

GUIDING PRINCIPLES FOR LEARNING IN THE 21ST CENTURY



Conrad Hughes

1. THE JOURNEY

2. THE PRINCIPLES

3. CHALLENGES

Conrad Hughes

ARTICLE

International education and the International Baccalaureate Diploma Programme

A view from the perspective of postcolonial thought

CONRAD HUGHES

International School of Geneva, Switzerland

Article

JRIE
JOURNAL OF RESEARCH IN
INTERNATIONAL EDUCATION
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(www.sagepublications.com)
VOL. 8(2) 123-142 ISSN 1475-2409
DOI: 10.1177/1475240909305201



UNESDOC

1/1

Title: How can international education help reduce students' prejudice?

Series: Prospects: quarterly review of comparative education

Other lang. series issues: Perspectives: revue trimestrielle d'éducation comparée; Perspectivas:

Series (vol/issues): XLIV(44), 3 / 171

Author: Hughes, Conrad

Creative Education

2012, Vol.3, No.3, 334-340

Published Online June 2012 in SciRes (<http://www.SciRP.org/journal/ce>)



<http://dx.doi.org/10.4236/ce.2012.33053>

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Journal of Research in
International Education
2014, Vol. 13(3) 203-217
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DOI: 10.1177/1475240914550783
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A critical analysis of the International Baccalaureate's Middle Years Programme assessment design with particular focus on feedback

Conrad Hughes

International School of Geneva, Switzerland

Article

JRIE

Journal of Research in
International Education
2014, Vol. 13(1) 30-45
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DOI: 10.1177/1475240914528084
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Theory of Knowledge aims, objectives and assessment criteria: An analysis of critical thinking descriptors

Conrad Hughes

International School of Geneva, Switzerland

Passion for Beauty: A Model for Learning

Conrad Hughes

International School of Geneva, Geneva, Switzerland



Dedicated EXCLUSIVELY to UK secondary education

HOME NEWS BEST PRACTICE BLOG SUPPLEMENTS ABOUT LOGIN CONTACT

Home | Blog | Article



Teacher as leader

Published: 11 October 2012

Traditional teaching methods will not develop students' adaptability, innovation, resilience, critical-thinking or creativity. Dr Conrad Hughes reprises his recent lecture on the teacher as a leader of learning.



THE JOURNEY

5 STEPS

PARTNERSHIP



RESEARCH



CONCEPTUALISATION



ACTION



ASSESSMENT OF IMPACT

PARTNERSHIP



RESEARCH



Learning and competences for the 21st century

P. T. M. Marope

Assessment and the aims of the curriculum: An explorer's journey

Paul Black

Principles for learning and competences in the 21st-century curriculum

Clementina Acedo, Conrad Hughes

The curriculum debate: Why it is important today

Juan Carlos Tedesco, Renato Opertti, Massimo Amadio

The future of schooling: Children and learning at the edge of chaos

Sugata Mitra

Critical thinking for 21st-century education: A cyber-tooth curriculum?

Steve Higgins

Creativity in 21st-century education

Lynn D. Newton, Douglas P. Newton

Whole Mind education for the emerging future

Rama Mani, Scilla Elworthy, Meenakshi Gopinath, Jean Houston, Melissa Schwartz

The Integral University: Holistic development of individuals, communities, organisations and societies

Alexander Schieffer, Ronnie Lessem

Learning at the bottom of the pyramid: Constraints, comparability and policy in developing countries

Daniel A. Wagner, Nathan M. Cast



CONCEPTUALISATION

PANEL CONVENED

Range of disciplines
and age specialists

BACKGROUND READING, EXPERT
SEMINARS

Authority in the field

PANEL EVALUATIONS

Definition of items

Coherence with School policy

Multiple panels working
simultaneously

MONITORING & FEEDBACK

Master draft,
Whole school consultation,
expert feedback

PANEL EVALUATION

Final report

Further revision

ACTION



ASSESSMENT OF IMPACT

THE PRINCIPLES

◆ STANDARDS

Academic Honesty

Information Literacy

◆ CORE COMPETENCE DEVELOPMENT

Critical thinking

Creativity

Concepts-focussed learning

STEM learning

Service learning

Mindfulness

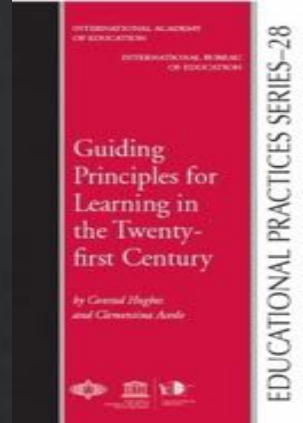
◆ SYSTEMS

Learning Support

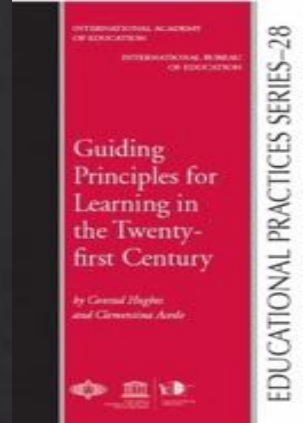
Assessment



1. ACADEMIC HONESTY



1. ACADEMIC HONESTY



2007: **60.8%** of polled college students admitted to cheating



16.5% of them didn't regret it

Council and Educational Testing Service :**41%** of Americans considered academic cheating a serious issue but **34%** of college officials considered academic cheating a serious issue

News > Politics

A-level exam 'leaks': Fury after maths and economics papers are 'disclosed' hours before tests

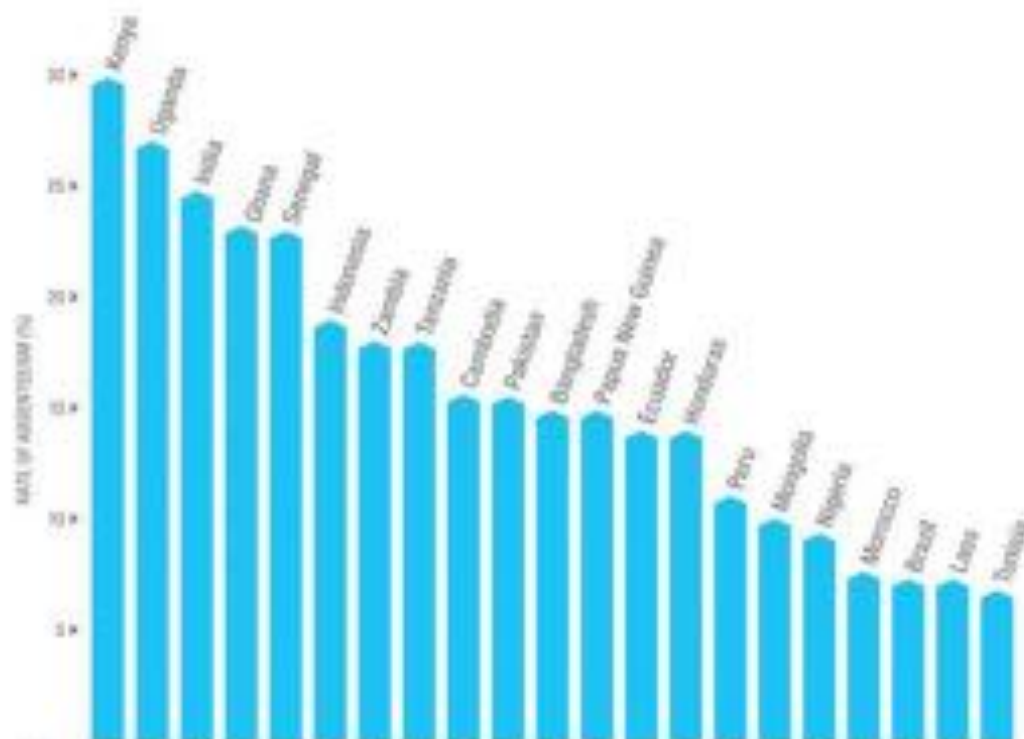
KATE PROCTOR | Monday 26 June 2017 19:32 |  2 comments



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The Evening Standard

HOW OFTEN DO TEACHERS MISS CLASS?

Survey findings of teachers absenteeism from 2004 to 2011



Source: World Bank

www.transparency.org

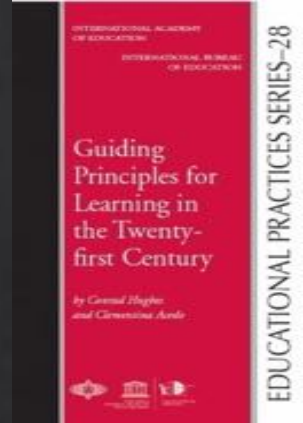
#HonestEducation

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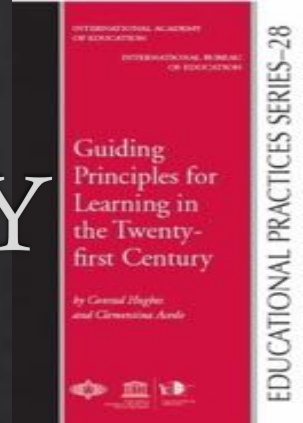


1. ACADEMIC HONESTY

deep understanding
creative task design
referencing



2. INFORMATION LITERACY



Every 60 seconds



98,000+ tweets



695,000 status updates



11 million instant messages



698,445 Google searches



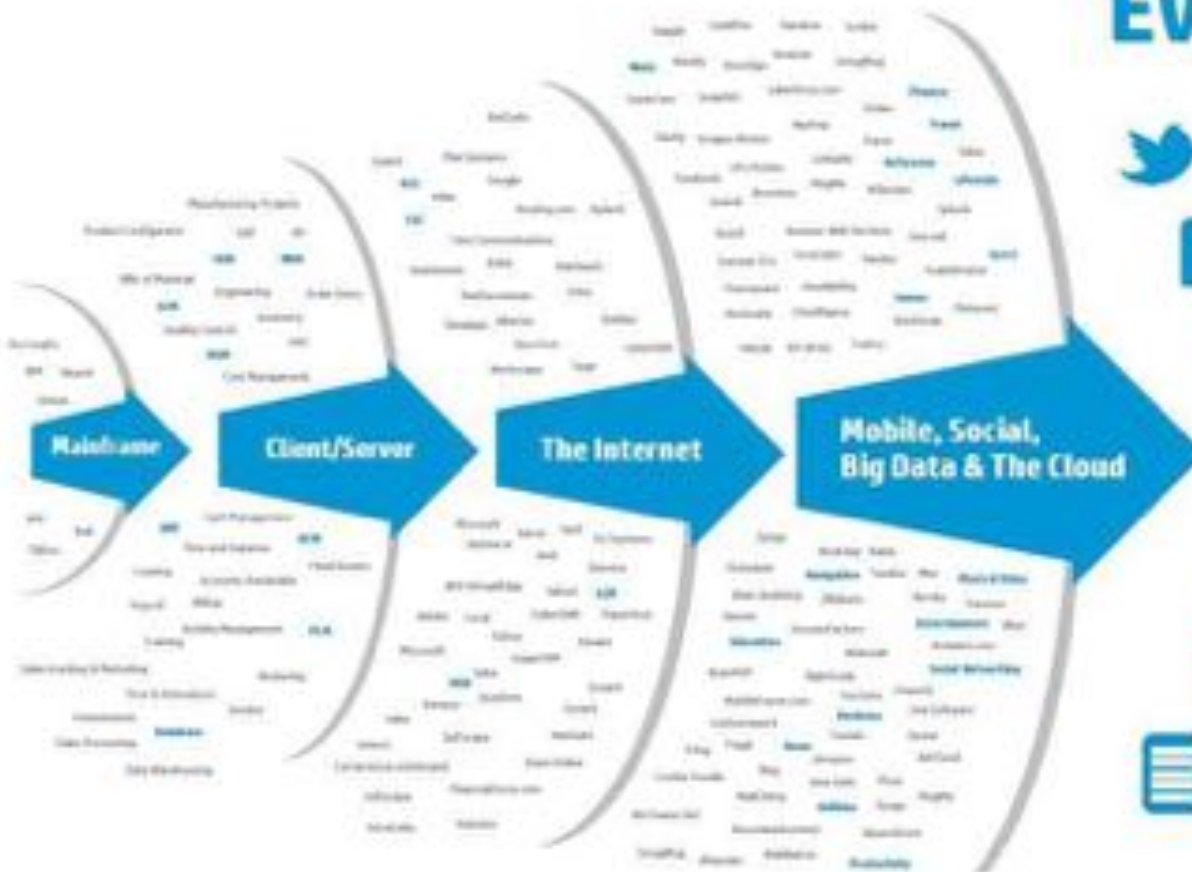
168 million+ emails sent



1,820TB of data created



217 new mobile web users



Data of the Internet of Things

BrontoByte

The digital universe
of tomorrow

10^{27}

ZettaByte

In 2016 1.3 ZB will
cross our digital networks daily

10^{21}

PetaByte

The CERN LHC
generates 1 PB per second

10^{15}

GigaByte

10^9

10^{12}

TeraByte - every day 500 TB
of data is added on Facebook

10^{18}

ExaByte

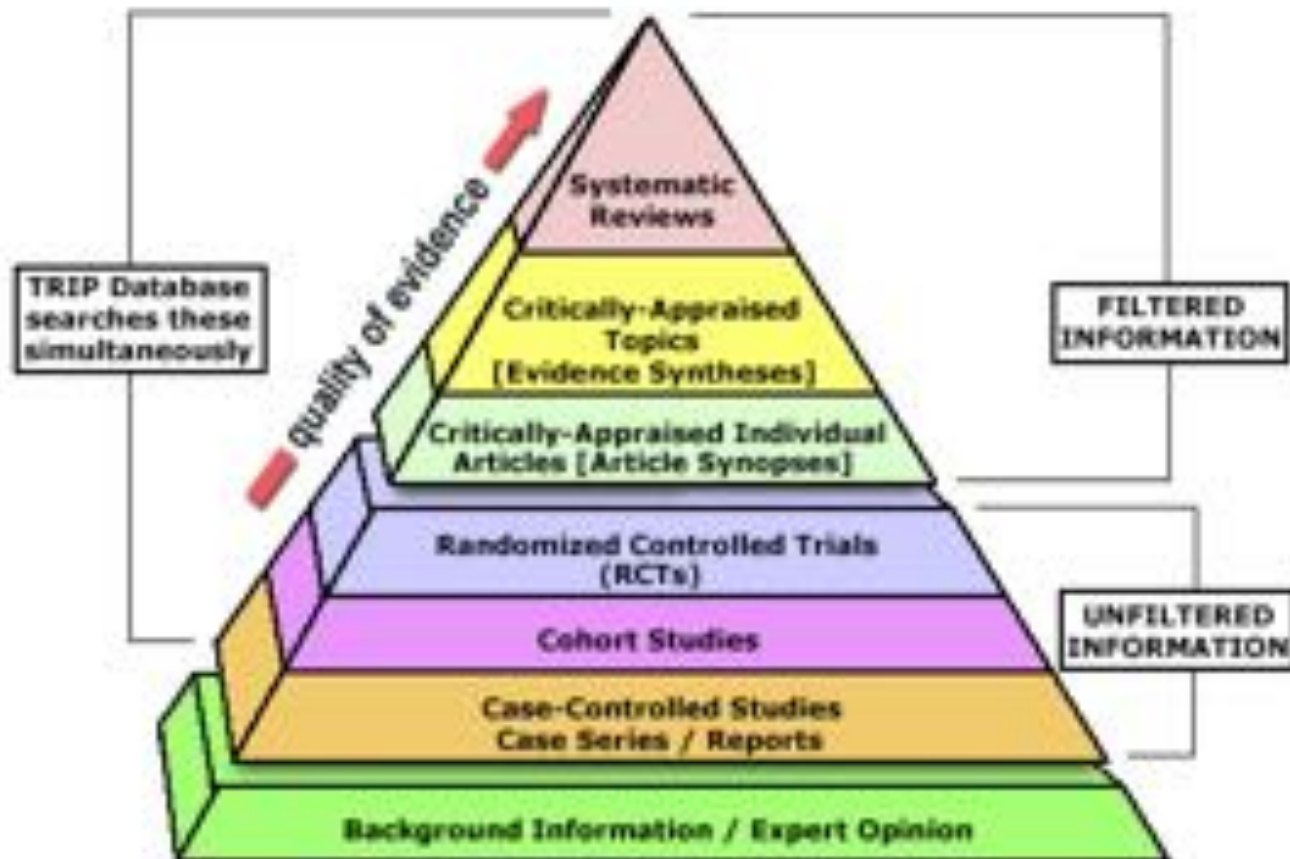
At the moment, every day 1 EB of data is created on the internet.
That is the equivalent of 250 million DVD's
The Square Kilometer Array Telescope will produce around 1 EB per day.

10^{24}

YottaByte

The digital universe today:
250 trillion DVD's

10^6
MegaByte

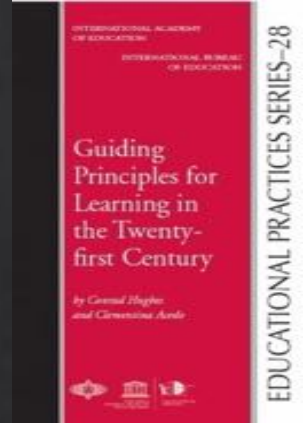


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2. INFORMATION LITERACY

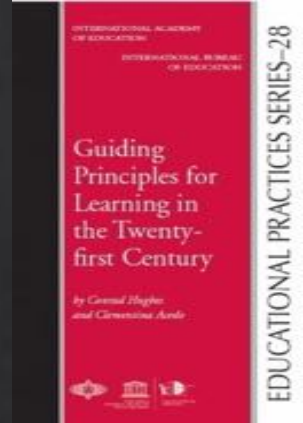
skilful in the use of new
technologies
internet safety
inquiry
collaboration

3. CRITICAL THINKING



FALLIBILITY

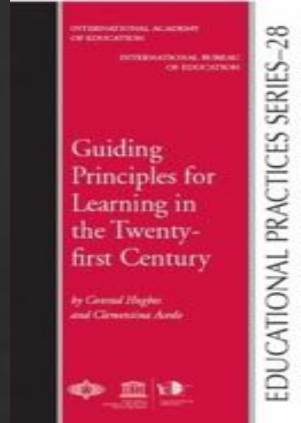
If a baseball and a bat cost \$1.10 together, and the bat costs \$1.00 more than the ball, how much does the ball cost?



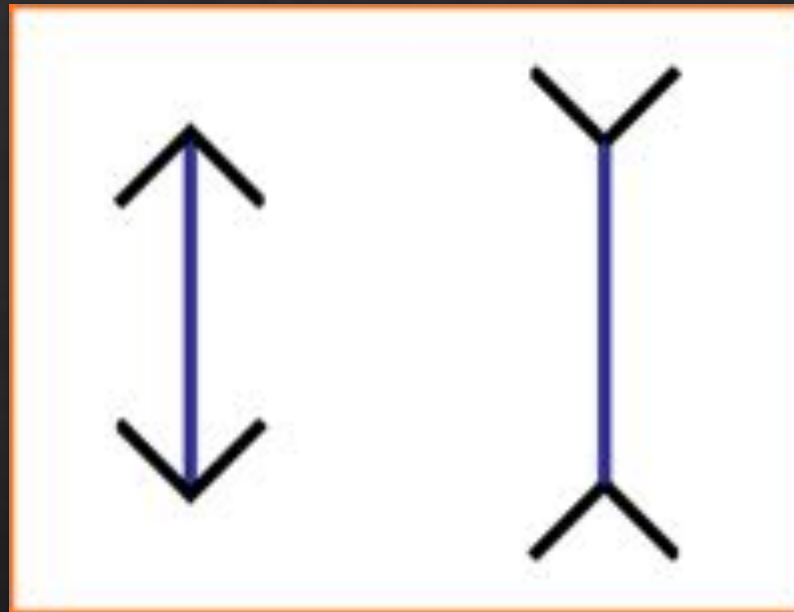
FALLIBILITY

More than **50%** of students
at Harvard, MIT, and
Princeton: wrong answer

(Kahneman, 2011)



FALLIBILITY



Müller-Lyer optical illusion

KNOWLEDGE OF HISTORY

Iran–Iraq War (1980–1988)

World War I (1914–1918)

Nigerian Civil War (1967–1970)

Second Sino-Japanese War (1937–1945)

Second Congo War (1998–2003)

Second Sino-Japanese War (1937–1945) :
20,000,000–25,000,000

World War I (1914–1918) : 8,545,800–
21,000,000

Second Congo War (1998–2003) :
2,500,000–5,400,000

Nigerian Civil War (1967–1970) :
1,000,000–3,000,000

Iran–Iraq War (1980–1988) : 289,220–
1,100,000

CRITERIA FOR TRUTH

What should we believe?

According to which criteria?

“the largest audience ever to witness an inauguration, period, both in person and around the globe”

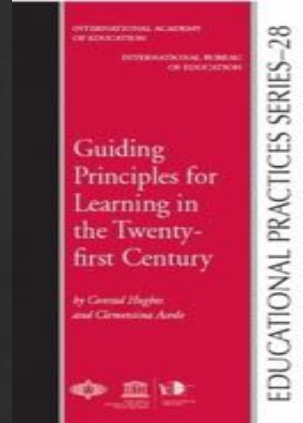


3. CRITICAL THINKING

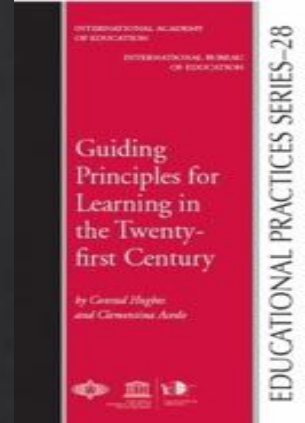
knowledge

good thinking

high-gain/low-risk learning
environment



4. CREATIVITY



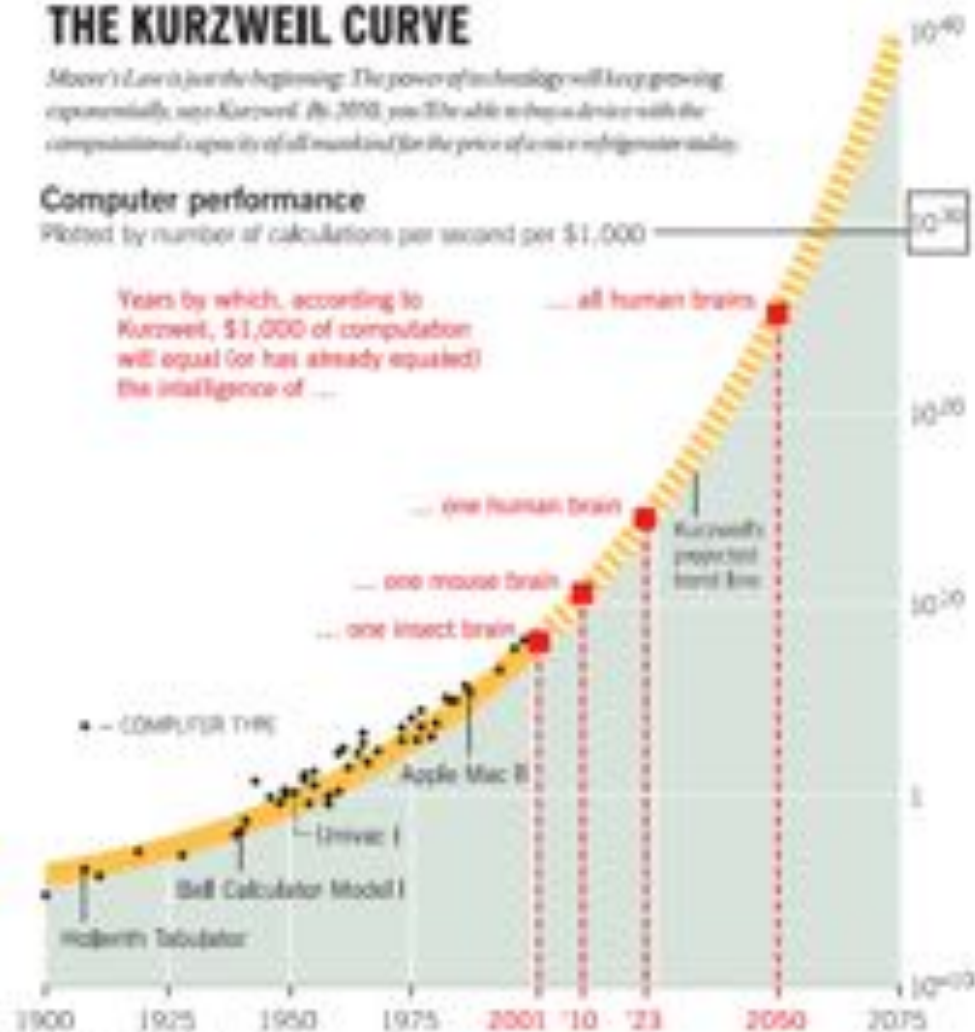
THE KURZWEIL CURVE

Moore's Law is just the beginning: The power of technology will keep growing exponentially, says Kurzweil. By 2010, you'll be able to buy a device with the computational capacity of all mankind for the price of a nice refrigerator today.

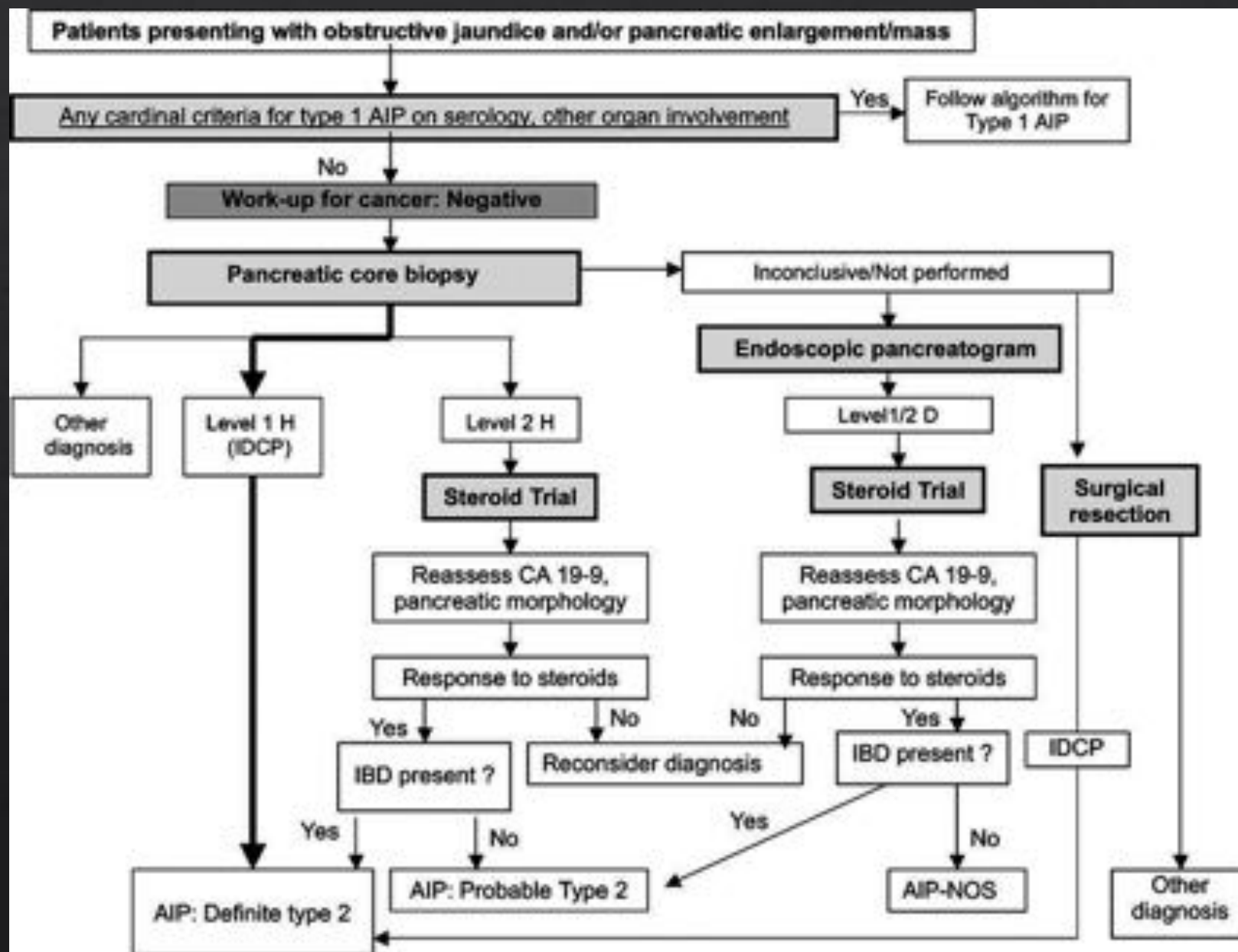
Computer performance

Plotted by number of calculations per second per \$1,000

Years by which, according to Kurzweil, \$1,000 of computation will equal (or has already equaled) the intelligence of ...



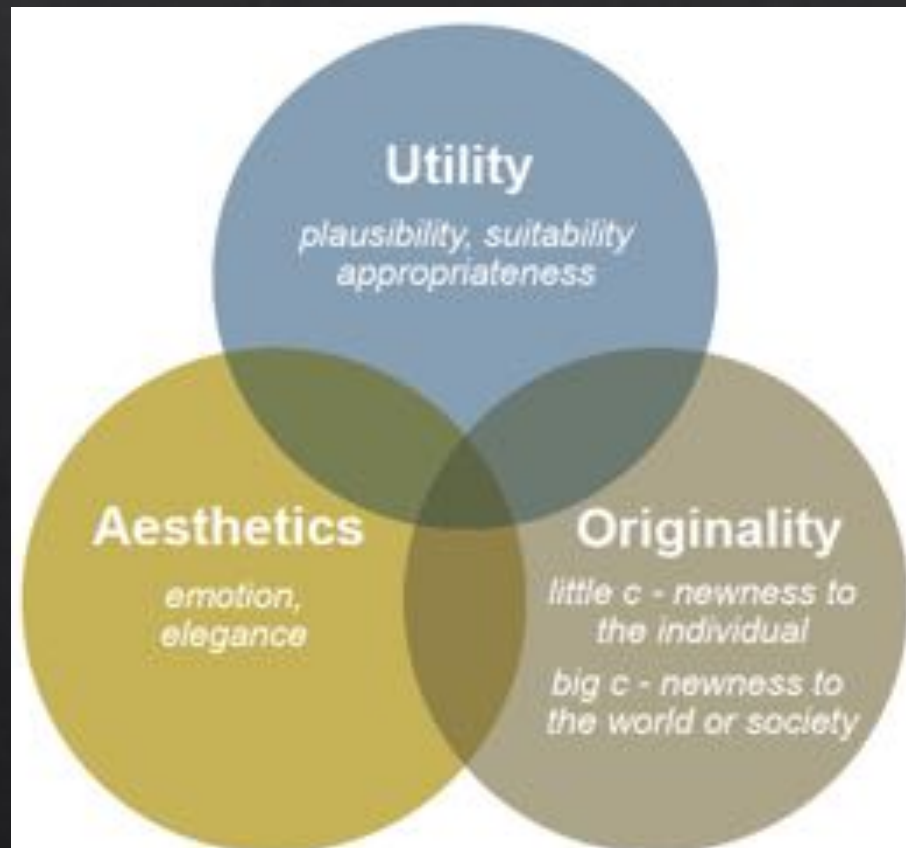
SOURCE: DATA FROM RAY KURZWEIL



The Most Innovative Companies

2017 RANK	COMPANY	REVENUE CHANGE (%)	EBIT CHANGE (%)	TSR CHANGE (%)	R&D SPENDING CHANGE (%)
1	Apple	-7.7	-15.7	12.5	24.5
2	Google	20.4	22.5	1.9	13.6
3	Microsoft	-8.8	-24.4	15.1	-0.5
4	Amazon	27.1	87.5	10.9	28.3
5	Samsung	0.6	10.7	45.3	3.0

4. CREATIVITY

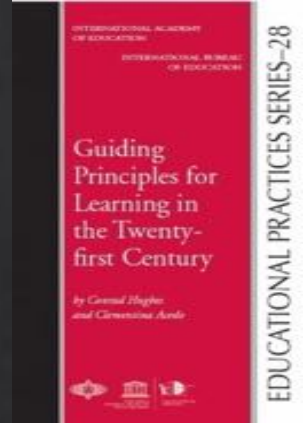


Discuss

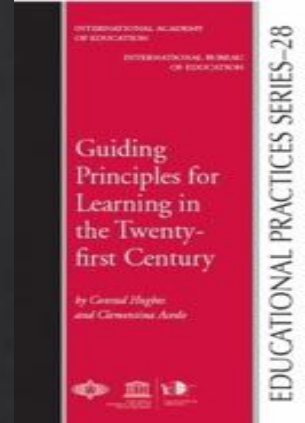
HOW DO YOU
STIMULATE
CREATIVITY IN
YOUR SCHOOL?

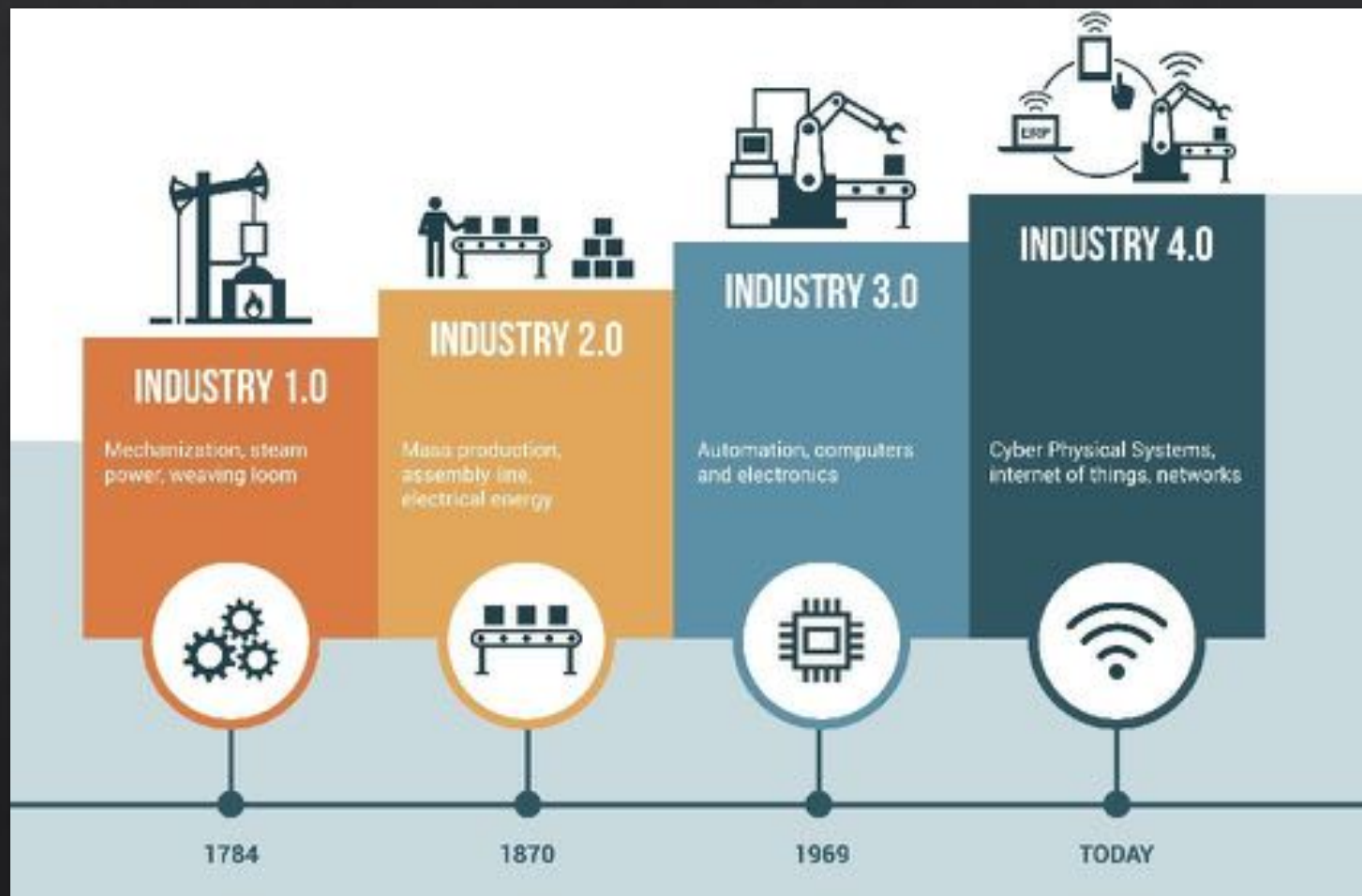
4. CREATIVITY

add to, adapt, alter, amend,
analogize, analyse, combine,
create, design, generate ideas,
hypothesize, modify, re-arrange,
re-design, re-state, reverse,
substitute, supplement



5. STEM







Overstepping Ourselves

As our Ecological Footprint continues to exceed Earth's biocapacity, we overdraw from our future.



1961

74%
of biocapacity



1985

114%
of biocapacity



2012

156%
of biocapacity

5. STEM

science & mathematics through
projects using technology & the
principles of engineering

interdisciplinarity

STEM history

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OF EDUCATION
INTERNATIONAL INSTITUTE
OF EDUCATION

Guiding
Principles for
Learning in
the Twenty-
first Century

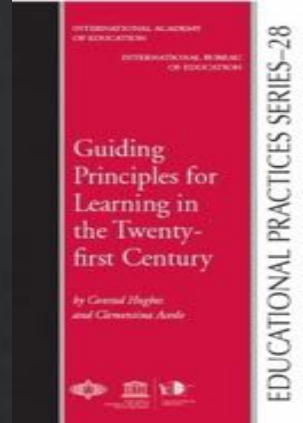
by Gerald Hughes
and Clemens Auer

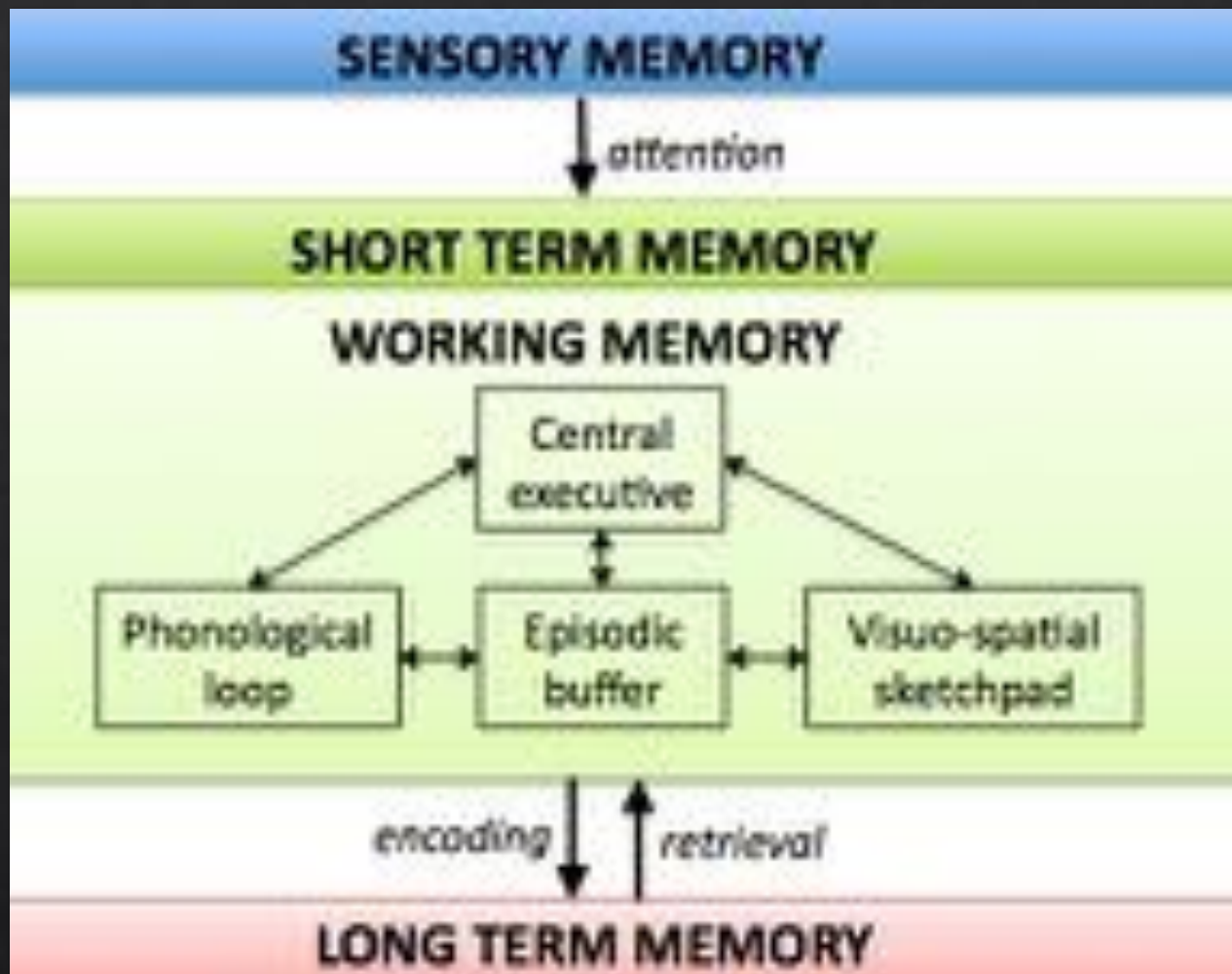


Discuss

HOW DOES YOUR
SCHOOL DEVELOP
STEM?

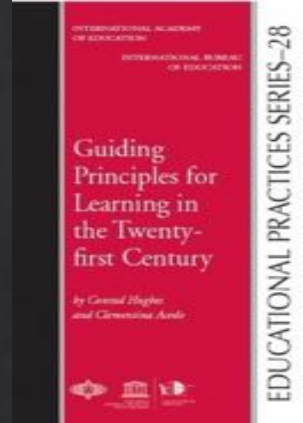
6. CONCEPTS-FOCUSSED LEARNING



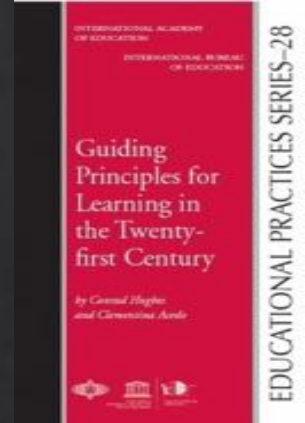


6. CONCEPTS-FOCUSSED LEARNING

brain schemata:
organize and pattern
information



6. CONCEPTS-FOCUSSED LEARNING



6. CONCEPTS-FOCUSSED LEARNING



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OF EDUCATION

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6. CONCEPTS-FOCUSSED LEARNING

theory

generalizations

concepts

topics

factual knowledge

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the Twenty-
first Century

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6. CONCEPTS-FOCUSSED LEARNING

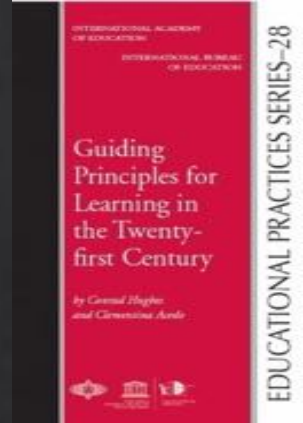
theory

generalizations

concepts

topics

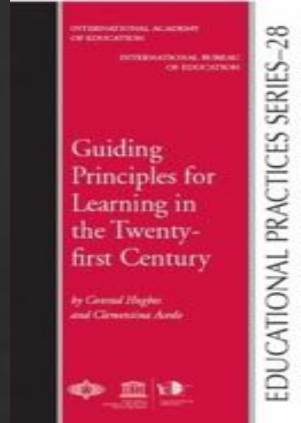
factual knowledge



6. CONCEPTS-FOCUSSED LEARNING

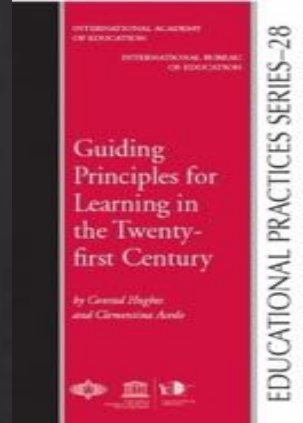
Threshold concepts

Land et al., 2005



Threshold concepts

fractions, buoyancy,
photosynthesis, gravity,
price, value



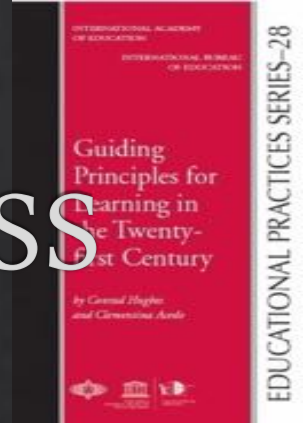
6. CONCEPTS-FOCUSSED LEARNING

Concepts: powerful tools for
transfer of knowledge

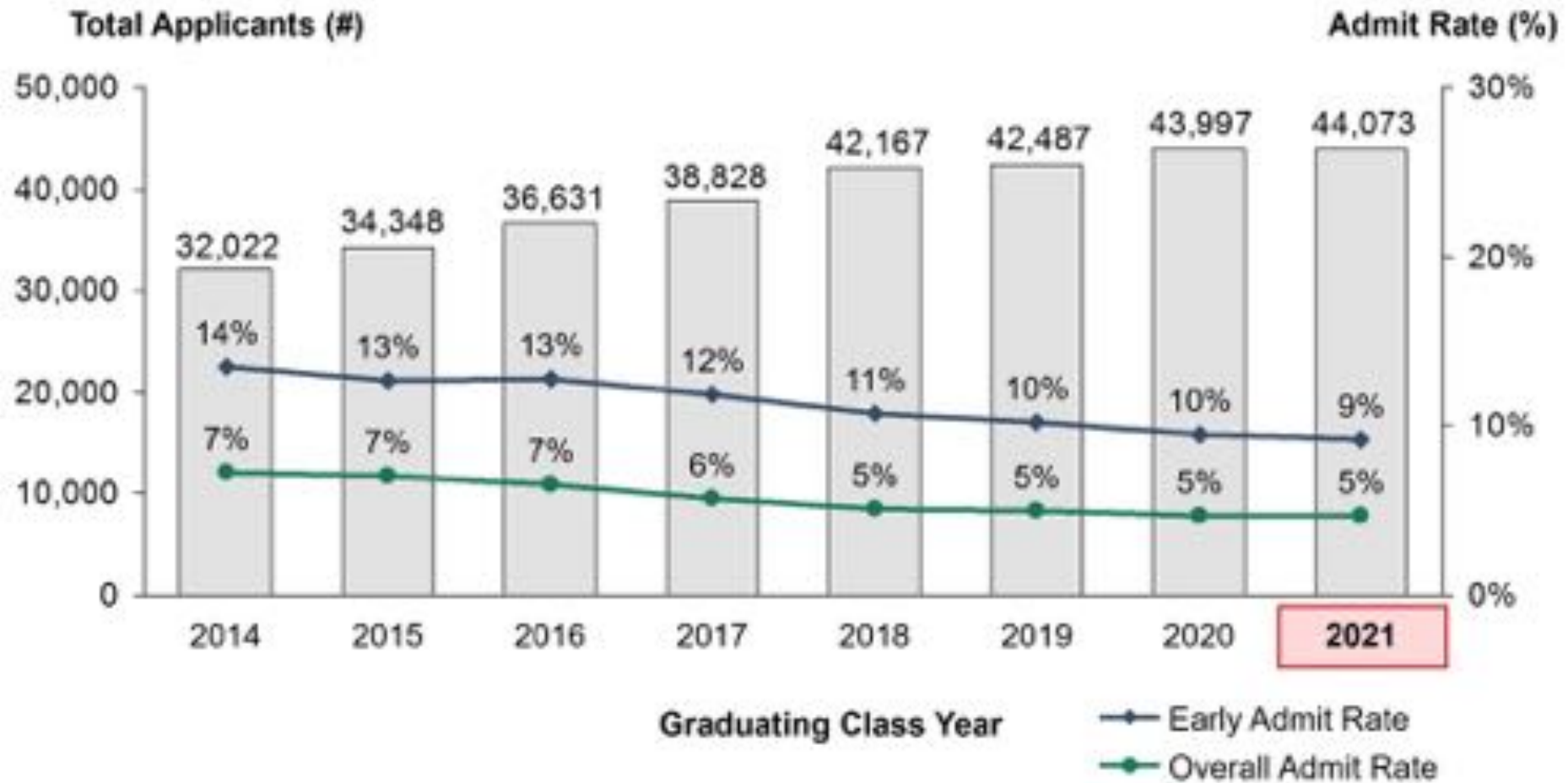
Threshold concepts: identified in
the curriculum and within a
student's learning progression

Interdisciplinary projects: clear
conceptual focus

7. HEALTH & MINDFULNESS




Stanford University: Cumulative Admission Statistics



7. HEALTH & MINDFULNESS





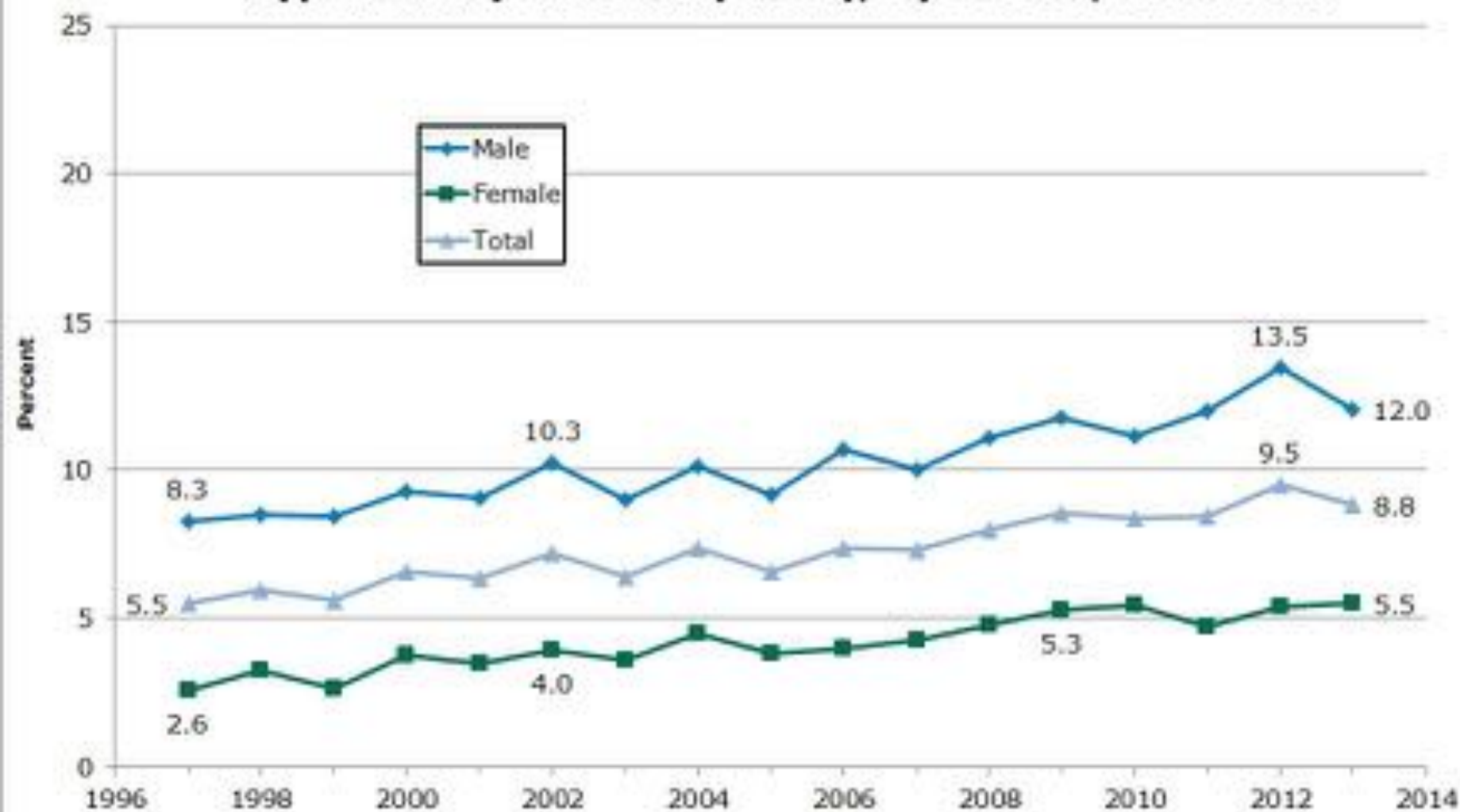
50% of teens feel they are addicted to their mobile devices.

SOURCE: COMMON SENSE MEDIA



Figure 1

Percentage of Children Ages 3-17 with Attention Deficit-Hyperactivity Disorder (ADHD), by Gender, 1997-2013



Source: Original analysis by Child Trends of National Health Interview Survey data 1997-2013.

Well-Being 2030



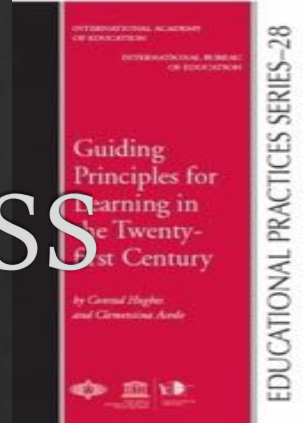
7. HEALTH & MINDFULNESS

time for reflection

designated space for
meditation

silence

health promotion project



7. HEALTH & MINDFULNESS

MINDFULNESS
SILENT ROOM

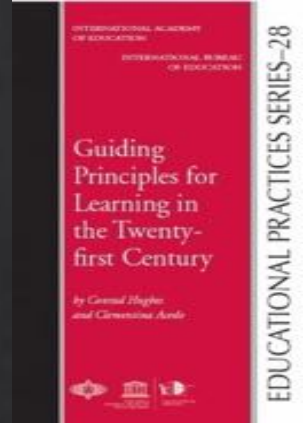


MON 11:50 > 13:30
TUE 09:50 > 11:40
WED 14:15 > 15:00
THU 16:00 > 17:00
FRI 15:00 > 15:30

FREE ENTRANCE **CENTRE DES ARTS | ROOM 101**

 **Ecole Internationale de Genève**
International School of Geneva

8. SERVICE LEARNING



HATE CRIME

+1000 hate crimes in US after first month of Trump Presidency

(Southern Poverty Law Center)

Increase of 28% in LA; 46% in Phoenix Arizona

(California State Study)

250 000 hate crimes per anum between 2004 & 2015



Discuss

IN YOUR SCHOOL,
WHAT ARE THE
OBSTACLES TO
SERVICE LEARNING?

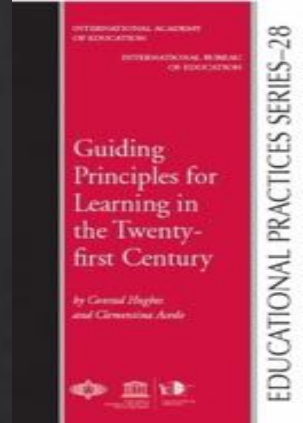
8. SERVICE LEARNING

genuine need

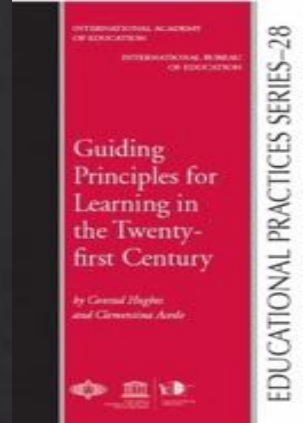
long-term commitment

respectful attitude

celebrated

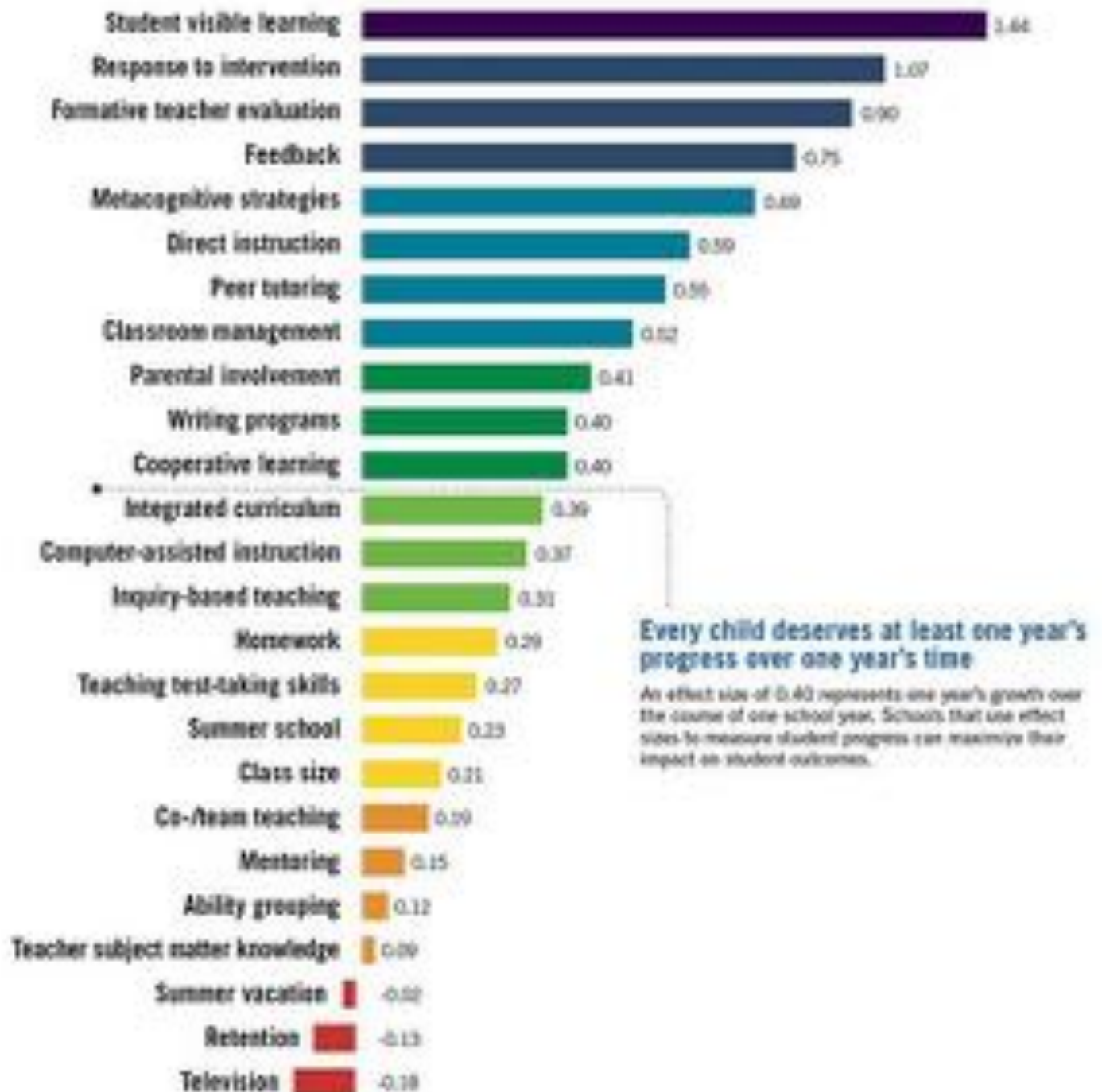


9. LEARNING SUPPORT



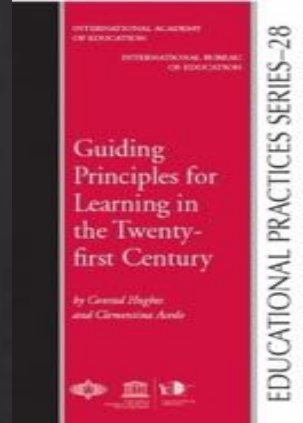
Toolkit findings



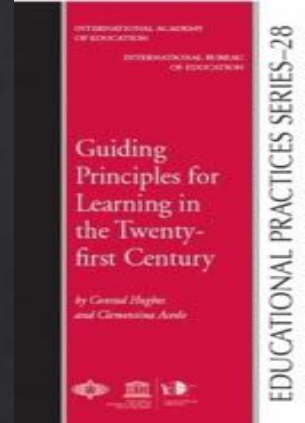


9. LEARNING SUPPORT

differentiate instruction
extend student learning
self-regulation
feedback



10. ASSESSMENT



10. ASSESSMENT

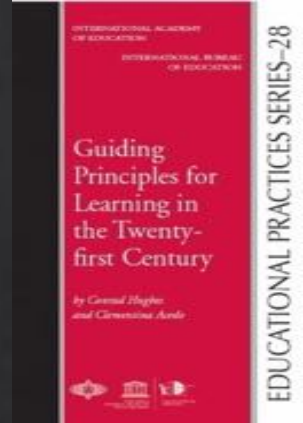
Model of Cognition

knowledge

skills

attitudes

metacognition

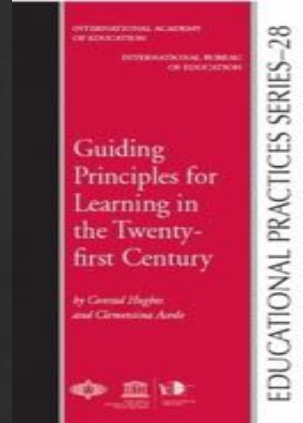


10. ASSESSMENT

Observation Instrument

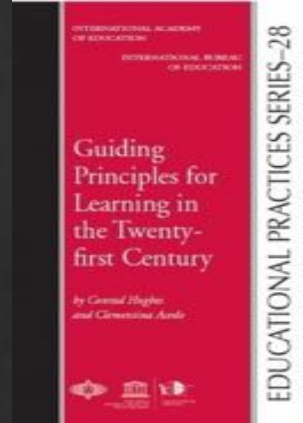
fitness for purpose

validity (face validity & ecological
validity)

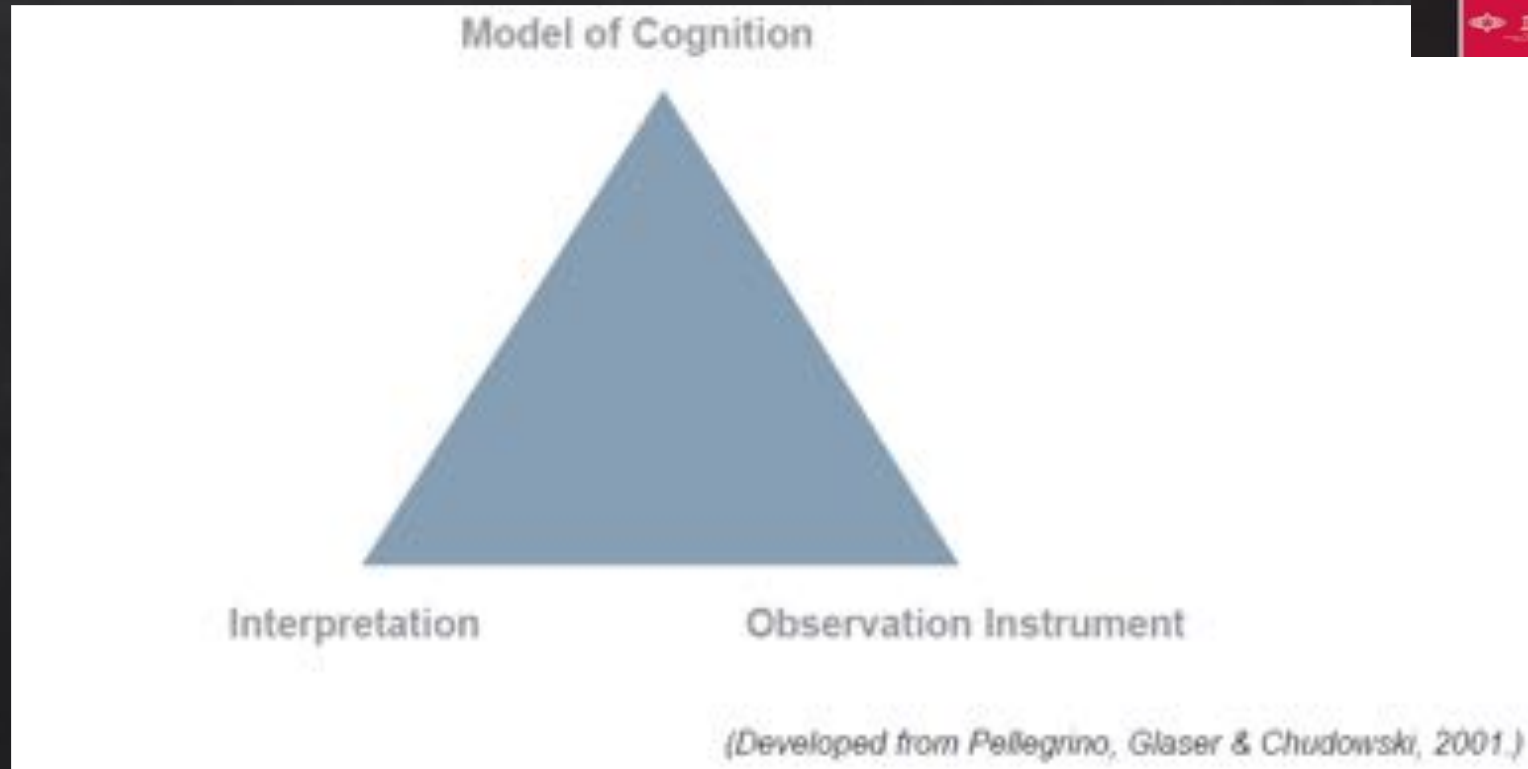


10. ASSESSMENT

Interpretation reliability



10. ASSESSMENT



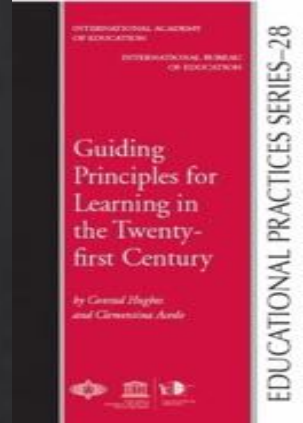
10. ASSESSMENT

Purposes

diagnostic

formative

summative



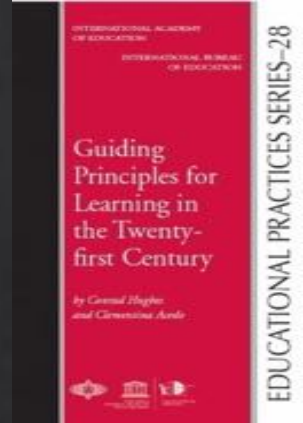
10. ASSESSMENT

21st Century

collaboration

creative & critical thinking

metacognition



CHALLENGES

IMPACT

conrad.hughes@ecolint.ch