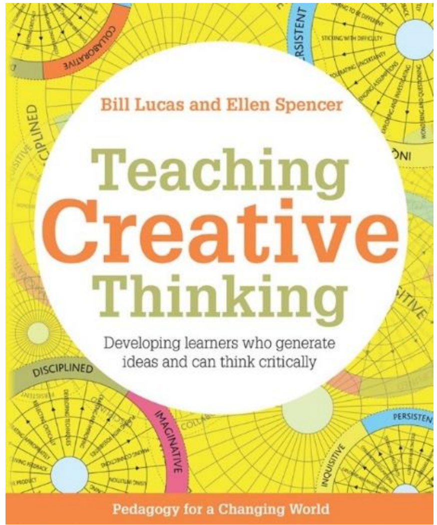
10. Drafting
11. Expert demonstration
12. Student feedback

Classroom as Learning Community

7. Group working
8. Peer teaching
9. Authentic assessment

Growth mindset

4. Role play and simulation
5. Reframing
6. Perspective taking


Bill Lucas and Ellen Spencer

Teaching Creative Thinking

Developing learners who generate ideas and can think critically

Pedagogy for a Changing World

Examples of signature pedagogies

- Project-based learning
- Research-based learning
- Creative partnerships
- Design thinking
- Montessori
- Studio thinking
- Dialogic teaching

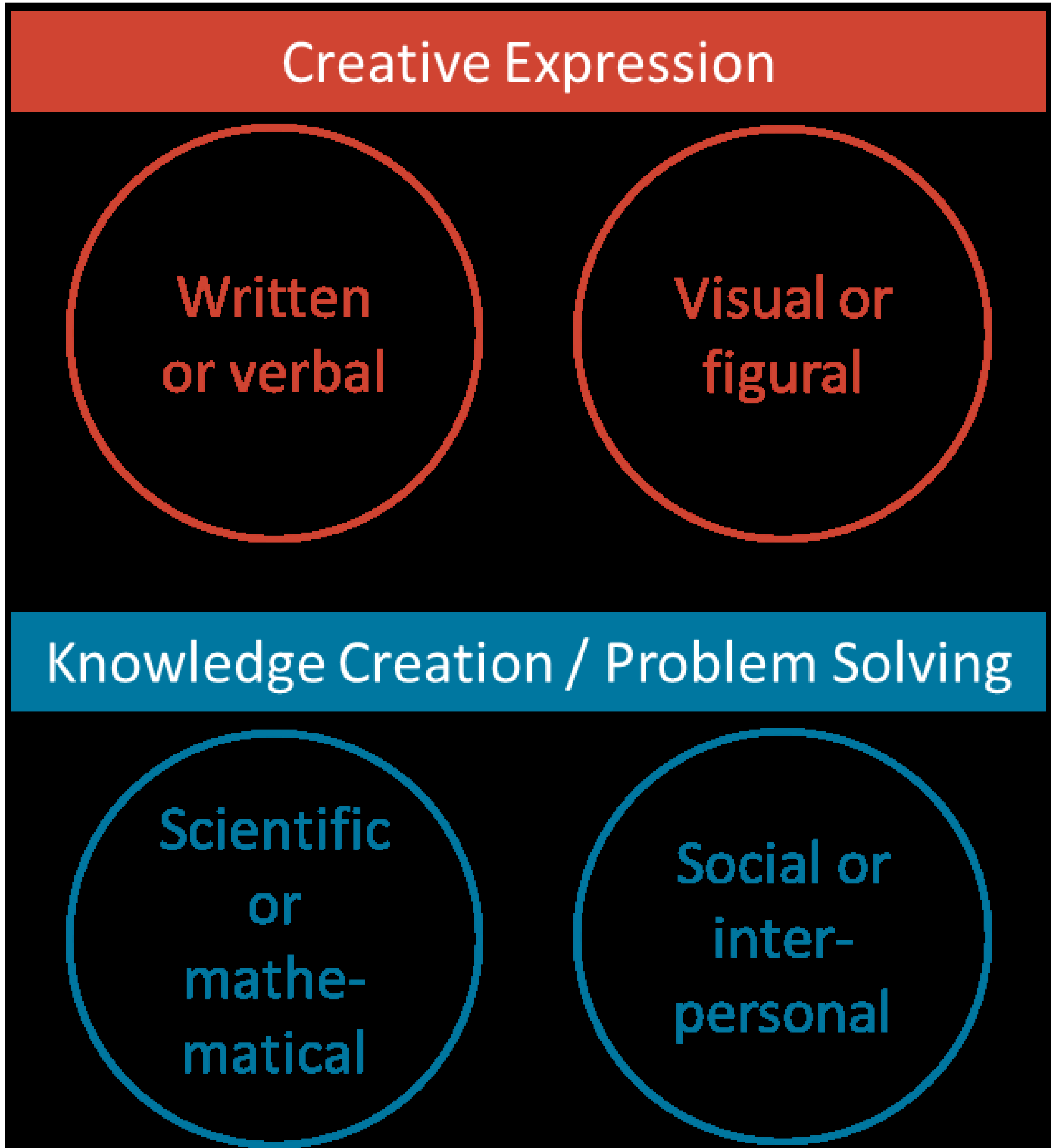
Some key methods

case studies
problem-based learning
thinking routines
philosophy for children
role play
games
deep questions
teacher modelling
authentic tasks
thinking out loud
peer teaching
coaching
self-managed projects
enquiry-led teaching

To Do List

- ☑ AGREE A CLEAR DEFINITION
- ☑ AGREE HOW IT FITS WITH FORMAL AND INFORMAL CURRICULA
- ☑ AGREE CULTURAL IMPLICATIONS
- ☑ TIMETABLING
- ☑ PEDAGOGY
- ☑ ASSESSMENT
- ☐
- ☐
- ☐
- ☐

PISA Creative Thinking, 2021



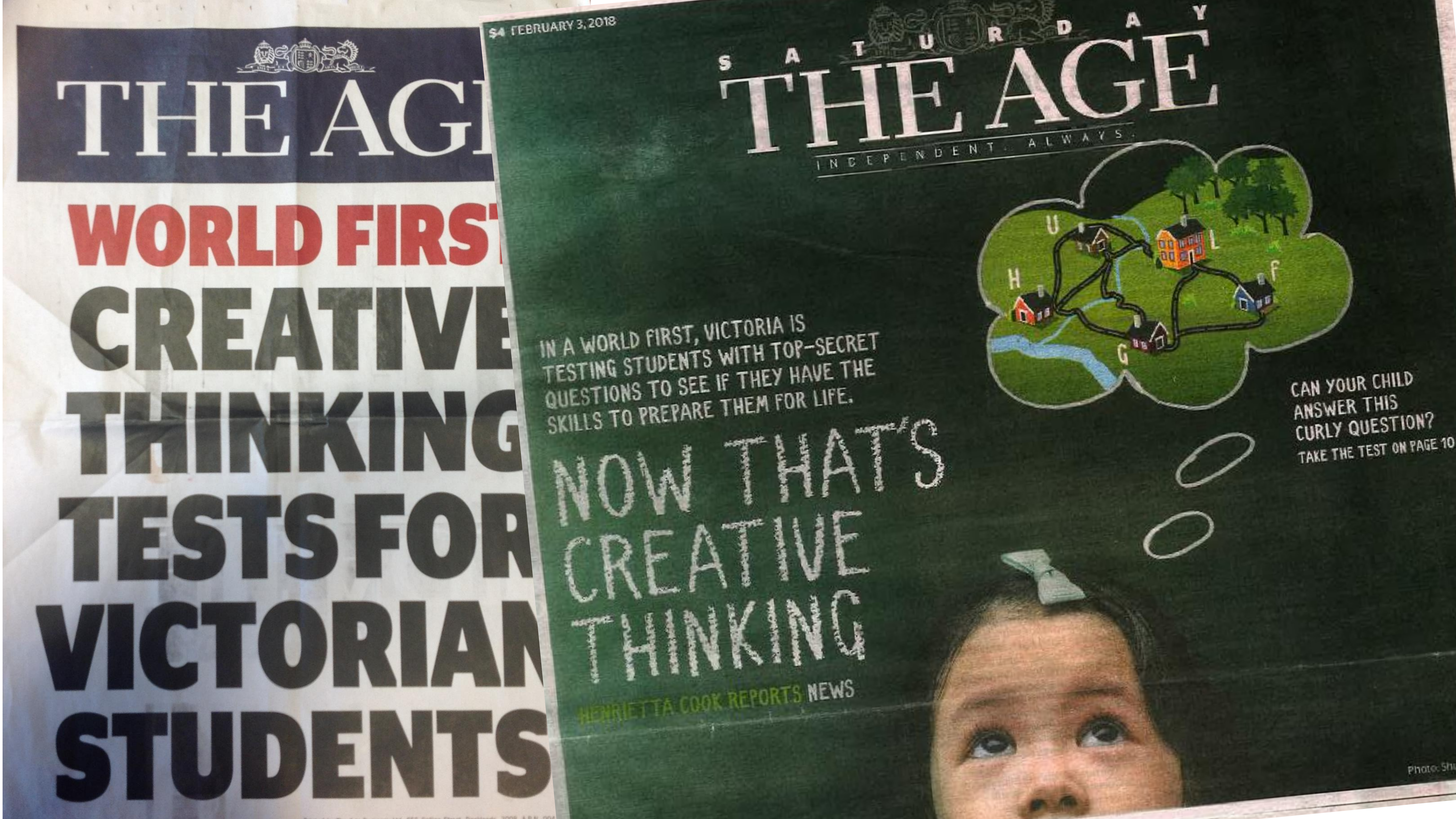
Creative Expression

- Written or verbal
- Visual or figural

Knowledge Creation / Problem Solving

- Scientific or mathematical
- Social or interpersonal

OECD
PISA



THE AG

WORLD FIRST

CREATIVE THINKING TESTS FOR VICTORIAN STUDENTS

$4 FEBRUARY 3, 2018

SATURDAY
THE AGE
INDEPENDENT. ALWAYS.

IN A WORLD FIRST, VICTORIA IS TESTING STUDENTS WITH TOP-SECRET QUESTIONS TO SEE IF THEY HAVE THE SKILLS TO PREPARE THEM FOR LIFE.

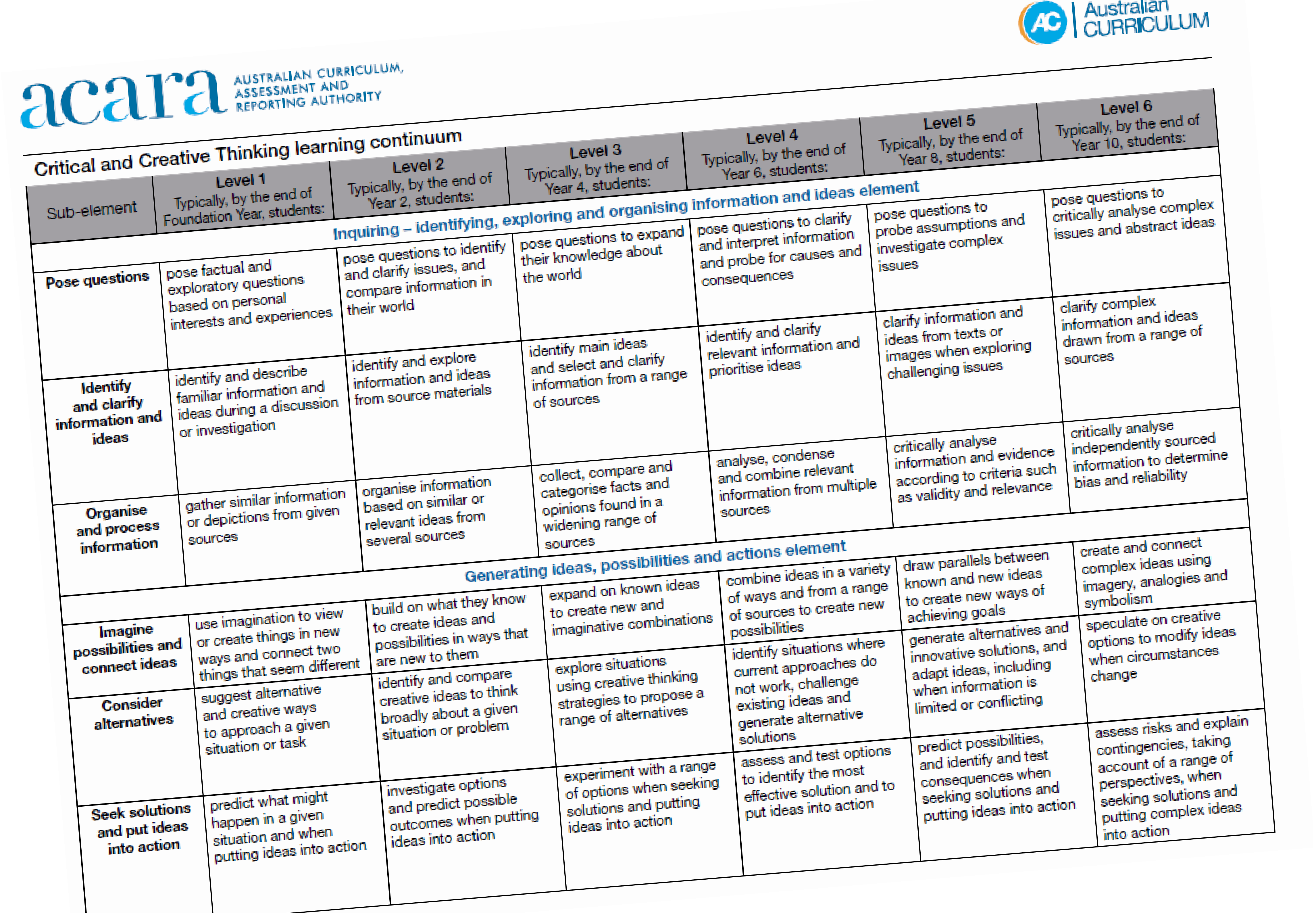
NOW THAT'S CREATIVE THINKING

HENRIETTA COOK REPORTS NEWS

CAN YOUR CHILD ANSWER THIS CURLY QUESTION?

TAKE THE TEST ON PAGE 10

Photo: Shu



Australian CURRICULUM

acara AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

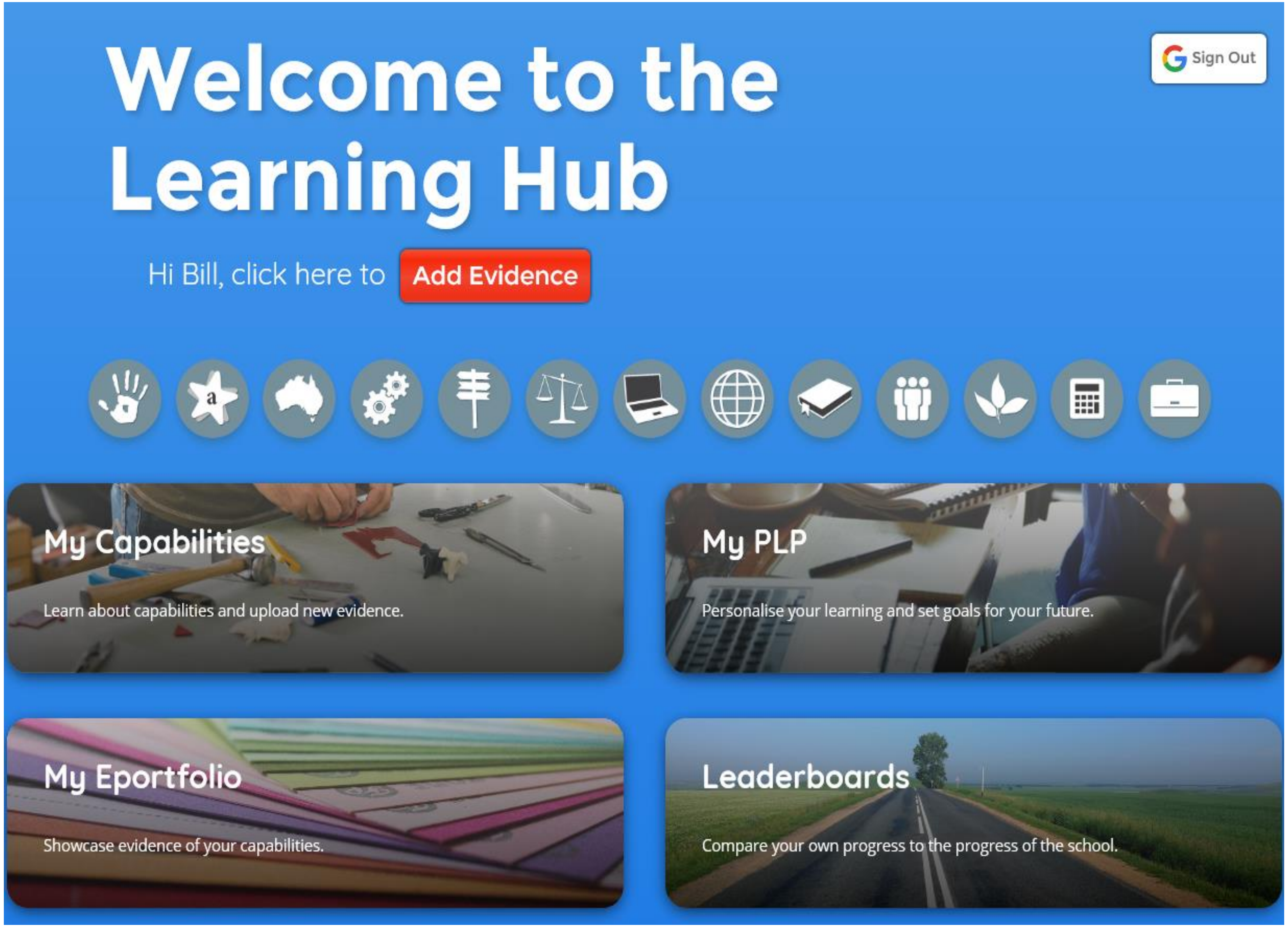
Critical and Creative Thinking learning continuum

Sub-element	Level 1 Typically, by the end of Foundation Year, students:	Level 2 Typically, by the end of Year 2, students:	Level 3 Typically, by the end of Year 4, students:	Level 4 Typically, by the end of Year 6, students:	Level 5 Typically, by the end of Year 8, students:	Level 6 Typically, by the end of Year 10, students:
Inquiring – identifying, exploring and organising information and ideas element						
Pose questions	pose factual and exploratory questions based on personal interests and experiences	pose questions to identify and clarify issues, and compare information in their world	pose questions to expand their knowledge about the world	pose questions to clarify and interpret information and probe for causes and consequences	pose questions to probe assumptions and investigate complex issues	pose questions to critically analyse complex issues and abstract ideas
Identify and clarify information and ideas	identify and describe familiar information and ideas during a discussion or investigation	identify and explore information and ideas from source materials	identify main ideas and select and clarify information from a range of sources	identify and clarify relevant information and prioritise ideas	clarify information and ideas from texts or images when exploring challenging issues	clarify complex information and ideas drawn from a range of sources
Organise and process information	gather similar information or depictions from given sources	organise information based on similar or relevant ideas from several sources	collect, compare and categorise facts and opinions found in a widening range of sources	analyse, condense and combine relevant information from multiple sources	critically analyse information and evidence according to criteria such as validity and relevance	critically analyse independently sourced information to determine bias and reliability
Generating ideas, possibilities and actions element						
Imagine possibilities and connect ideas	use imagination to view or create things in new ways and connect two things that seem different	build on what they know to create ideas and possibilities in ways that are new to them	expand on known ideas to create new and imaginative combinations	combine ideas in a variety of ways and from a range of sources to create new possibilities	draw parallels between known and new ideas to create new ways of achieving goals	create and connect complex ideas using imagery, analogies and symbolism
Consider alternatives	suggest alternative and creative ways to approach a given situation or task	identify and compare creative ideas to think broadly about a given situation or problem	explore situations using creative thinking strategies to propose a range of alternatives	identify situations where current approaches do not work, challenge existing ideas and generate alternative solutions	generate alternatives and innovative solutions, and adapt ideas, including when information is limited or conflicting	speculate on creative options to modify ideas when circumstances change
Seek solutions and put ideas into action	predict what might happen in a given situation and when putting ideas into action	investigate options and predict possible outcomes when putting ideas into action	experiment with a range of options when seeking solutions and putting ideas into action	assess and test options to identify the most effective solution and to put ideas into action	predict possibilities, and identify and test consequences when seeking solutions and putting ideas into action	assess risks and explain contingencies, taking account of a range of perspectives, when seeking solutions and putting complex ideas into action

Approaches to assessing creativity

PUPIL	TEACHER	REAL WORLD	ONLINE
Real-time feedback Photos Self-report questionnaires Logs/diaries/journals Peer review Group critique Digital badges Portfolios	In-process evaluation Criterion-referenced grading Performance tasks Rating of products and processes Structured interviews Capstone projects	Expert reviews Authentic tests eg presentations, interviews podcasts films Gallery critique Exhibitions	Reliable, validated online tests

An example from Rooty Hill High School



Welcome to the Learning Hub

Hi Bill, click here to

My Capabilities

Learn about capabilities and upload new evidence.

My PLP

Personalise your learning and set goals for your future.

My Eportfolio

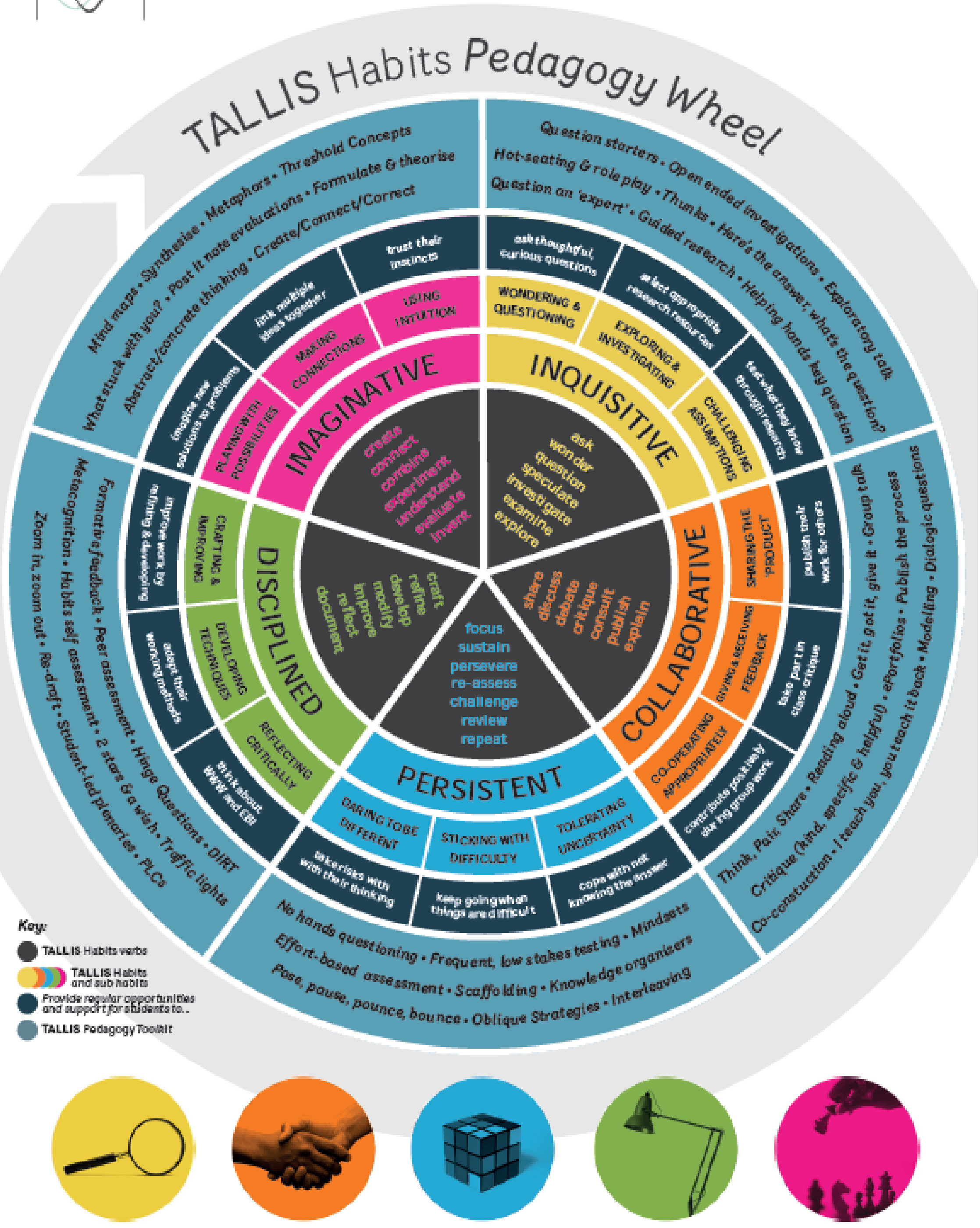
Showcase evidence of your capabilities.

Leaderboards

Compare your own progress to the progress of the school.

THOMAS TALLIS SCHOOL

Education to understand the world and change it for the better



TALLIS Habits Pedagogy Wheel

Mind maps • Synthesise • Metaphors • Threshold Concepts
What stuck with you? • Post it note evaluations • Formulate & theorise
Abstract/concrete thinking • Create/Connect/Correct

trust their instincts
link multiple ideas together
imagine new solutions to problems

USING INTUITION
MAKING CONNECTIONS
PLAYING WITH POSSIBILITIES

IMAGINATIVE

create
connect
combine
experiment
understand
evaluate
invent

Question starters • Open ended investigations • Exploratory talk
Hot-seating & role play • Thunks • Here's the answer, what's the question?
Question an 'expert' • Guided research • Helping hands key question

ask thoughtful, curious questions
select appropriate research resources
test what they know through research

WONDERING & QUESTIONING
EXPLORING & INVESTIGATING
CHALLENGING ASSUMPTIONS

INQUISITIVE

ask
wonder
question
speculate
investigate
examine
explore

Think, Pair, Share • Reading aloud • Get it, got it, give it • Group talk
Critique (kind, specific & helpful) • ePortfolios • Publish the process
Co-constuction • I teach you, you teach it back • Modelling • Dialogic questions

publish their work for others
take part in class critique
contribute positively during group work

SHARING THE 'PRODUCT'
GIVING & RECEIVING FEEDBACK
CO-OPERATING APPROPRIATELY

COLLABORATIVE

share
discuss
debate
critique
consult
publish
explain

No hands questioning • Frequent, low stakes testing • Mindsets
Effort-based assessment • Scaffolding • Knowledge organisers
Pose, pause, pounce, bounce • Oblique Strategies • Interleaving

take risks with with their thinking
keep going when things are difficult
cope with not knowing the answer

DARING TO BE DIFFERENT
STICKING WITH DIFFICULTY
TOLERATING UNCERTAINTY

PERSISTENT

focus
sustain
persevere
re-assess
challenge
review
repeat

Formative feedback • Peer assessment • Hinge Questions • DIRT
Metacognition • Habits self assessment • 2 stars & a wish • Traffic lights
Zoom in, zoom out • Re-draft • Student-led plenaries • PLCs

improve work by refining & developing
adapt their working methods
think about WWW and EBI

CRAFTING & IMPROVING
DEVELOPING TECHNIQUES
REFLECTING CRITICALLY

DISCIPLINED

craft
refine
develop
modify
improve
reflect
document

Key:
- ● **TALLIS** Habits verbs
- ● **TALLIS** Habits and sub habits
- ● Provide regular opportunities and support for students to...
- ● **TALLIS** Pedagogy Toolkit

The **TALLIS** Habits are based on Lucas, Spencer, and Claxton (2013) *Progression in Student Creativity in School* OECD Publishing.

TALLIS HABITS

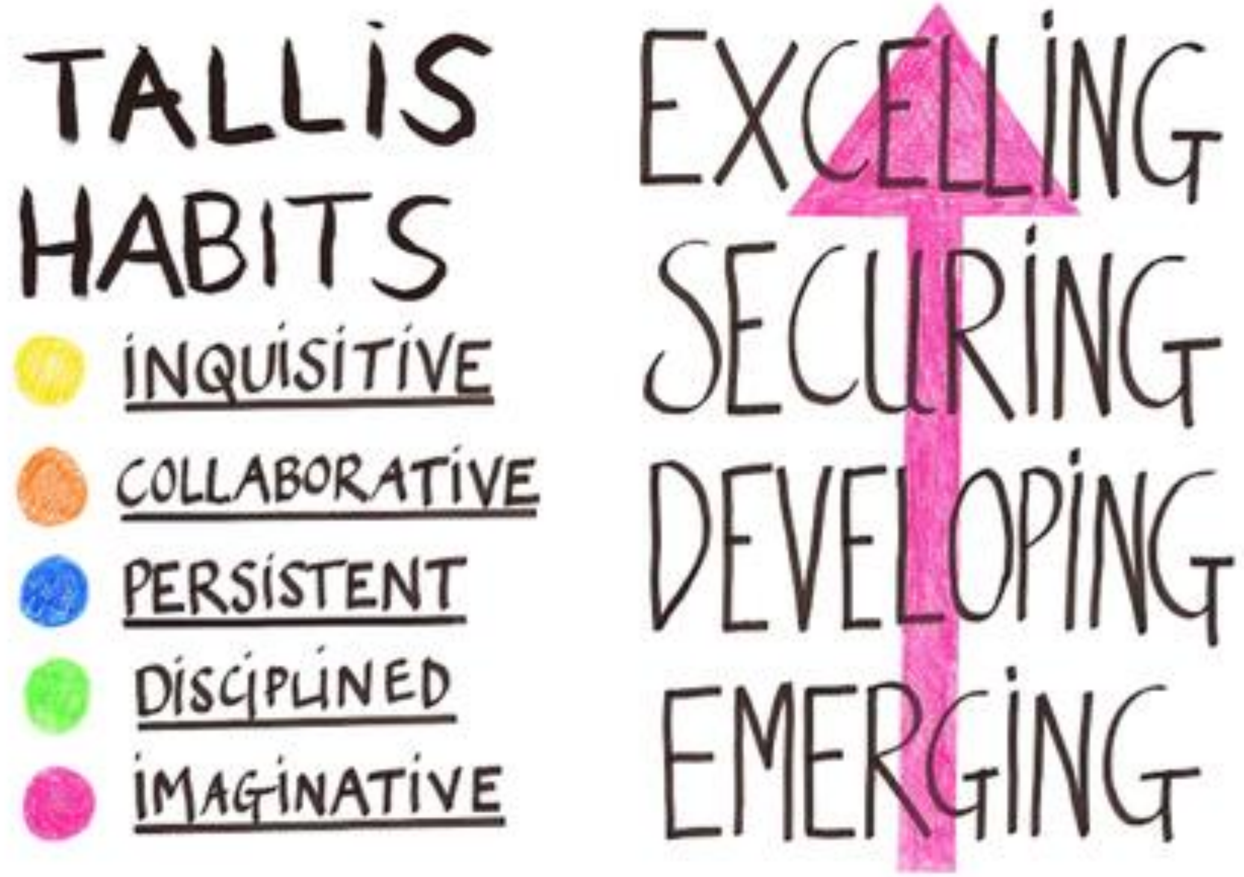
The new Tallis Habits web app is a fun and interactive way to record how you are learning.

The Habits focus for this half term is **IMAGINATIVE.**

IMAGINATIVE:
Using intuition
Making connections
Playing with possibilities

Download the **TALLIS ONLINE** APP

Available on the iPhone App Store



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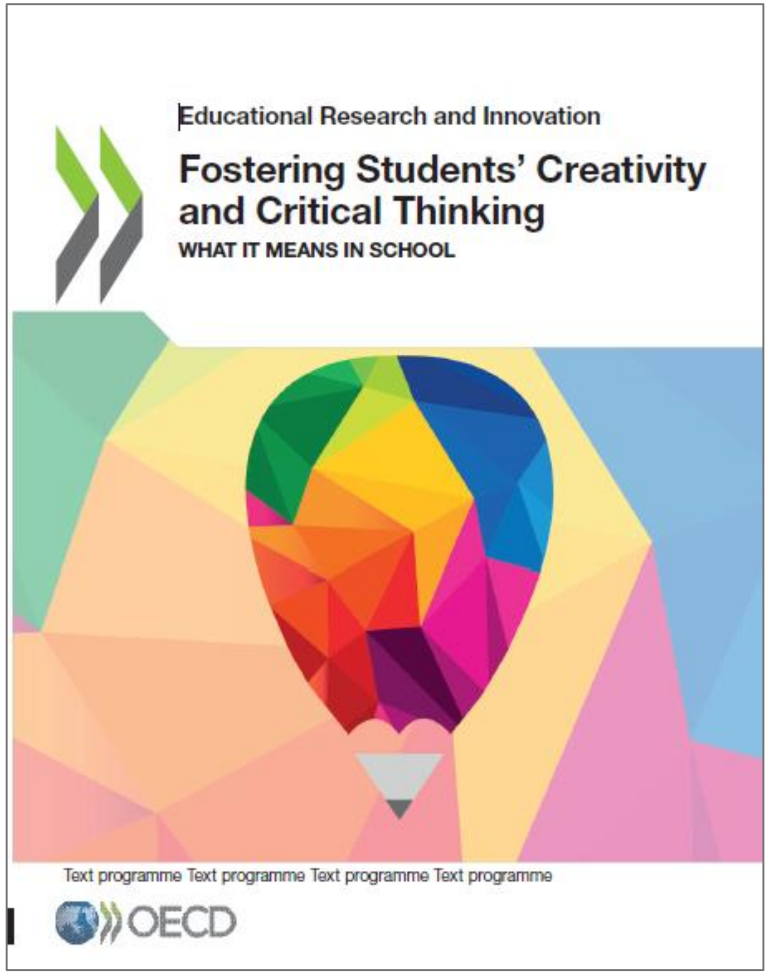
- ☑ PROFESSIONAL LEARNING
- ☐
- ☐
- ☐

Fostering Students’ Creativity and Critical Thinking

- Creativity and critical thinking can be learnt and assessed in all subjects
- We need to be intentional and thus clear about what we try to achieve: rubrics help clarify
- Teachers need support: professional learning opportunities and scaffolding (resources, examples, peer learning, etc.)
- It is not easy, it takes time, but it is feasible – and real teachers in real-life settings have already done it
- There are many different ways to do it (and just starting to move the needle is an important step)



Educational Research and Innovation

Fostering Students’ Creativity and Critical Thinking

WHAT IT MEANS IN SCHOOL

Text programme Text programme Text programme Text programme

OECD

To Do List

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- ☑ ASSESSMENT
- ☑ PROFESSIONAL LEARNING
- ☑ CREATE/IMPLEMENT A NATIONAL STRATEGY FOR ENGLAND
- ☐
- ☐

Learning from Australia

1. Make a strong, evidence-based case for the value of capabilities to employers, parents and educators

2. Consider capabilities across the continuum from the early years through to post-school education

3. Simplify existing learning continua for the general capabilities

4. Create clear case studies to show how capabilities can be fostered through education

5. Enable professional networks to share effective practices

6. Draw on existing promising practices to create guidance on the assessment of the general capabilities

7. Provide support for principals and leaders to exercise instructional leadership in the development of capabilities

8. Create an evidence base to promote sharing, innovation, and widespread practice improvement

MITCHELL REPORT NO. 03/2018

The capable country

Cultivating capabilities in Australian education

OCTOBER 2018

Bill Lucas
Charlene Smith

OECD project on fostering and assessing students’ creativity and critical thinking

1. Articulate a common **international language**
2. Develop an exemplary **bank of pedagogical resources** to teach and assess creativity and critical thinking as part of countries’ (current) curriculum
3. Develop **professional development plans**
4. Develop and pilot **evaluation instruments** to measure the effects of pedagogical practices on pedagogies, beliefs, social and behavioural skills, and standardised measures of creativity and academic achievement

To Do List

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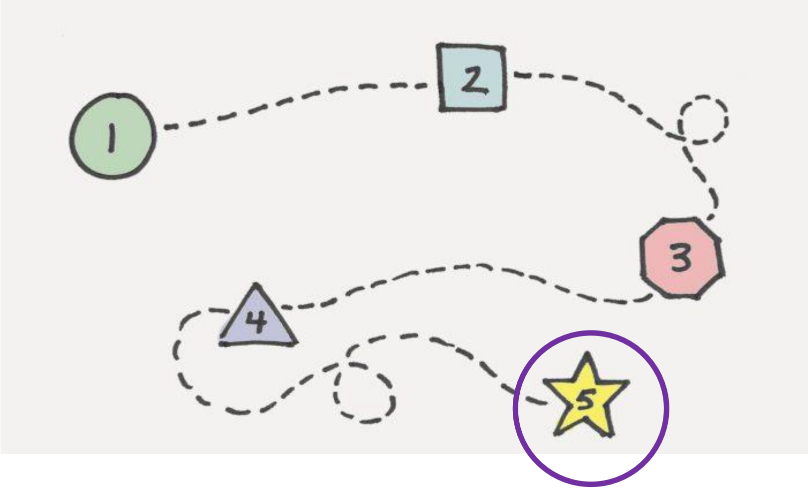
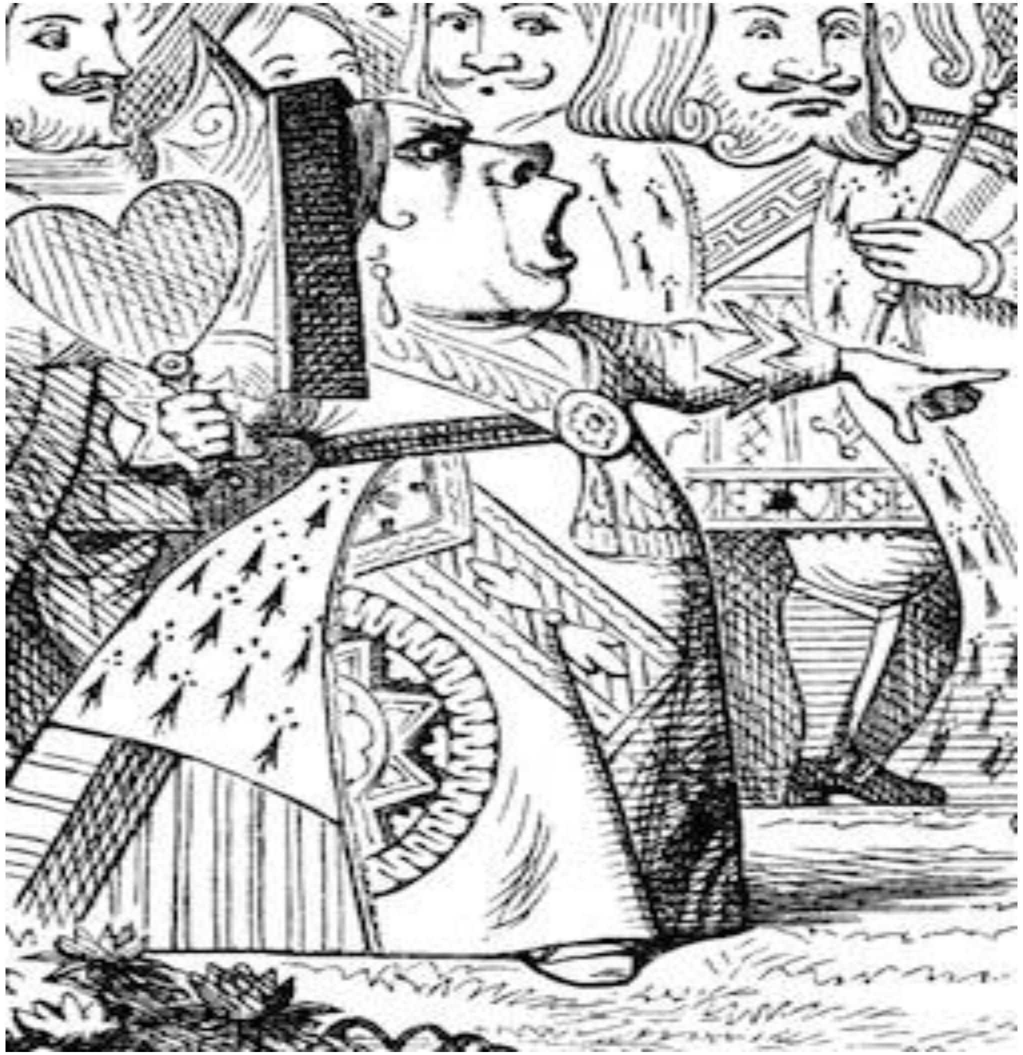
- ☑ CREATE/IMPLEMENT A NATIONAL STRATEGY FOR ENGLAND
- ☑ ???
- ☐



5. Discussion

Shifting the paradigm?



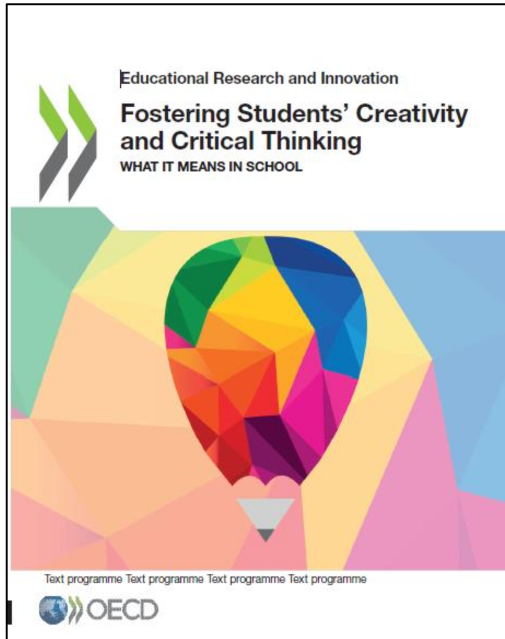
Alice laughed:

"There's no use trying," she said; "one can't believe **impossible things**."

"I daresay you haven't had much practice," said the **Queen**.

"When I was younger, I always did it for half an hour a day. Sometimes I've believed as many as six **impossible things** before breakfast."

Lewis Carroll, *Through the Looking Glass*, 1871



Educational Research and Innovation

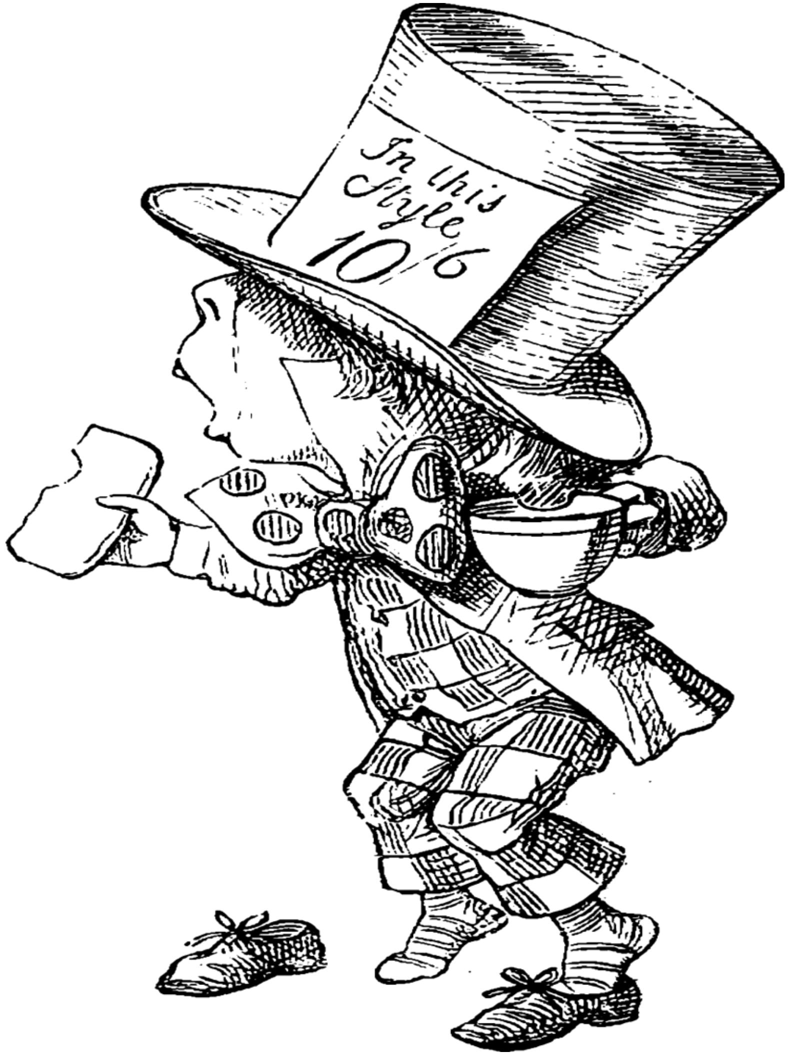
Fostering Students' Creativity and Critical Thinking

WHAT IT MEANS IN SCHOOL

Text programme Text programme Text programme Text programme

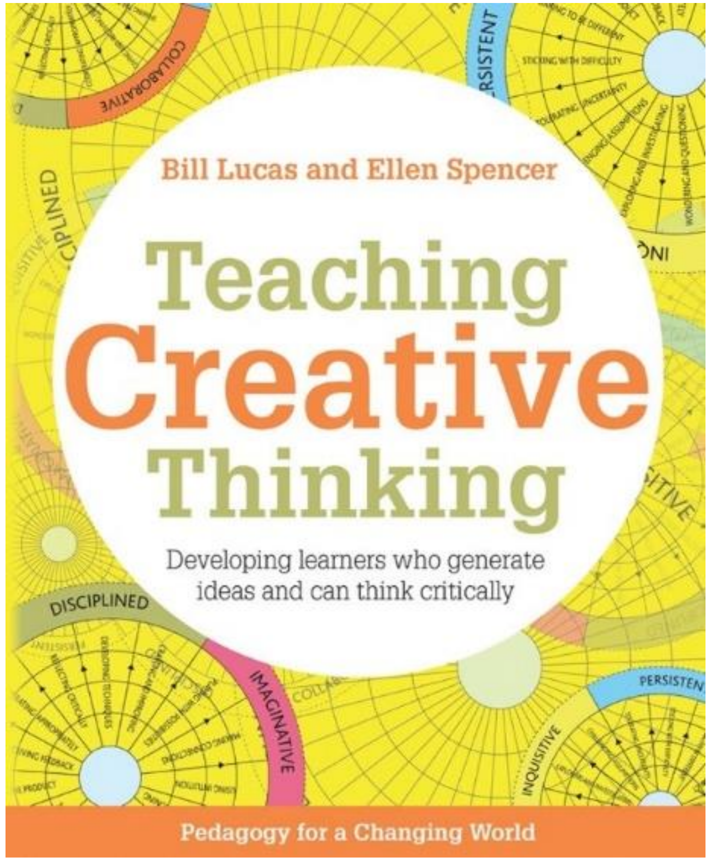
OECD

… but it is possible


In this Style 10/6

Alice:
This is impossible.

The Mad Hatter:
Only if you believe it is.


Bill Lucas and Ellen Spencer

Teaching Creative Thinking

Developing learners who generate ideas and can think critically

Pedagogy for a Changing World

COLLABORATIVE
DISCIPLINED
IMAGINATIVE
INQUISITIVE
PERSISTENT

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www.winchester.ac.uk/realworldlearning
www.educatingruby.org

@LucasLearn @Pedagogy4Change

UNIVERSITY OF
WINCHESTER
CENTRE FOR REAL-WORLD LEARNING