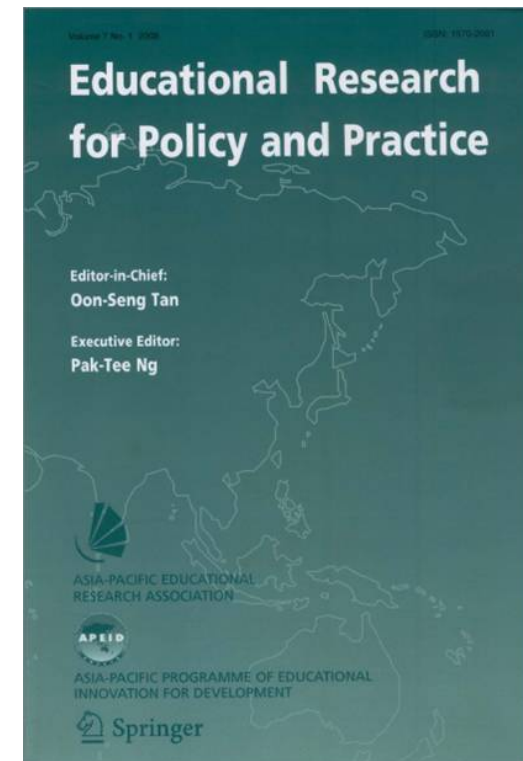
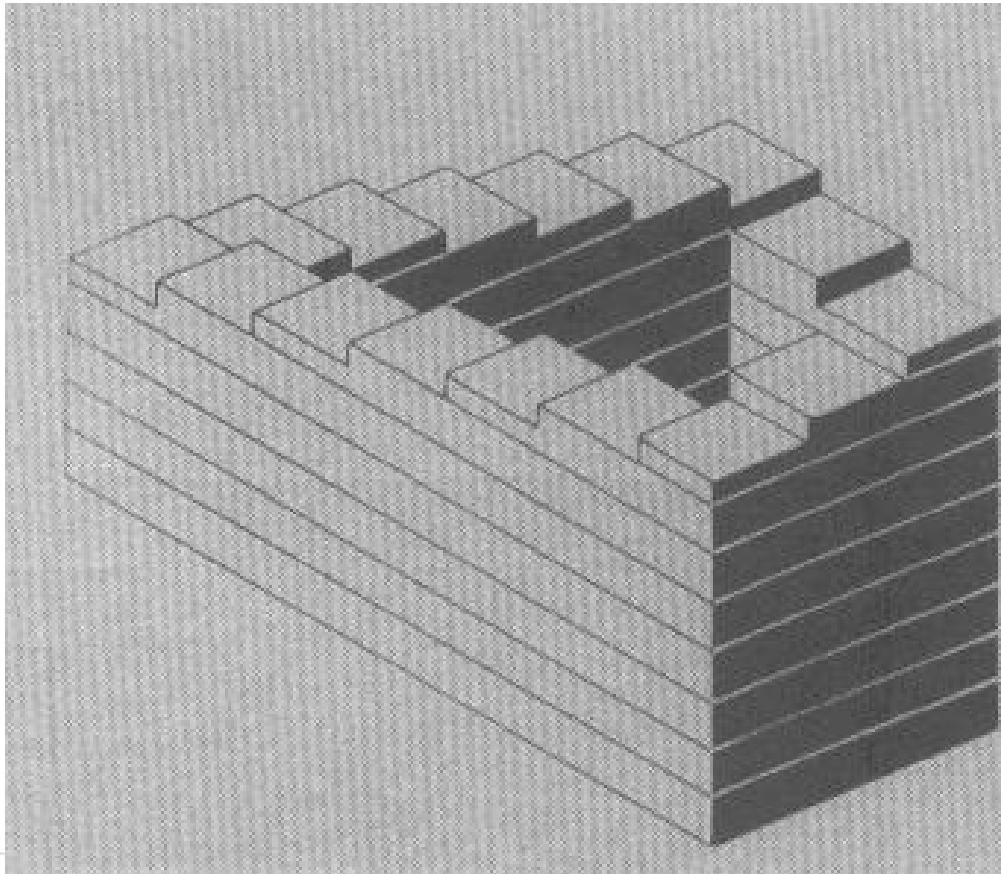


Teacher Education Innovation: Policies and Effective Practices for Building Teacher Competencies in the 21st Century

Oon-Seng Tan
Director
National Institute of Education
Editor-in-Chief
Educational Research for Policy & Practice

An Institute of



National Institute of Education (NIE)



*Teacher Education
and
Education Research*

A Thought Leader in Education

- Our research philosophy is to impact school practices, improve learner outcomes, and inform education policy formulation.
- Partnerships with over 60 international organisations and educational institutions with a view of contributing to and advancing the global understanding of education issues and challenges in the 21st century

- **Autonomous institute of Nanyang Technological University (NTU is ranked 41st by QS and 2nd in the QS Top universities under 50 years)**
- **NIE is ranked 13th in world by QS in 2013**

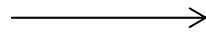


- 21st Century Challenges
- Some Key Ideas in our Understanding of Education in Singapore
- Need for Effective Teacher Education Policies and Practices

- Transistor to the 4th Gen Intel Chip:
Challenge of Mindset Shift in dealing with education
- Smart knowledge (understand globalisation, technology, nature of intelligence)
- Reality of the need for tolerance of Uncertainty
- Bigger Picture and Multi-disciplinary Thinking
- Don't forget the Invariants of Education

Challenge of Mindset Shifts in Education

Hardware
Structures
Industrial Models



Intelligence

- Critical Thinking (Problem Solving)
- Collaborative (Teamwork)
- Creativity (Flexibility & Innovation)
- Communication (Interpersonal Skills)
- Connectivity (Project Management & Systems Thinking)
- C.....C.....

Summary of my message

#1 Coherence

#2 Human Development

#3 Innovation

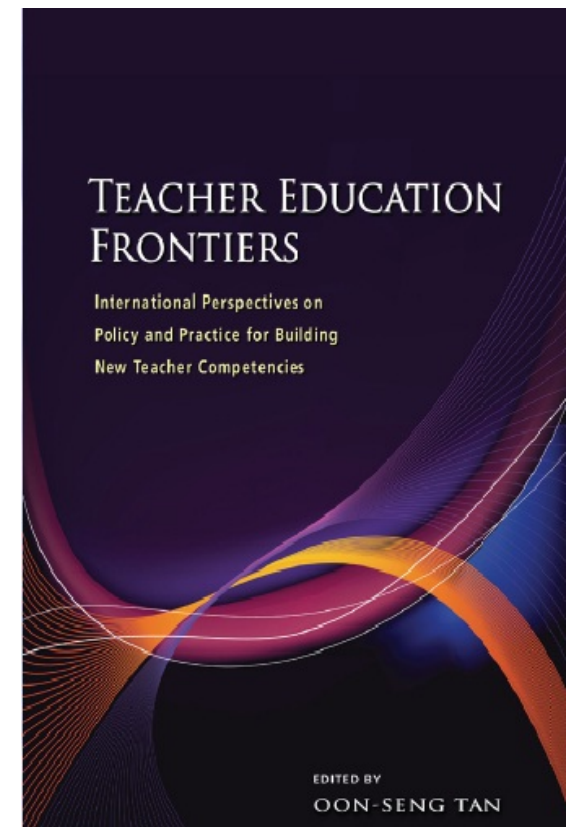
#4 Leadership

#5 Empowerment

#1 Coherence

Education is the most important investment in the long haul and the quality of education impacts on

- Nation Building
- People's Capacity for Adaption
- Value Creation
- Values Preservation
- Capabilities for Innovation



Coherence at Macro Planning

- Outcome perspective (e.g. desired outcomes of graduands)
- Long-term outlook
- Sustainability
- Paradigms (Perspectives and mindsets), Philosophy (Beliefs), Practicality (Actionables and outcomes)
- Teacher Policies, Preparation, Practice

Impact factors of education:

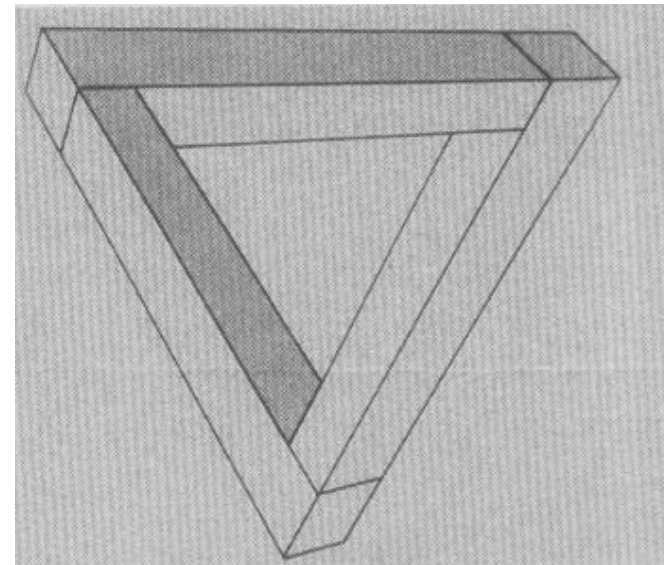
- Standards and accountability – efficient use of data, nurturing of the child
- Human capital management – good recruitment strategies, ample opportunities for professional development
- Structure and organization – good governance, balanced top-down and bottom-up initiatives

The Tripartite relationship between NIE, MOE and Schools is a key success factor in the implementation phase of the TE21 programme

- Transforming teacher education is a task NIE cannot achieve in isolation.
- There is a need for unified commitment and alignment of efforts from all key stakeholders – **NIE, MOE, and schools.**
- Schools will be an important partner in strengthening the theory-practice linkage for :
 - ❖ Student teachers
 - ❖ Beginning teachers
 - ❖ Experienced teachers

MOE

Schools



NIE (University)

Phases of Development

- Survival → Efficiency → Learner-centric
- Thinking Schools, Learning Nation (TSLN)
- Teach Less, Learn More (TLLM)
- Emphasis on Mathematics and Sciences
- Bilingual Language Policies

#2 Human Development

Human Development

- Autonomy
- Learning
- Motivation
- Ownership

Not creating value in education if we...

- Teach content and routines that becomes obsolete
- Impart skills that are not sufficiently transferable across situations
- Use learning processes that do not impact on life-wide learning
- Use learning environments that do not encourage motivation and independence

- Developing human intelligence is about learning to solve problems.
- Problem solving in real-world contexts involves multiple ways of knowing and learning
- Harnessing intelligences
 - from within individuals,
 - from groups of people and
 - from the environment to solve problems

- Anatomy
- Blood circulation
- Bacteria
- Vaccination
- Anesthetic surgery
- X-ray
- Tissue culture
- Cholesterol
- Anti-bodies
- DNA



Highly analytical technologies
(Power of details)

More holistic technologies
(Visual multi-dimensional
thinking)

Big picture and capacity for
digital details
(New power of details)

Leveraging Points in Education

- Discovery of Habits
- Discovery of Novelty
- Discovery of Invariants
- New Power of Habits and Novelty

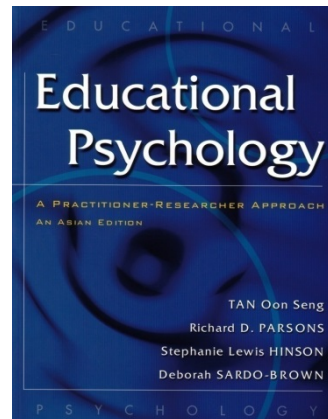
Patterning
System



Inquiry
Problem-based



Habits



Novelty

Memory
iMitation
Modeling

Big Picture Matrix
(Multiple & Integrative)
Ambiguity

- Training the analytical mind – breaking things into smallest, simplest entities
- Inferential logic
- Fundamental laws
- Limitations – all human constructs, models and theories are at best approximations
- The whole is more than the sum of the parts

- Looking from different perspectives
- Big picture thinking, analysis, imagination and reality
- Ana-logical thinking, generative thinking, divergence, theory of constraints
- See big picture and zoom into details when you need (zooming in and out/telescopic and hypertext thinking)

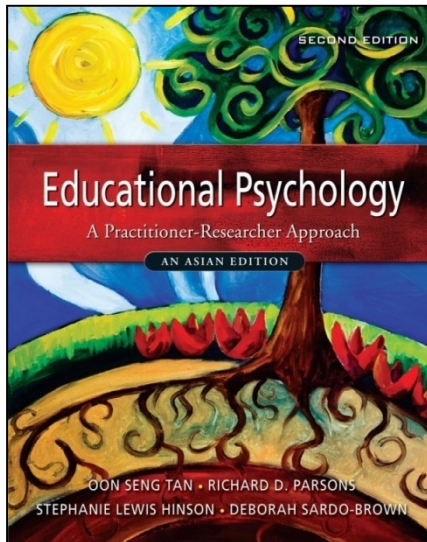
- Bridging gap between theory and practice
- Information accessibility, knowledge explosion
- New possibilities, multiplicity and integrative disciplines
- Real world competencies
- Developments in art-science of learning

Values
Anchoring Culture



Invariants

Morality
Humanity
Character

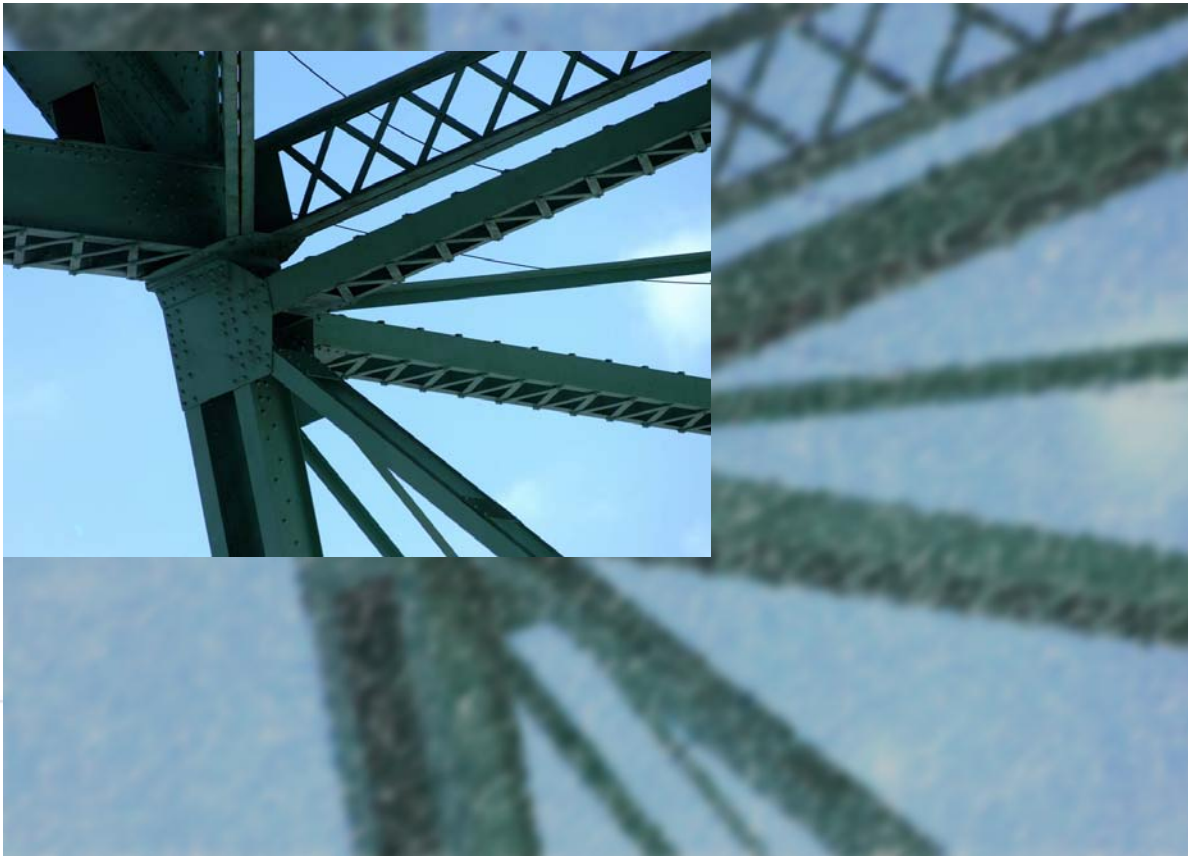


Flexibility
Morphism

Variants

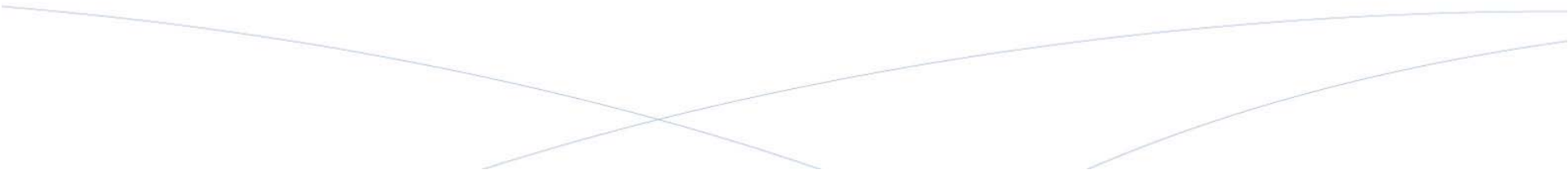
Multiplicity
Integrative
Ambiguity

“Strong Fundamentals, Future Learnings”



Strong emphasis on Mathematics and Science

To equip students with the basic knowledge and analytical skills to move Singapore up the value-chain, and retain our competitive advantage in a globalised knowledge-based economy.



Singapore's performance as a system

- Ranked 2nd in “Quality of the Educational System” (Global Competitiveness Report 2011–2012)
- Identified as one of the world's best-performing school systems (McKinsey Report, published November 2010)
- Ranked among the top in Reading, Mathematics and Science (PISA 2009)
- Ranked among the top in Mathematics and Science (TIMSS 2011)
- Ranked among the top in Literacy (PIRLS 2011)
- Ranked among the top in the 2013 International Physics, Mathematics, Chemistry, Biology and Informatics Olympiads

Key Finding 1: Strong performance in applying knowledge and skills in unfamiliar real-life situations

Mathematics literacy skills		Reading literacy skills		Science literacy skills	
Shanghai	613	Shanghai	570	Shanghai	580
Singapore	573	Hong Kong	545	Hong Kong	555
Hong Kong	561	Singapore	542	Singapore	551
Chinese Taipei	560	Japan	538	Japan	547
Korea	554	Korea	536	Finland	545
Macao	538	Finland	524	Estonia	541
Japan	536	Ireland	523	Korea	538
Liechtenstein	535	Chinese Taipei	523	Vietnam	528
Switzerland	531	Canada	523	Poland	526
Netherlands	523	Poland	518	Canada	525
Estonia	521	Estonia	516	Liechtenstein	525
Finland	519	Liechtenstein	516	Germany	524
Canada	518	New Zealand	512	Chinese Taipei	523
OECD Average	494	OECD Average	496	OECD Average	501

Key Finding 1: Strong performance in applying knowledge and skills in unfamiliar real-life situations

- Our strong performance shows our students:
 - possess strong fundamentals
 - are adept at applying knowledge and skills in solving novel real-life problems
 - can navigate in computer-based environments, work with less structured data, interact and uncover relationships

Students have the **strong fundamentals to meet the challenges of employment and life-long learning in the 21st century**

“Tall buildings” is an article from a Norwegian magazine published in 2006.

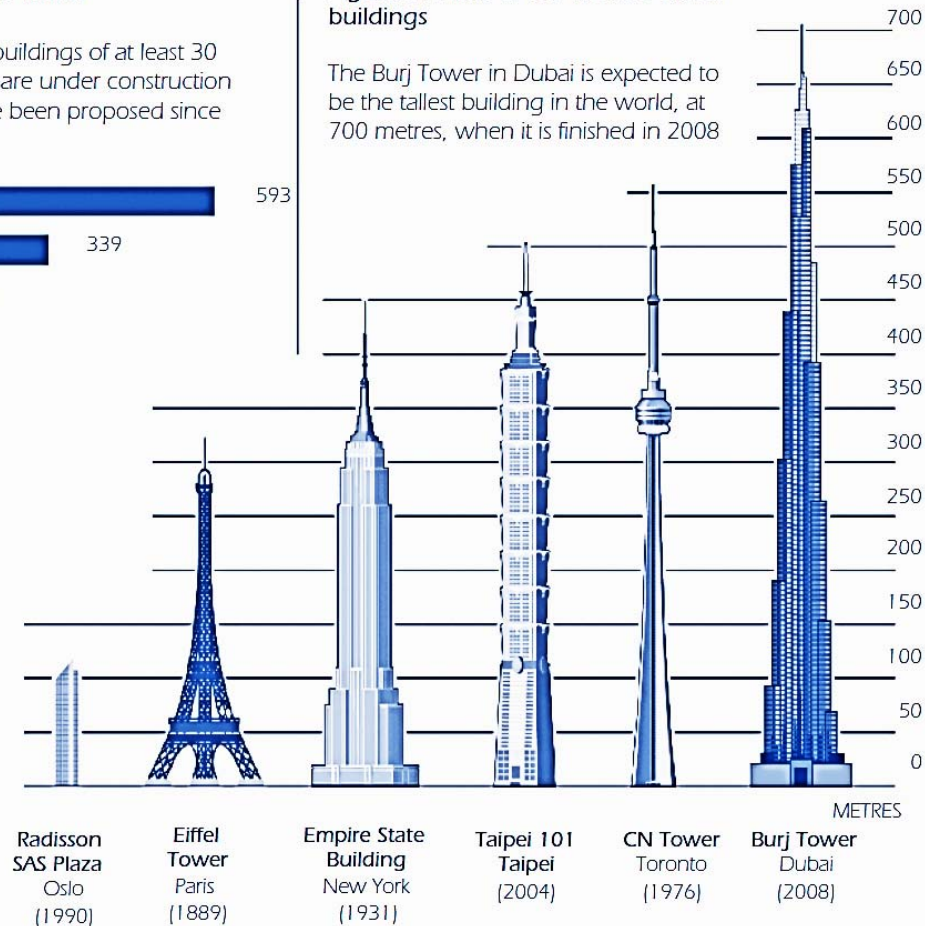
Figure 1: Tall buildings of the world

Figure 1 shows the number of buildings of at least 30 storeys that have been built, or are under construction. This includes buildings that have been proposed since January 2001.



Figure 2: Some of the world's tallest buildings

The Burj Tower in Dubai is expected to be the tallest building in the world, at 700 metres, when it is finished in 2008



The Radisson SAS Plaza in Oslo, Norway is only 117 metres tall.

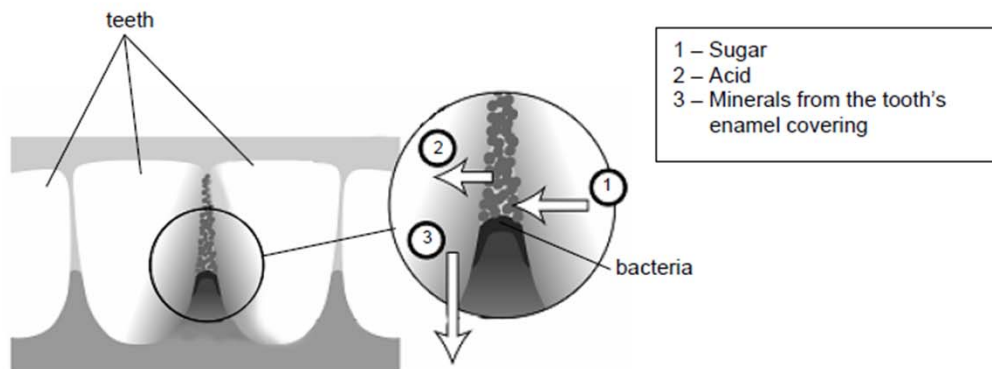
Why has it been included in Figure 2?

Recognise the influence of reader's perspective on the way a text is

Bacteria that live in our mouths cause dental caries (tooth decay). Caries has been a problem since the 1700s when sugar became available from the expanding sugar cane industry.

Today, we know a lot about caries. For example:

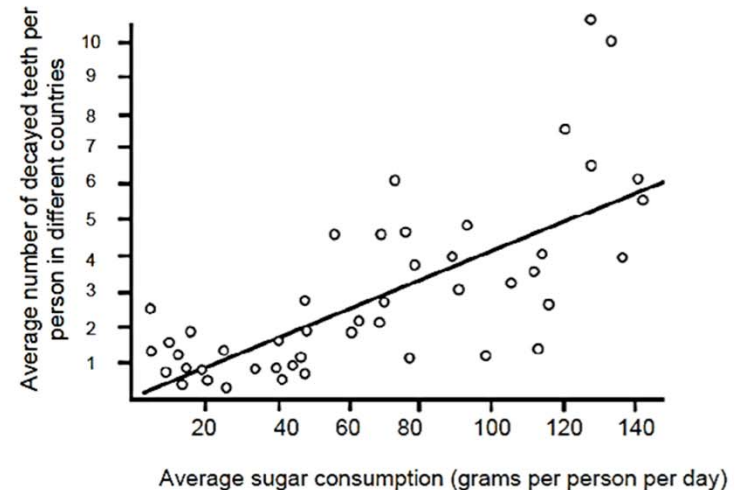
- Bacteria that cause caries feed on sugar.
- The sugar is transformed to acid.
- Acid damages the surface of teeth.
- Brushing teeth helps to prevent caries.



Question 4: TOOTH DECAY

S41

The following graph shows the consumption of sugar and the amount of caries in different countries. Each country is represented by a dot in the graph.



Question 1: TOOTH DECAY

What is the role of bacteria in dental caries?

- A Bacteria produce enamel.
- B Bacteria produce sugar.
- C Bacteria produce minerals.
- D Bacteria produce acid.

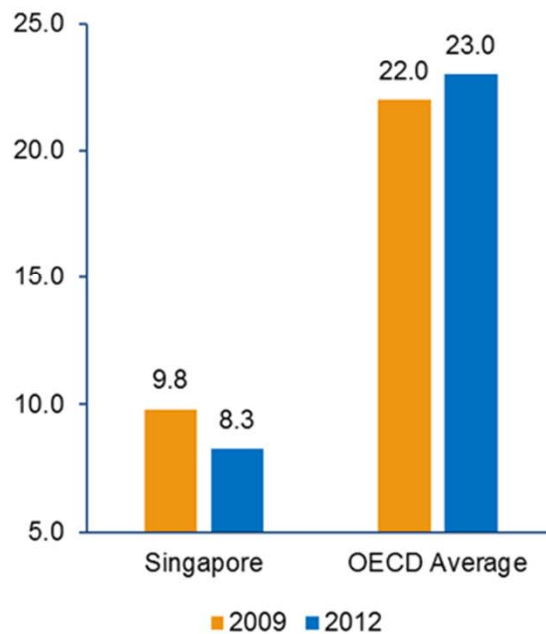
Which one of the following statements is supported by the data given in the graph?

- A In some countries, people brush their teeth more frequently than in other countries.
- B The more sugar people eat, the more likely they are to get caries.
- C In recent years, the rate of caries has increased in many countries.
- D In recent years, the consumption of sugar has increased in many countries.

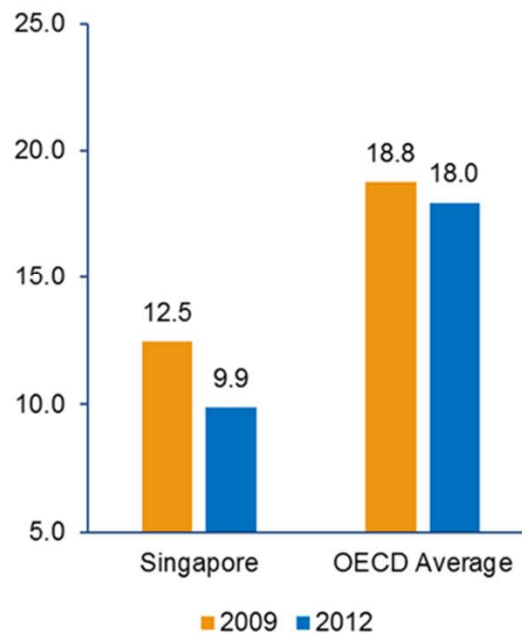
Key Finding 2: Improved performance of our academically-weaker students

- Proportions of **low performers** have dropped to **below 10%**

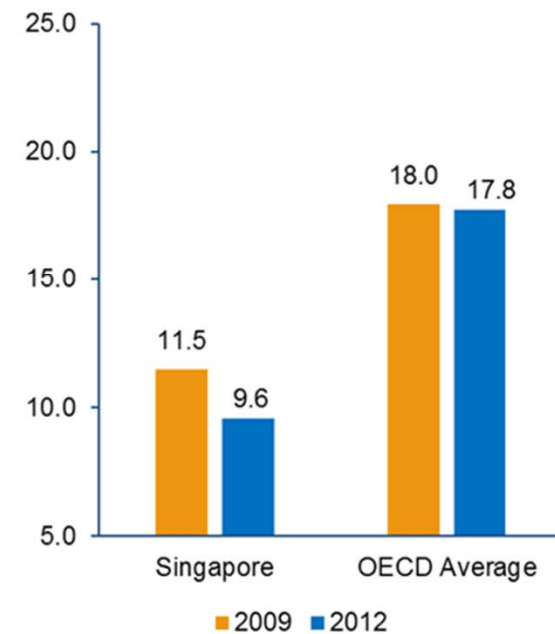
Proportion of Low Performers in **Mathematics**



Proportion of Low Performers in **Reading**

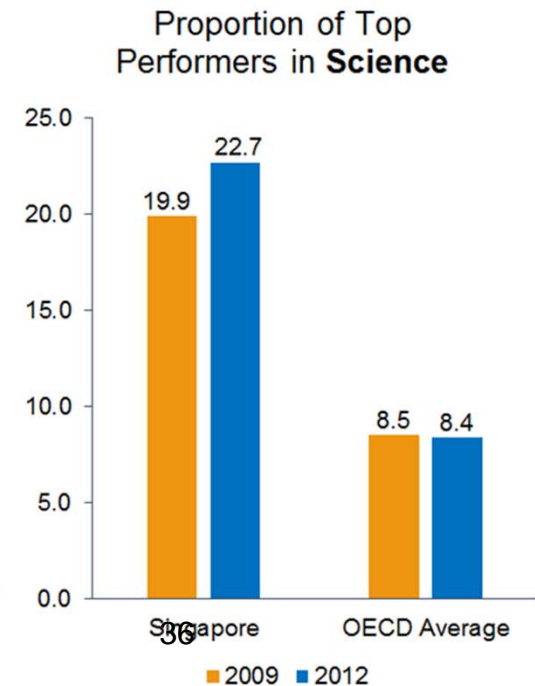
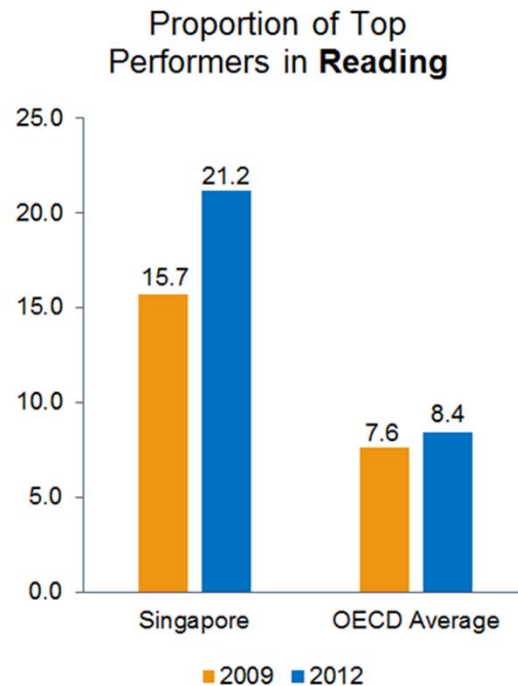
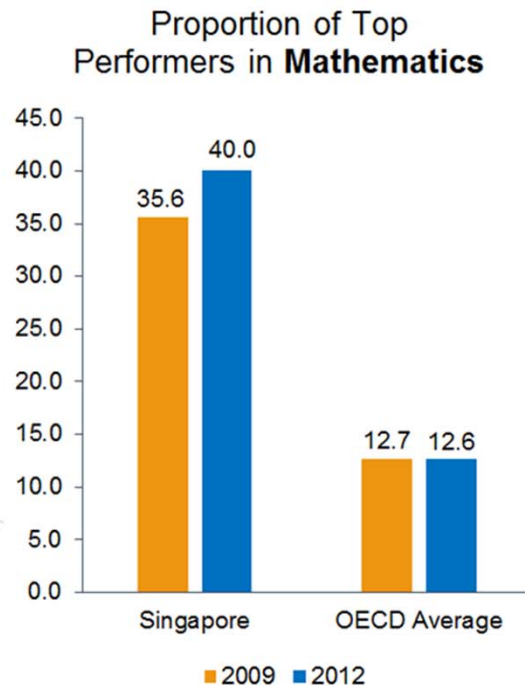


Proportion of Low Performers in **Science**



Key Finding 3: Students achieve their fullest potential and scale peaks of excellence

- Efforts to level up academically-weaker students are not at expense of stronger students
- Proportions of top performers among our students have also increased significantly compared to 2009



Key Finding 3: Students achieve their fullest potential and scale peaks of excellence

- Our top performers have strong competencies:
 - Formulate and evaluate problem-solving strategies for dealing with complex problems
 - Work strategically using broad, well-developed reasoning skills
 - Integrate multiple pieces of deeply embedded information
 - Bring critical insights to situations
 - Construct arguments based on evidence and analysis
 - Have well-developed inquiry abilities

In Summary – PISA 2012

- Singapore students have strong fundamental skills essential to continuous lifelong learning in the 21st Century
- Good progress for all, but with significantly good progress by academically-weaker students, without compromising on the performance of stronger students
- Our schools and teachers create a positive and supportive learning environment, with students highly motivated and confident in learning Mathematics
- Need to work on levelling up academically-weaker students and engage them in learning
- Continue in efforts in using learner-centred approaches to deepen reasoning, process skills and conceptual understanding for ALL students

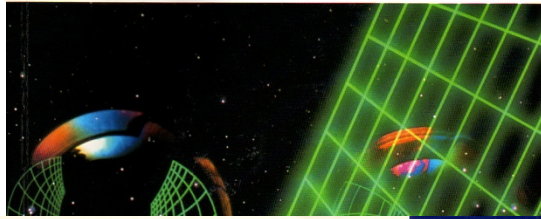


Late
80s
Through
90s
Texts

FEDERAL

MATHEMATICS

A Problem-Solving Approach

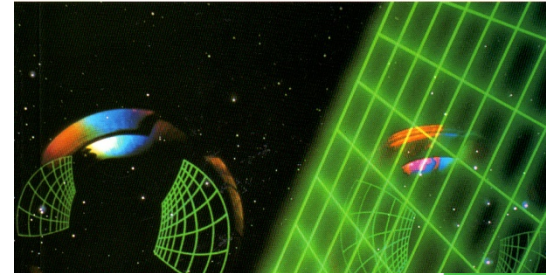


2

FEDERAL

MATHEMATICS

A Problem-Solving Approach

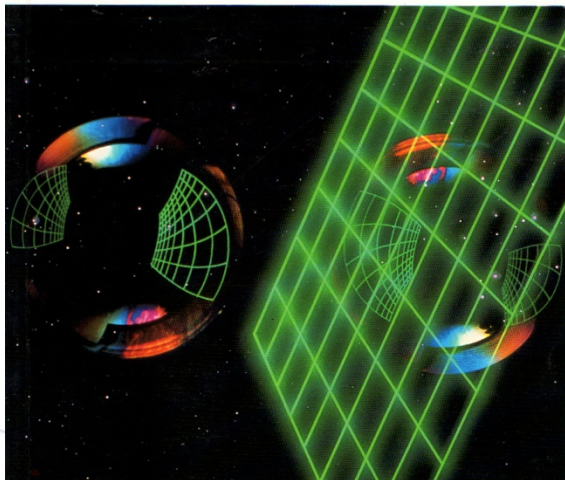


4

FEDERAL

MATHEMATICS

A Problem-Solving Approach



1

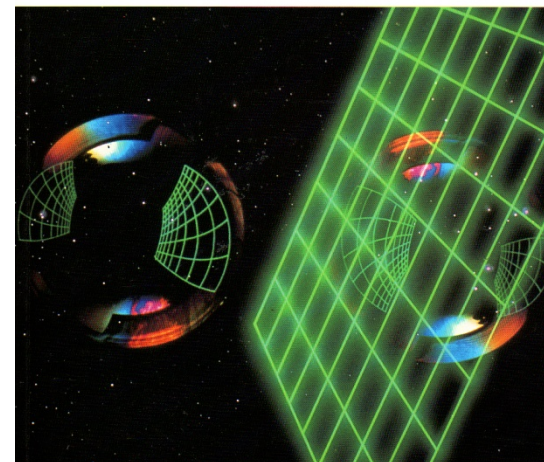
TAN OON SENG • YAP YEW

GENERAL EDITOR: KOH KHEE MENG Ph.D

FEDERAL

MATHEMATICS

A Problem-Solving Approach

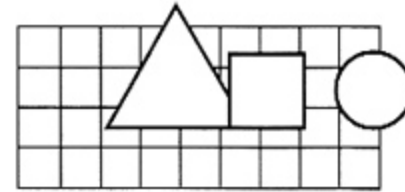


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Introduction To The Student



In Book 1 of this mathematics course, you have worked on many interesting activities, exercises and investigations. Whilst mastering the many important concepts and skills in topics on arithmetic, mensuration, algebra and geometry, you have also been introduced to the various strategies in approaching a problem.

The problem-solving approach in our mathematics course will help us become better thinkers and more effective problem-solvers. Recall that generally there are four basic steps in approaching a problem.

Step 1 : Understand the problem.

Step 2 : Decide on a plan.

Step 3 : Carry out the plan.

Step 4 : Look back (Reflect).

Understanding the Problem

To understand the problem, it is important that we read the problem carefully and actively. Initial careful reading reduces the chance of mis-interpretation, mis-reading or missing key data.

Active reading involves using a pencil to circle key words and information, drawing a diagram and putting the question into your own words. The following examples illustrate how to better understand a given question:

Example (Looking for key words and relevant data)

What is the percentage increase in value
if $\frac{1}{2}$ is increased to $\frac{7}{8}$?

Circle key words and data as follows:

What is the percentage increase in value
if $\left(\frac{1}{2}\right)$ is increased to $\left(\frac{7}{8}\right)$?



key words: percentage increase

data: $\frac{1}{2}$ to $\frac{7}{8}$
↓
 $\frac{4}{8}$ to $\frac{7}{8}$ re-state data

The increase in value is now obvious:

$$\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$$

Recall the concept:

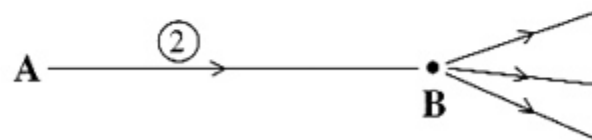
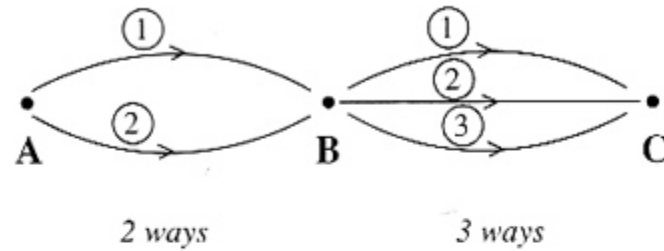
$$\text{percentage increase} = \frac{\text{actual increase}}{\text{original value}} \times 100\%$$

The answer can now be worked out easily.

Example (Using drawings)

There are two routes from town A to town B and three routes from town B to town C. How many ways can one get from town A to town C?

Use a diagram as follows:



It is now easy to see that there are altogether $(2 \times 3) = 6$ ways to get from A to C.

Example (Using symbols)

The sum of three consecutive numbers is 30. Find the three numbers.

Consider any three consecutive numbers such as 3, 4, 5. They can be written as 3, $3 + 1$, $3 + 2$.

Let the three required numbers be N , $N + 1$ and $N + 2$. Thus,

$$N + (N + 1) + (N + 2) = 30.$$

We can now use algebra to obtain the value of N .

Let us summarise the approach.

To understand a problem:

- Look for **key words**, **relevant data** and relationship among the data.
- Identify what is **wanted**.
- Re-state the problem with **diagrams**, simple **notation** or **symbols**.

Deciding on a Plan and Carrying out the Plan

Successful problem-solvers consciously choose a plan, a method or a strategy to solve problems. The following examples illustrate some important strategies used to solve problems:

Example (Consider a simpler problem)

What is the percentage increase in value if $\frac{1}{2}$ is increased to $\frac{7}{8}$?

The question may look difficult at first because of the different denominators in $\frac{1}{2}$ and $\frac{7}{8}$.

What about the following question?

What is the percentage increase when \$10 is increased to \$12?

We can see immediately that we are looking for $\left(\frac{12-10}{10}\right) \times 100\%$.

Similarly in the earlier problem, we are looking for $\frac{\left(\frac{7}{8}-\frac{1}{2}\right)}{\frac{1}{2}} \times 100\%$.

Example (Guess and check)

I am thinking of two numbers. Their sum is 22 and their difference is 10. What are the numbers?

Be bold to start by using any two numbers with a sum of 22.

Try: $10 + 12 = 22$

Observe that $12 - 10 = 2$.

The difference is too small, so try a larger number in place of 12. You may want to list the numbers in a table like this:

<i>Numbers</i>	<i>Difference</i>
12, 10	2
14, 8	6
16, 6	10

Hence the numbers are 16 and 6.

Use strategies to decide on a plan:

- Can I consider a simpler problem?
- Use trial and error . . .
- Look for a pattern



Example (Looking for a pattern)

Find the sum of the natural numbers from 1 to 100 (inclusive).

The problem is to find $1 + 2 + 3 + 4 + \dots + 100$.

[The ellipsis, denoted by 3 dots [. . .] indicates that the pattern continues.]

Look for a pattern:

$$\begin{array}{c}
 101 \\
 \text{---} \\
 101 \\
 \text{---} \\
 1 + 2 + 3 + \dots + 50 + 51 + \dots + 98 + 99 + 100 \\
 \text{---} \\
 101 \\
 \text{---} \\
 101
 \end{array}$$

It was reported that the mathematician Karl Gauss (1777–1855) observed the above pattern at a young age when he was in primary school.

$$1 + 100 = 101$$

$$2 + 99 = 101$$

$$3 + 98 = 101$$

$$\vdots$$

$$50 + 51 = 101$$

Since there are 50 pairs each with the sum of 101, the total is $50 \times 101 = 5\,050$.

Example (Listing systematically)

How many ways are there to make \$1.20 using, 10¢, 20¢ and 50¢ coins?

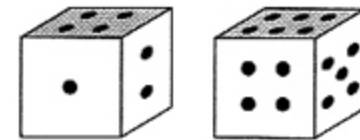
Use a table and list systematically, looking for patterns.

<i>Number of coins</i>		
<i>10¢</i>	<i>20¢</i>	<i>50¢</i>
12	0	0
10	1	0
8	2	0
•	•	•
•	•	•

Example (Using a table)

If a red die and a blue die are rolled, how many ways can we get a total of 10 from the two dice?

Will a 2 or 3 on any of the dice meet the condition? Any initial guess and check will show that 4 is smallest number for each die to meet the given condition.



<i>Red die</i>	<i>Blue die</i>
4	6
5	5
6	4

Example (Using algebra and equations)

I am thinking of two numbers. Their sum is 22 and their difference is 10. What are the numbers?

Let the two numbers be x and y .

Then, $x + y = 22$ (1)

$$x - y = 10$$
 (2)

From (2), $x = 10 + y$.

Substitute $x = 10 + y$ into (1). $10 + y + y = 22$

$$10 + 2y = 22$$

$$2y = 12$$

$$y = 6$$

Then, x can also be found.

Let us summarise at this point.

When deciding on a plan to carry out, ask questions such as:

- Does the question **resemble** some problems I have worked before?
- Can I make some **guesses** and check?
- Can I draw a **diagram**?
- Can I make a **chart** or **table**?
- Is there a **pattern**?
- Can I work **backwards**?
- Can I use **algebra**?

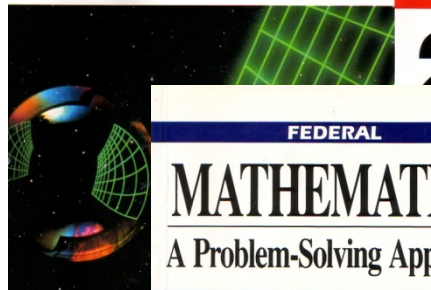
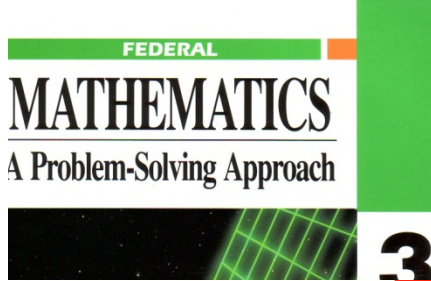
Looking Back (Reflect)

Having obtained the solution of a problem by a particular method, always learn to check the solution and consider **why** it is solved in that way. You should also consider whether or not there is **more** than one possible solution.

Some important questions to ask when reflecting are:

- How can I check the solution?
- Is there more than one possible solution?
- Is there another way of solving the problem?
- Can I find a general formula for the result?
- Can I explore related problems?

#3 Innovation

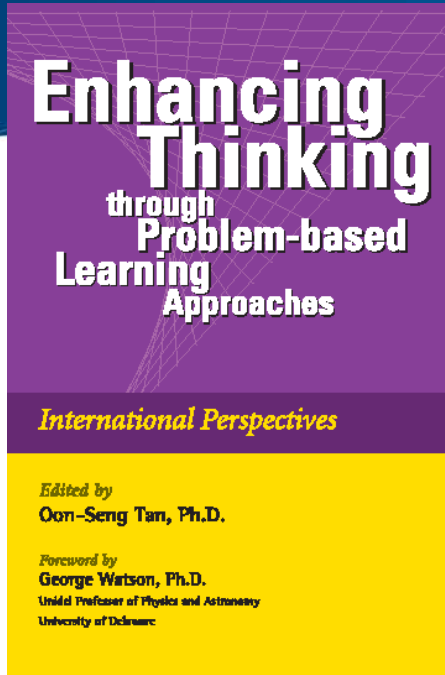


4

3

2

1

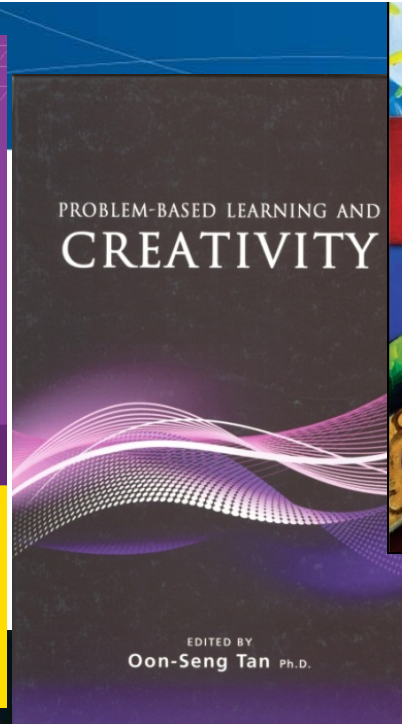


Enhancing Thinking through Problem-based Learning Approaches

International Perspectives

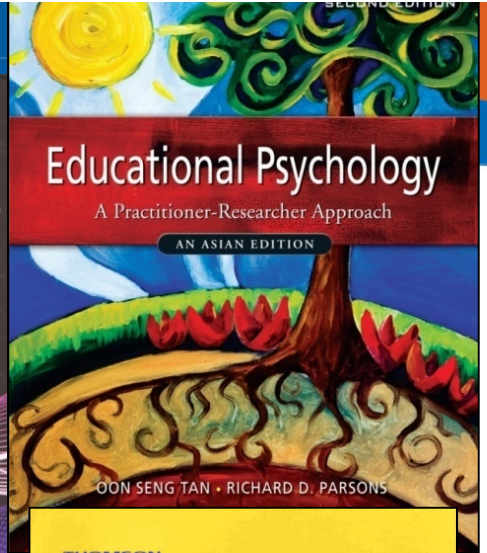
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Foreword by George Watson, Ph.D. United Professor of Physics and Astronomy University of Delaware



PROBLEM-BASED LEARNING AND CREATIVITY

EDITED BY Oon-Seng Tan Ph.D.



Educational Psychology

A Practitioner-Researcher Approach

AN ASIAN EDITION

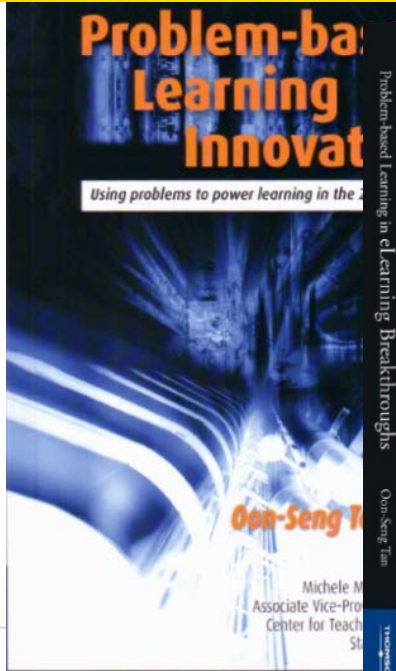
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教育心理学

Educational Psychology: A Practitioner-Researcher Approach (An Asian Edition)

实践者—研究者之路

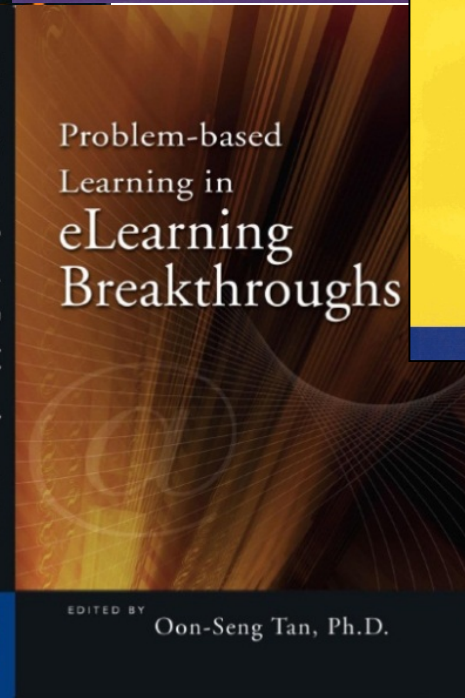


Problem-based Learning Innovations

Using problems to power learning in the 21st century

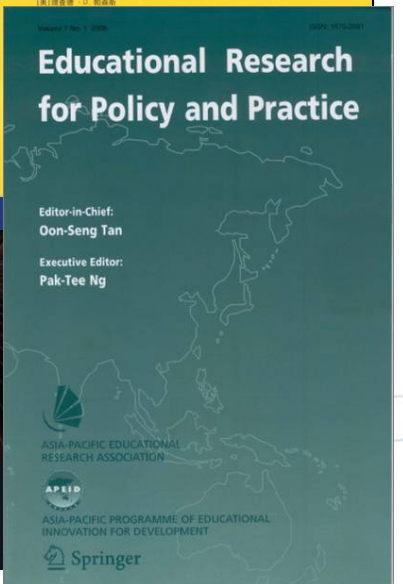
Oon-Seng Tan

Michele M. Kober Associate Vice-Provost Center for Teaching and Learning



Problem-based Learning in eLearning Breakthroughs

EDITED BY Oon-Seng Tan, Ph.D.



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Success:
Great
Teachers**



Facilities design and technology are integrated to simulate school learning environments which facilitate innovative pedagogies

Student Teacher Notebook Scheme



Facilitates immersion in a culture of pervasive and effective IT use early in their teaching careers. Ideal for gaining familiarity and experimentation with pedagogies that leverage on IT

Collaborative Tutorial Room **new**



Design of classroom facilitates a collaborative learning environment. Features include cluster seating, 1-to-1 computing facilities and collaborative spaces – both virtual and physical writing space

Primary English Language (PEL) Classroom



Model classroom which uses current technologies for teaching or reading and writing

Teachers Language Development Centre (TLDC)



Uses flexible and functional learning spaces where technology is seamlessly integrated to create a purposeful learning environment

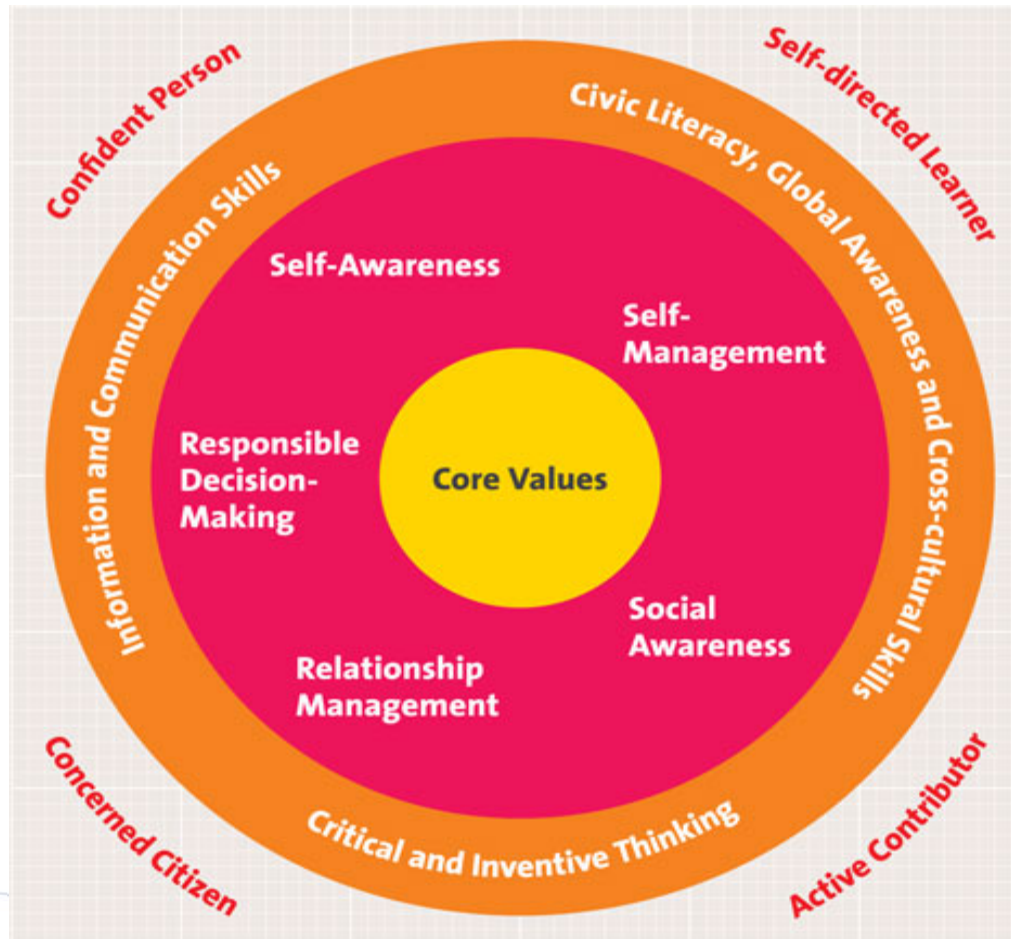
ICT Developments

- Build Foundation
- Seed Innovation
- Scaling and Sustainability

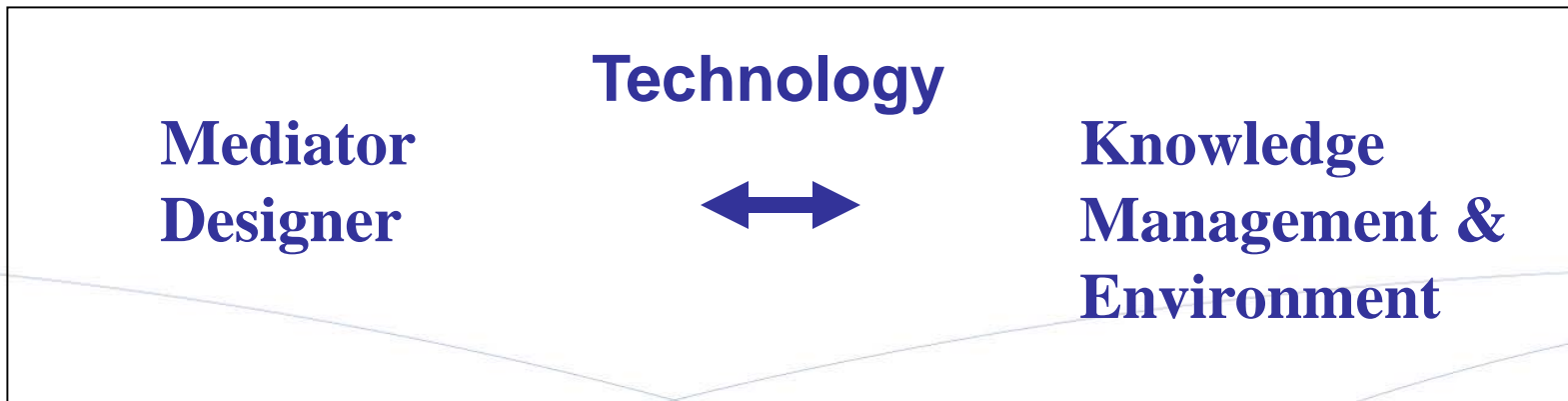
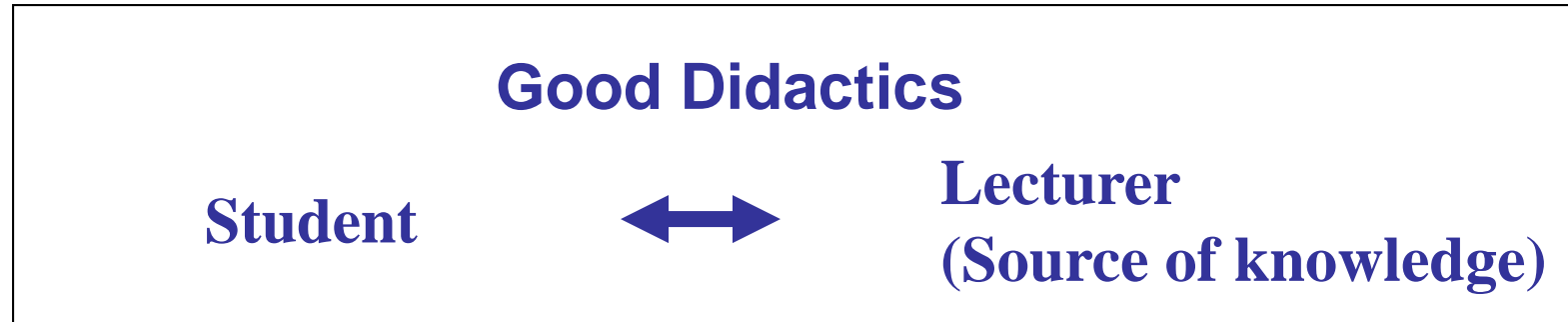
- Harnessing ICT: Transforming Learners



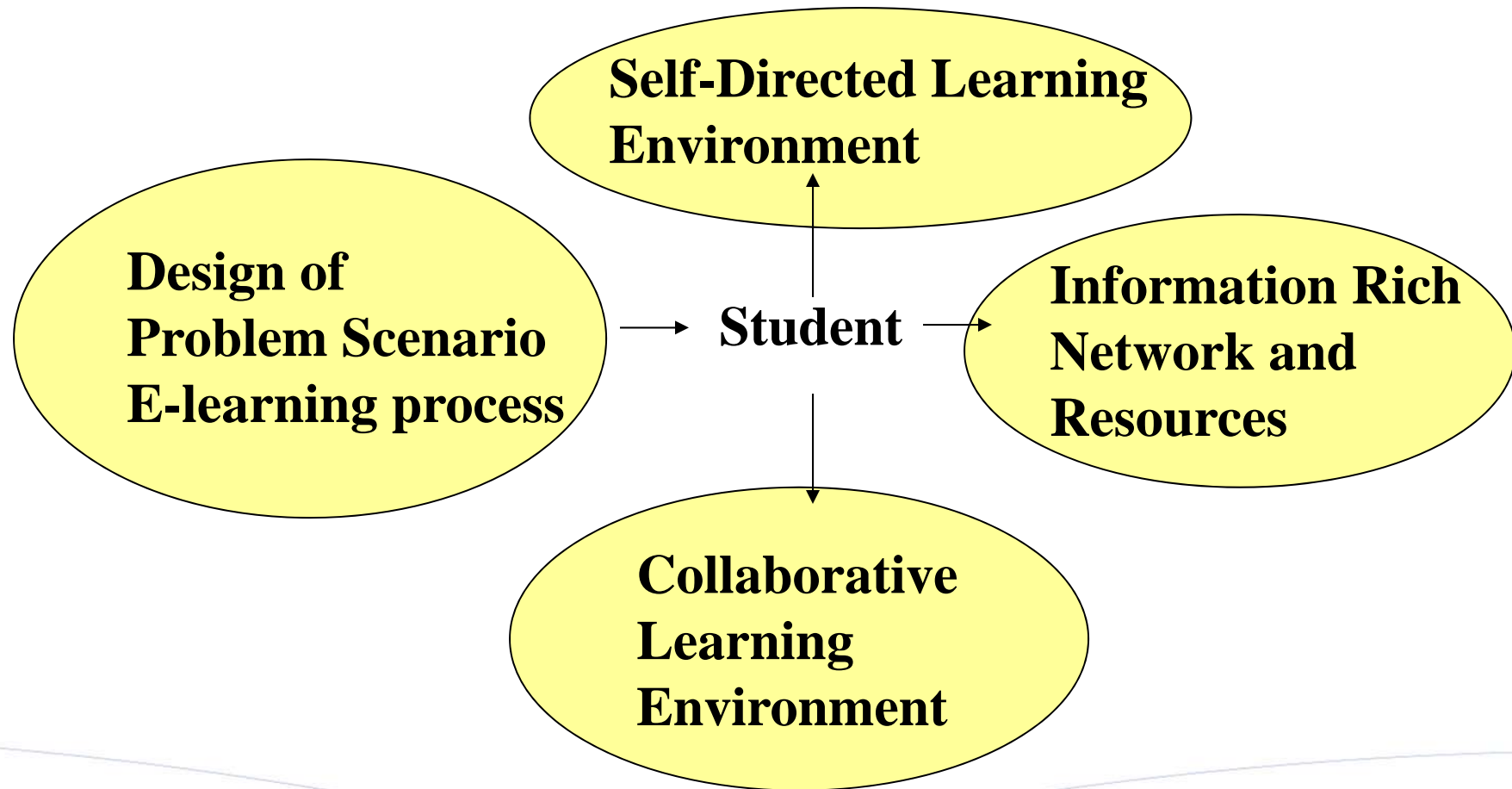
21st Century Competencies Framework



Role of Facilitator-Mediator-Designer



Designer of the Learning Environment



#Leadership: Promoting Professional Leadership and Symbolism of the Teacher

Asia's education secrets revealed



Oon-Seng Tan

The secret to the success of Asian education systems has often been attributed to cultural antecedents of parental involvement and over-competitiveness in the pursuit of grades. The West is fascinated by tales of "tiger mothers" who adopt an allegedly ethnically defined approach to educational excellence, involving strict discipline and hard work with little play.

These stereotypes obscure one of the most important catalysts for enhancing education in Asia – the teacher factor. There is a Chinese saying: "Every child's life is like a parchment where every teacher leaves an indelible mark."

Recent international studies on the impact of educational reforms on student learning and achievement often point to the importance of focusing on teacher recruitment, teacher education and teacher development. What can we learn from the policy and practices of some of the better performing education systems in Asia? How do some of the best systems cope and envisage the future?

The evolution of education systems of developed countries has

ensuring teachers are well equipped with subject matter expertise and how best to teach a subject. More time is spent on practical teacher skills such as understanding student psychology, and applying these insights to the classroom.

The training of teachers does not end when they enter the classroom. Professional development, sponsored by the Ministry of Education and supported by school leaders, is essential to ensure they adapt to the changing profile of new generations of students.

For example, Asian teachers are innovatively using pedagogies that tap on the cyber space environment and take their learners into the 21st century. Professional development also ensures they are being mentored and progressing satisfactorily in their careers. By ensuring the professional welfare of the operators of the education engine, the system works towards a win-win situation for every stakeholder – in contrast to many Western counterparts who are often caught up with union issues.

The training of teachers does not end when they enter the classroom.

Asia's successful education

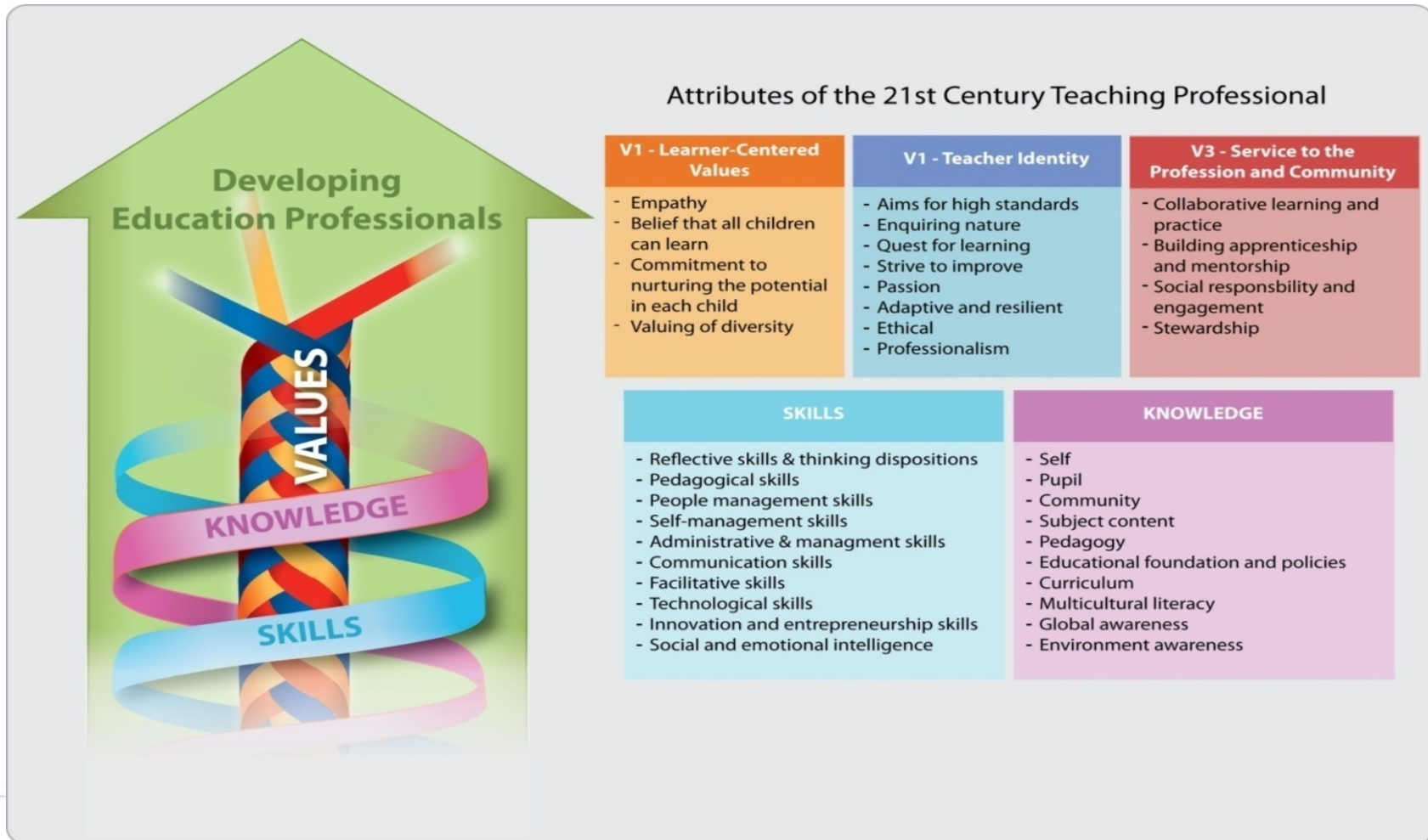
The secret of understanding The Teacher Factor

Teacher preparation is the sowing of seeds for lifelong learning

Education is not just about preparing people for the future; it is also about inventing our future.



Values, Skills and Knowledge

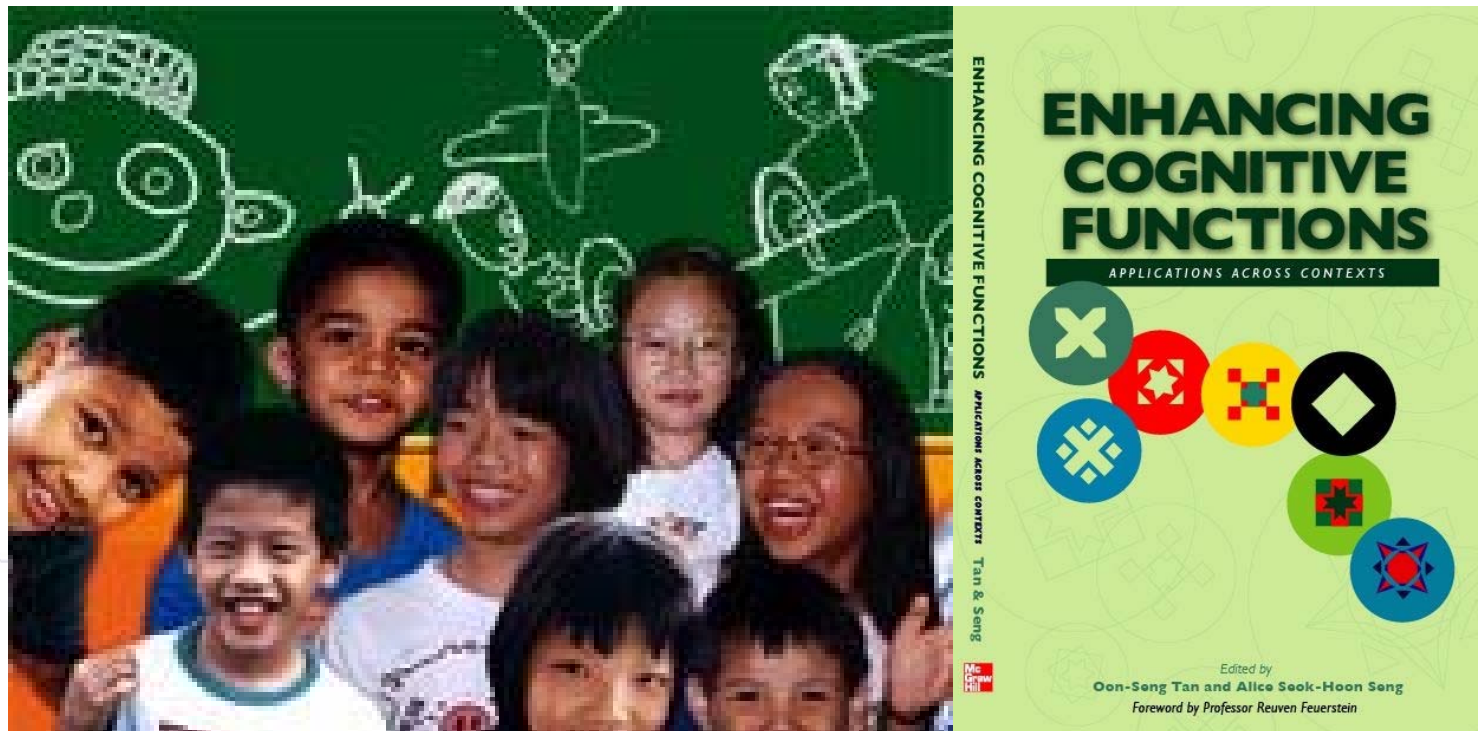


Source: NIE V3SK Model

- Teacher identity values refer to having high standards and strong drive to learn in view of rapid changes in the education milieu and to be responsive to students' needs.
- The role of the teacher is to enable students to recognize the state, repertoire, and depth of various dimensions of their thinking. In effective teaching, students' cognition "visibility" is important (Tan, 2004).
- Novice Teacher – Expert Teacher



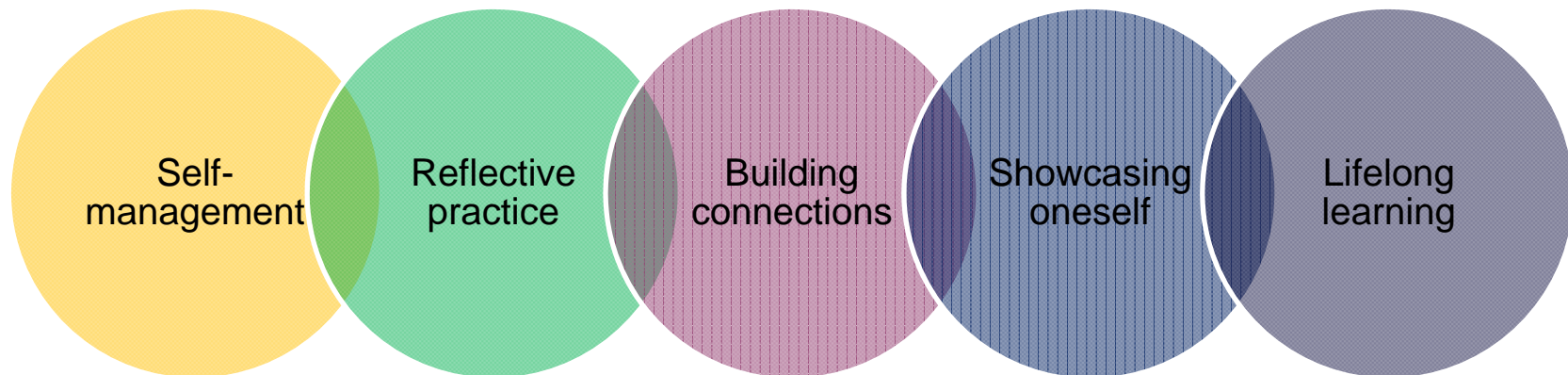
- The desired outcomes of the V³SK model is child-centred teacher.
- Teacher of the Child as a Person
- Content – Rich in Fundamentals and Heuristics
- Pedagogical Content Knowledge



Teaching and Learning e-Portfolio

The e-Portfolio is an electronic collection of authentic and diverse evidence of a student teacher's learning and achievement over time, on which he/she has reflected and designed for personal development, as well as for presentation for specific purposes.

The e-Portfolio is a tool for:

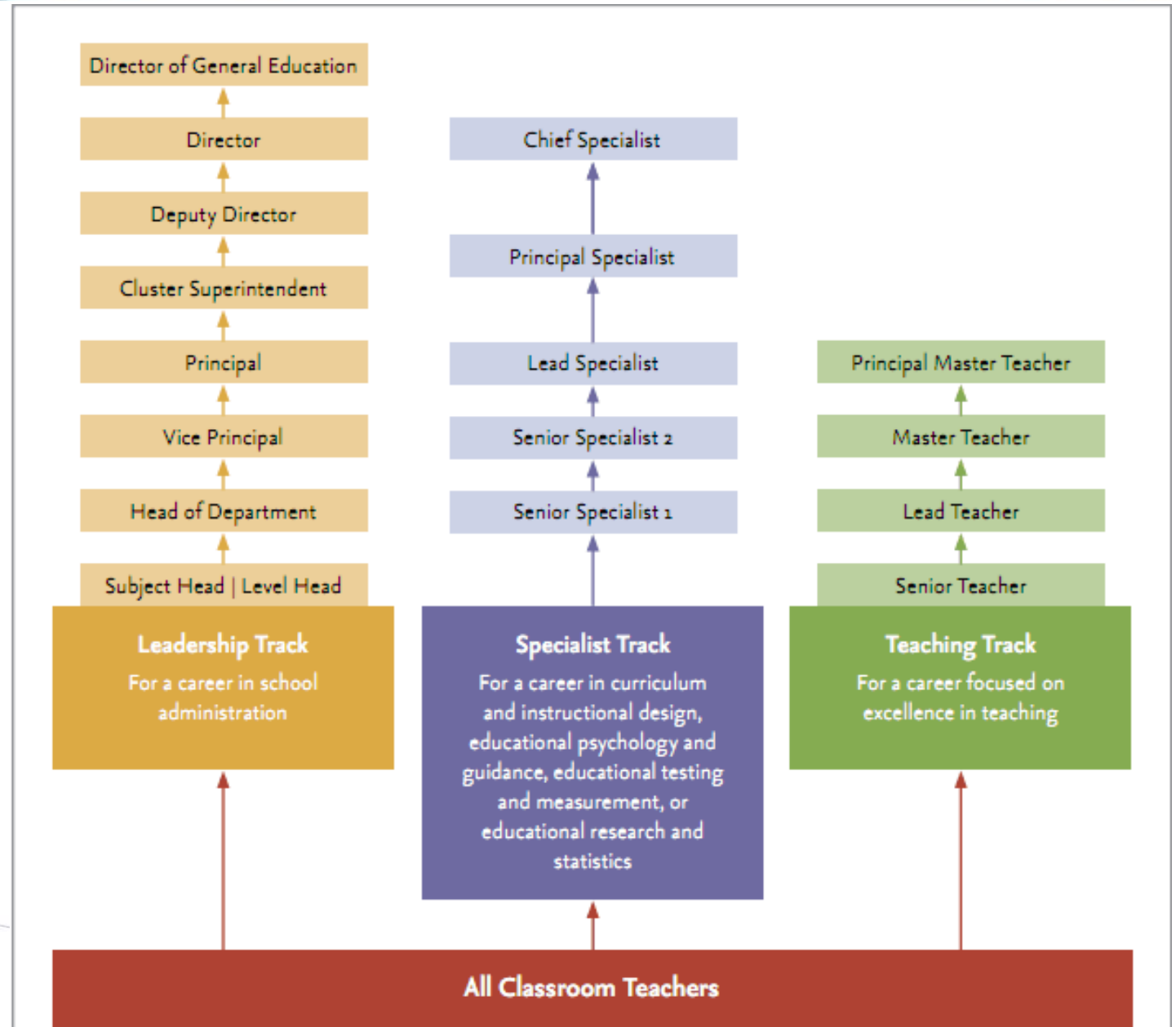


Source: NIE, 2012, p.

Leadership Track

Specialist Track

Teaching Track



- Professional Development Continuum Models (PDCM)
 - Provide different structured pathways for teachers to obtain higher professional certification through in-service courses at NIE

Higher Degree by Coursework

- Content-Based (MA, MSc)
- Education Discipline-Specific (Med)

Higher Degree by Research

- MA, MSc, PhD, EdD

Leadership Programmes

- Leaders in Education Programme

Teacher Professional Development

- Courses
- Advanced Diploma in Teaching (ADT)

#Empowerment

Teaching is about
transforming lives and creating the future.



Creators of knowledge, NOT merely consumers

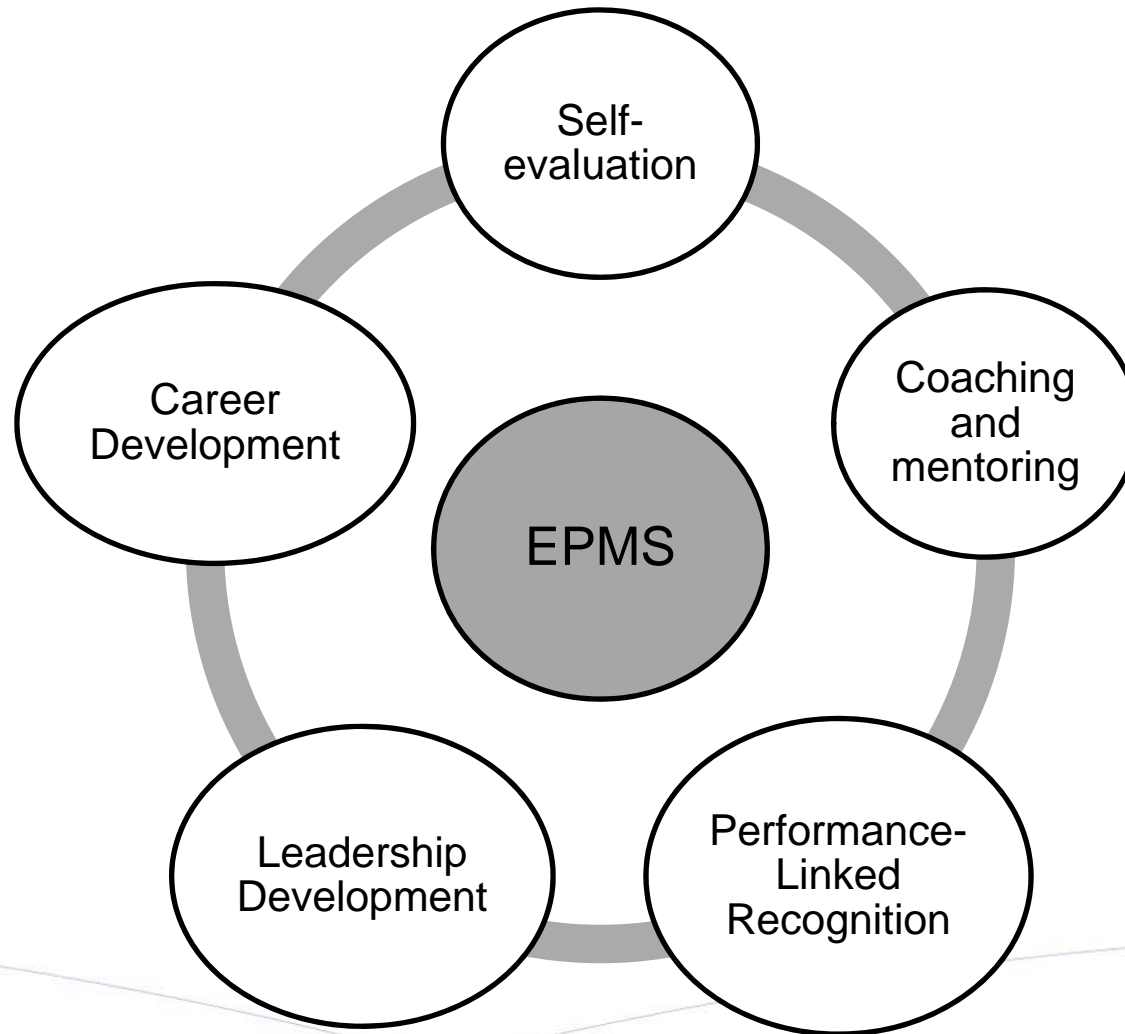
Facilitators of learning, NOT merely transmitters

Architects of learning environment, NOT merely
implementers

Leaders of educational change, NOT merely followers



EPMS is a holistic teacher evaluation tool



EPMS Key Result Areas for Teachers

- 1) The holistic development of students through:
 - a. Quality learning of students
 - b. Pastoral care and well-being of students
 - c. Co-curricular activities
- 2) Contribution to the school
- 3) Collaboration with parents
- 4) Professional development

Complemented by

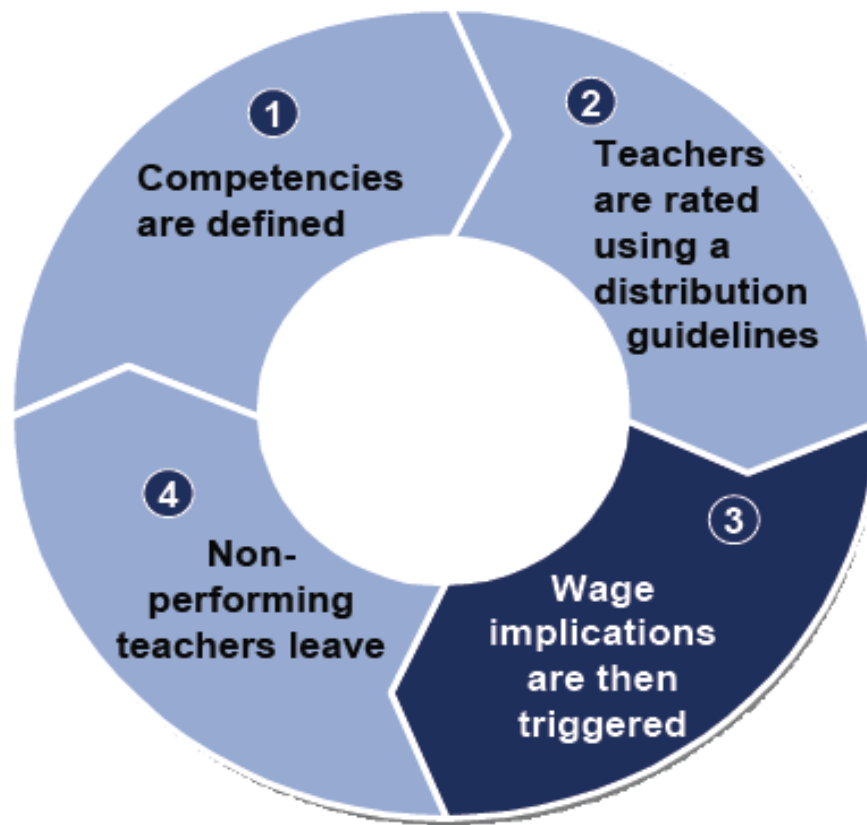


Knowledge

- a. Teaching Area
- b. Psychology
- c. Developments in the field of education
- d. Education Policies

Skills

- a. Teaching Pedagogy
- b. Teachers must practise to teach in the classroom



- 1** **Competencies are defined** identifying the skills and knowledge expected. Detailed descriptions of the competencies, and suggestions for improvement, are provided
- 2** **Distribution guidelines** are approximately normal, allowing differentiation between performance levels
- 3**
 - **A-rated teachers get bonus of up to 3.25 months salary (bonus pool varies by year)**
 - C-rated teachers' average bonuses are equivalent to their salary for 1.5 months
- 4**
 - E-graded performers put in a performance review for 6-9 months (termination possible)

- Reform, Innovation in what direction (marco, micro, wide-angle, telescopic)?
- Building Blocks: Standards, Accountability
- Tipping Blocks: Equity, Professionalism
- World Bank: Entrant standards, recruitment policy, ITP, workload and duties, development polices, compensation, T & L monitoring, school leadership, unions
- Singapore: Policy inception, design and implementation – clarity, communication and capacity
- Longevity, ownership & sustainability

21st century Learners call for 21st century Teachers

STUDENT - 21st
century

MOE and School
Initiatives

Research:
NIE and
International

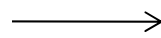
Best
practices
in
TE

21st century Teachers call for 21st century Teacher Educators

- Onus is for NIE to be responsive and relevant: universities are to be good at scholarship – research to inform the future
- Aggressive adaptation is happening all over Asia
- Hunger for novelty and learning
- Novice - Experts

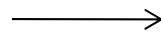
Rising above structures, human as resources, standards and competition

Requirement,
recruitment, ITP



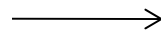
Teacher symbol

Teacher's workload
Teacher's roles



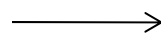
Teacher calling
and competencies

Compensation,
Salary, Benefits



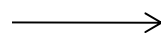
Teacher professional
development

Results, accountability



Professional care,
Proactive clinical practices

School management
and appraisal



Teacher leadership
and inspiration

THANK YOU!