



An Institute of



Preparing Teachers for the Changing Future

by

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TRANSFORMING TEACHING
INSPIRING LEARNING

OVERVIEW

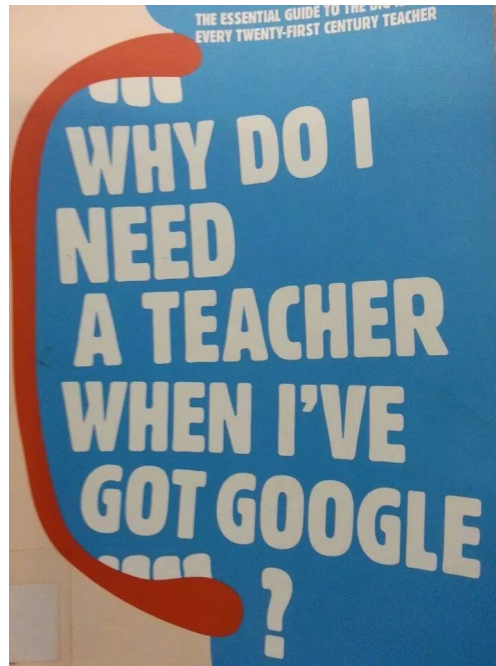
1. Education for the 21st Century

- Changing Profile of **L**earners
- The **R**eal World
- Role of **E**ducators

2. Transforming Teacher Education

- Teacher **P**rofessionalism
- Rigorous **P**rogramme
- Professional **P**ractice
- Innovative **P**edagogies
- Multiple **P**erspectives





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TRANSFORMING TEACHING INSPIRING LEARNING



“Muchness” of nothing

“More” of the same

“Jack-of-no-trade”

“Master-of-avoiding”

“Follow-law”



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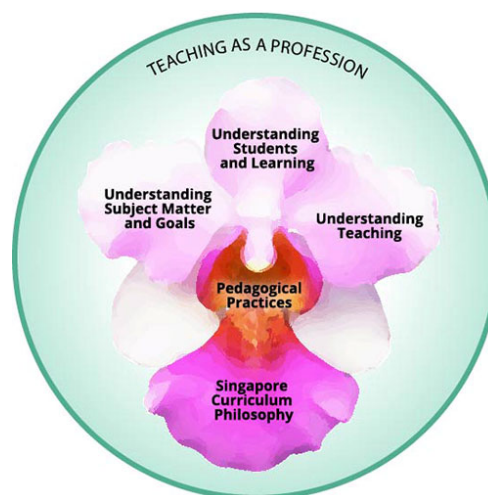


EDUCATORS NEED TO BE

SHAPERS OF CHARACTERS
CREATORS OF KNOWLEDGE
FACILITATORS OF LEARNING
ARCHITECTS OF LEARNING ENVIRONMENTS
LEADERS OF EDUCATIONAL CHANGE

21ST Century
Education

BACKGROUND



The Singapore Teaching Practice

<https://www.moe.gov.sg/about/singapore-teaching-practice>



Transforming Teacher Education



TRANSFORMING TEACHING INSPIRING LEARNING

Transforming
Teacher Education

Programme Foci

- Teacher **P**ROFESSIONALISM
- Rigorous **P**ROGRAMMES
- Professional **P**RACTICE
- Innovative **P**EDAGOGIES
- Multiple **P**ERSPECTIVES



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The teacher is
not just a teacher of a subject
but more importantly,
a teacher of the **learner** and
a **preserver and**
custodian of societal values.

- Tan, 2012



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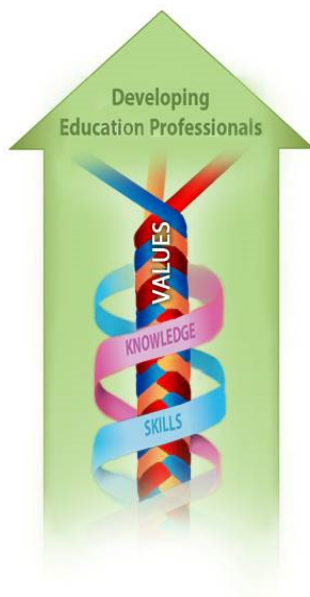


TRANSFORMING TEACHING INSPIRING LEARNING

V³SK Framework – a compass for 21st century TE

Attributes of the 21st Century Teaching Professional

V1 – Learner-Centered Values	V2 – Teacher Identity	V3 – Service to the Profession and Community
<ul style="list-style-type: none"> • Empathy • Belief that all children can learn • Commitment to nurturing the potential in each child • Valuing of diversity 	<ul style="list-style-type: none"> • Aims for high standards • Enquiring nature • Quest for learning • Strive to improve • Passion • Adaptive & resilient • Ethical • Professionalism 	<ul style="list-style-type: none"> • Collaborative learning and practice • Building apprenticeship and mentorship • Social responsibility & engagement • Stewardship



SKILLS

- Reflective skills & thinking dispositions
- Pedagogical skills
- People management skills
- Self-management skills
- Administrative & management skills
- Communication skills
- Facilitative skills
- Technological skills
- Innovation & entrepreneurship skills
- Social & emotional intelligence

KNOWLEDGE

- Self
- Pupil
- Community
- Subject content
- Pedagogy
- Educational foundation & policies
- Curriculum
- Multicultural literacy
- Global awareness
- Environmental awareness

- **Professional Practice and Inquiry Portfolio**
Crystallizing Teaching Philosophy
Constructing Conceptual Map of Learning and Teaching
- **Meranti Project**
Confronting Biases and Challenging Assumptions
Clarifying Values and Understanding Ethics
- **Character and Citizenship Education**
Understanding Citizenship and Nurturing Professional Commitment
- **Group Endeavour in Service Learning**
Learning to Serve, Serving to Learn



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- **Group Endeavour in Service Learning**
Understanding of **self**
Understanding of **others**
Understanding of **community needs**
Exploring social entrepreneurship
Develop effective **life skills**
Develop and exercise situational **leadership skills**
Encourage **innovation and creativity** under conditions of resource and time constraints



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- Deep understanding of learners
- Strong content and pedagogical mastery
- Strong theory-practice nexus
- Inquiry and research skills
- Multidisciplinary focus
- Extended clinical practice



Education Research

- Scientific study that examines education and learning processes and the human attributes, interactions, organisations, and institutions that shape educational outcomes.
- Examples of Projects
 - ✓ An Investigation of Primary 5 Students' Engagement in Mathematical Modelling
 - ✓ Problem-based Learning: A Study on its Impact on Learners' Motivation, Strategy Use, Learning Process
 - ✓ Examining the teaching of writing: Teachers' implementation of the STELLAR programme

Content Research

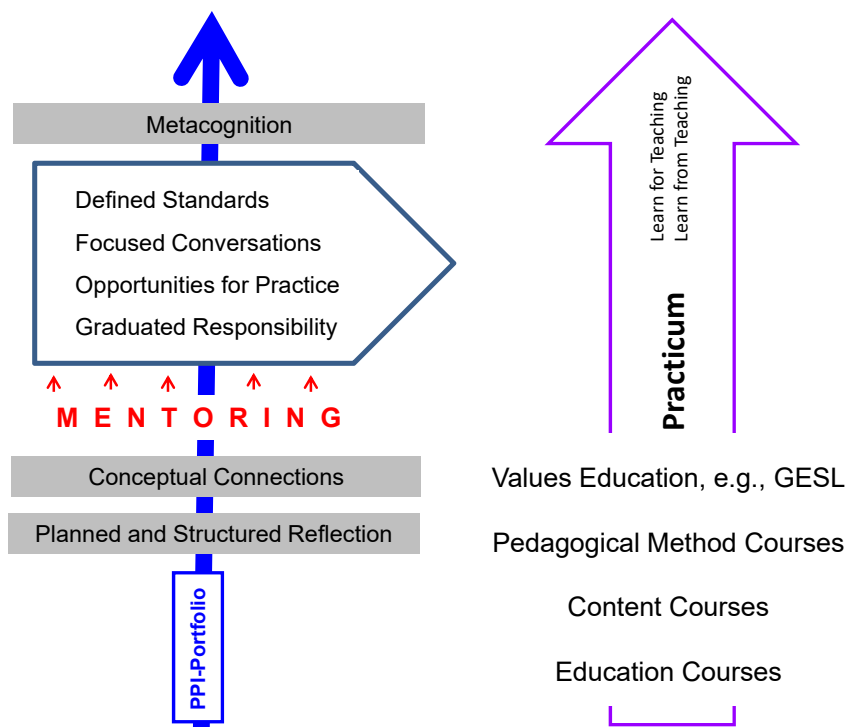
G-Quadruplex - targeting Anticancer Metal Complexes

A/P Yan Yaw Kai

- ✓ G-quadruplex structures are four-stranded, guanine-rich DNA structures containing coplanar square quartets of guanine residues held together by hydrogen bonding. They exist in telomeres and in promoter regions of some proto-oncogenes. The activity of the enzyme telomerase (crucial for the immortalization of cancer cells) can be inhibited if telomeric DNA is folded into a quadruplex structure.
- ✓ The aim of this project is to synthesise potential G-quadruplex binding metal complexes and investigate their binding affinity and specificity to G-quadruplex DNA. The cytotoxicity of these complexes against cancerous and non-cancerous cells will be determined too.



21st Century Teacher



• Professional Practice & Inquiry Folio

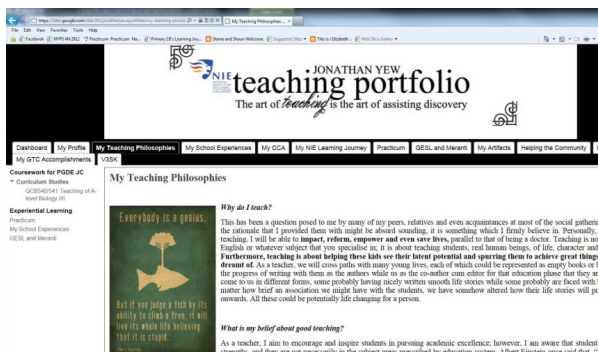
Crystallizing Teaching Philosophy

Constructing Conceptual Map of Learning and Teaching

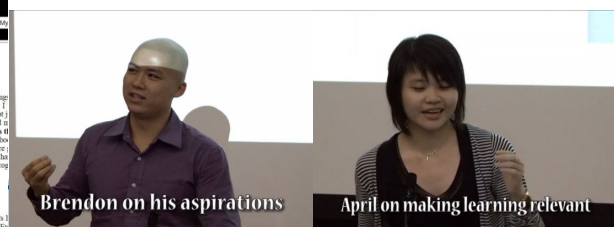
The PPI provides the platform for student teachers to

- ✓ integrate and aggregate their learning across the different courses and practicum;
- ✓ articulate the connection between theory and practice; and
- ✓ reflect and inquiry into their practice.

“There’s a lot of unstructured thinking going on, all these ideas come to you and you absorb them, but you may not have the time to fully form a particular framework to approach issues about education ... **it became the foundation of MY philosophy of education. That aspect of ourselves as educators became more anchored,** in terms of the beliefs that we held dear and certain things that we wanted to do in the course of our teaching experiences...”



Kelvin, PGDE JC



Experiential
(E)

Multimodal
(M)

Inquiry-Based
(I)

Connected
(C)

**Anywhere &
Anytime**
- Ease of Access of Info
- e-course

Borderless
- 'Porous' School
- Global Student

Seamless
- Real to Virtual
- Personal to Public
- Course to Course

Co-Learning
- Communicate
- Co-Construct
- Collaborate

Personalised
- Autonomous Learner
- Student-Driven



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Experiential (E)

- **Placed-Based Learning**

Connecting between texts and place

- **Field Experience**

Learn for Practice, Learn from Practice

- **Group Endeavour in Service Learning**

Learning to Serve, Serving to Learn

- **International Practicum**

Strengths and Weaknesses

Facts and Fallacies



Multimodal (M)



Video Games

Leveraging on video games for the discovery of self-directed and collaborative learning principles



Augmented Learning

Use of AR to elevate student teachers' experience of interacting with real physical objects and space

3-D Application

3D apps help in student teachers' visualization by providing a detailed and accurate graphic rendering of the content



Inquiry-Based (I)

- **Problem-Based Learning**

- Ill-defined real world problem
- Interdisciplinary focus
- Authentic investigation



- **Appreciative Inquiry**

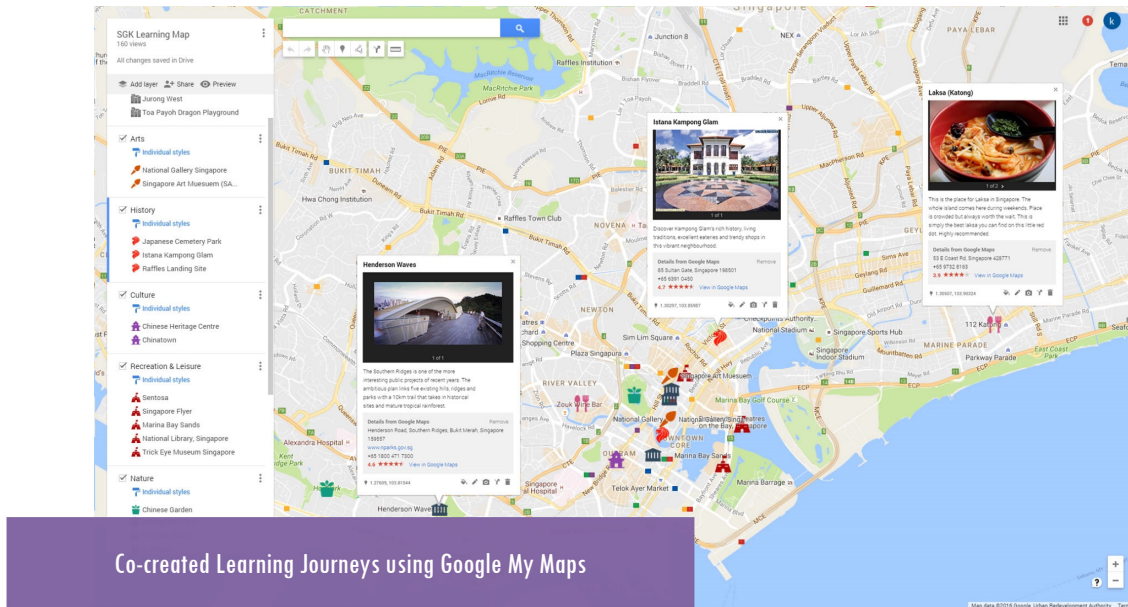
Singapore Kaleidoscope

- Singapore's natural heritage
- Society and culture
- Singapore's geo-political landscape



Pre-service teachers will engage with different perspectives, experience Singapore through a range of lenses, and explore the critical challenges and issues necessary to understand Singapore in the 21st century.





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Connected (C)

- Connecting to the World**

Use of NIE mGEO App to share information on the go during field trip



- IoT and Big Data**

Real-World Data and Interdisciplinary Learning
Nurture a culture of experimentation and innovation



Live Devices

Sensor	Location
431424	Woodlands Secondary School D6/T/Road 1024/100027
431424	Winnington School, Cool America, 1031
Atmospheric pressure	Bishan Park Secondary School Weather Station 1075/100031 Ch 2
Atmospheric pressure	Bukit Timah Primary School Weather Station 1077/100039 Ch 2
Atmospheric pressure	Tampines North Primary School Weather Station 1078/100029 Ch 3
Castle Rain Fall	Amey Site Weather Station 1308 Ch 7



- **Community as our Teacher**
 - Group Endeavor in Service Learning (GESL)
 - Service and Leadership Training (SALT) Programme (Vietnam)
 - Youth Expedition Programme (YEP)
- **Industry as our Partner**
 - Building University Interns for Leadership Development (BUILD) Programme
- **World as our Classroom**
 - Semester Exchange
 - International Teaching Assistantship

International Teaching Practice

“I've been told how different the education system would be in America (or any other country for that matter), but when you've spent your whole life studying in Singapore, you tend to forget, or find it hard to imagine, that another country would approach education in a wholly different way.”

- Zhiwen, BA Year 2 University of California, Santa Barbara





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

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Thank You

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