
2010 Raffles Institution Curriculum and Lab Open House
Meeting with Principal,Mrs.Lim Lai Cheng and
Deputy Principal, Mrs.Chia Geok Boon
Prof. Tai-Shan Fang's Photos-Report
Of RI Curriculum and Lab Open House Witness
Jan. 19~22, 2010
Ending up with Top 3 RI Students of the Singapore's 2 Golds 2 Silvers
in 42nd Tokyo 2010 IChO
Dean of Academy
Mrs Reavley Munn Ye
2010/01/20 08:57
Dr Rosemary Tan
CEO, Veredus Laboratories
Prof Fang Tai-Shan
National Taiwan Normal


1949
公元前219年秦徐福尋找長生不老藥
公元後2010年 42nd IChO
1946
1912
1895
1963
鄭和下西洋
賽先生與德先生在東方華語文文化的相對論
北京
天津
太原
石家庄
济南
银川
西宁
兰州
中国
China
西安(京)
郑州
合肥
南京
上海
杭州
成都
武汉
重庆
长沙
南昌
贵阳
福州
昆明
南宁
广州
Taiwan
Hong Kong
Macau
海口
Laos
Thailand
Vietnam
Cambodia
Malaysia
Singapore
North Korea
South Korea
日本
Japan
秋田
盛岡
新潟
仙台
水戸
東京
名古屋
静岡
大阪
岡山
広島
福岡
長崎
熊本
鹿児島
那覇
Philippines


Day 3: Dialogue Session with Gifted Chemistry Students
Meeting with Phase I Training—List of Invited Students:
1.Chester Chen Deyu
2.Fong Jie Ming Nigel (gold)ranked as no. 26
3.Goh Su Fen
4.Kaushik Subramanian Venkataraman
5.Lee Kwok Hao
6.Li Yi Wei Tony
Singapore Team (2 Golds 2 Silvers)
in 42nd Tokyo 2010 IChO
Khu Boon Hou Dereck (from 華僑高中)
(silver)ranked as no. 68
england
7.Low Zhao Kai
8.Lum Jian Yang (gold)ranked as no. 27
9.Shaun Ee Kai Ern
9.Tan Kia Hau Matthew
11.Tng Jia Hao Barry (silver)ranked as no. 45
12.Zhang Qinze Arthur
13 Zhang Wei
2010/01/21 09:03


Singapore Team (2 Golds 2 Silvers)
42nd
International
Chemistry Olympiad
Presentation of
Gold Medals
2. (RI)Fong Jie Ming Nigel (gold) ranked as no. 26
8. (RI)Lum Jian Yang (gold)ranked as no. 27
11.(RI)Tng Jia Hao Barry (silver)ranked as no. 45
Khu Boon Hou Dereck (from華僑高中)(silver)ranked as no. 68


謝謝萊佛士書院
全體師生 四天三夜
熱情周詳的接待!
Thank you all of RI's
Hospitality during my
4-days- 3-night's
visiting
Congratulations!
Top 3 of Singapore 2
Golds 2 silvers from
your RI students !!


2010 Raffles Institution Curriculum and Lab Open House
Meeting with Pincipal,Mrs.Lim Lai Cheng and
Deputy Principal, Mrs.Chia Geok Boon
Prof. Tai-Shan Fang's Photos-Report
Of RI Curriculum and Lab Open House Witness
Jan. 19~22, 2010
Dean of Academy
Mrs.Reavley Munn Ye
2010/01/20 09:57
Network of Scientific Advisers
Prof Peter Ng
Director, Raffles Museum of Biodiversity Research and Tropical Marine Science Institute
Prof Lim Tit Meng
CEO-designate, Singapore Science Centre
Asst Prof Shawn Lum
Nanyang Technological University
Dr Rosemary Tan
CEO, Veredus Laboratories
Assoc Prof Hugh Tan
National University of Singapore
Prof Fang Tai-Shan
National Taiwan Normal

Launch of the Raffles OpenLab on 20 January 2010

http://www.rjc.edu.sg/new/news1.asp?nid=313

26 Jan 2010

The OpenLab was officially launched on the 20th Jan 2010 by our Guest-of-Honour, Ms Ho Peng, Director-General of Education, Ministry of Education, Singapore. The OpenLab was built in June 2009 and has since been host to a variety of Independent student science research projects, science electives, scientific seminars and student-run science electives.

The OpenLab houses dedicated staff and resources with a Scientists-in-Residence Programme. And we have at present 2 PhDs, 1 MSc, 1 Lab Officer, 1 Lab technician. The facilities of the lab are up-to-date and designed for research at advanced levels.

The purpose of the OpenLab is in making scientific research accessible to students for: 1) A safe environment for students to conduct research, 2) Readily available research equipment, 3) Access to scientists-in-residence within school, 4) An open community of inquirers.

Our scientific advisers are as follows:

Scientific Advisers

Prof Peter Ng
Director, Raffles Museum of Biodiversity Research and Tropical Marine Science Institute

Prof Lim Tit Meng
CEO, Singapore Science Centre / Assoc Professor, Department of Biological Sciences, The Natianal University of Singapore

Assoc Prof Hugh Tan
Department of Biological Sciences, The National University of Singapore

Asst Prof Shawn Lum
National Institute of Education, Nanyang Technological University

Lifescience Industry Adviser

Dr. Rosemary Tan
CEO, Vereduslaboratories

Overseas Scientific Adviser

Prof Fang Tai-Shan
National Taiwan Normal University

Day 1: Arrival
In York Hotel

20 - 22 January 2010

觀摩新加坡教育部萊佛士初級學院推動
”教師引擎追求專業卓越文化” 的實踐體驗

By Prof. Tai-Shan Fang
方泰山
國立台灣師範大學化學系教授
精簡首頁 http://icho.chem.ntnu.edu.tw/index.htm
中華民國台灣參加國際化學奧林匹亞競賽計畫主持人
http://icho.chem.ntnu.edu.tw

“A Teacher-Driven Culture of Professional Excellence”

Quote from MOE Work Plan Seminar on 17 September 2009, Dr Ng Eng Hen, Minister for Education and Second Minister for Defence

Raffles Institution (Singapore) would like to extend an invitation to you to visit Raffles Institution (Singapore) from **20 - 22 January 2010**. We would be delighted for you to be one of our honoured guests to grace our **Curriculum Open House and to witness the opening of the Raffles OpenLab** by the Director-General of Education, Ministry of Education Singapore on 20 January 2010. The official **Curriculum Open House will be on 20 Jan**, while the programme for **21 - 22 Jan will involve dialogue and exchange sessions with the institution's key personnel and science teachers.**

Uncle Lee(0):新加坡的李表哥---- Polytics 李光耀

Lee Kuan Yew

李光耀，GCMG，CH（**Lee Kuan Yew**，1923年9月16日－），新加坡華人，爲新加坡前任總理、前任國務資政、以及現任內閣資政，常被譽爲**新加坡國父**。李光耀不僅是新加坡的**開國元老**之一，也是現今新加坡政壇極具影響力的人物之一。

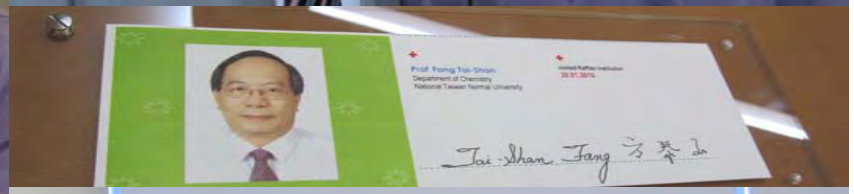
李光耀1923年9月16日出生於馬六甲萬里望，是當地的第四代華裔，祖籍爲中國湖北省（天門）。他的祖先原本在蘭芳共和國生活，直至其所在地被荷蘭吞併之後，取道蘇門答臘島及馬來亞半島，最終來到新加坡定居。李光耀自幼就接受英語教育，13歲（1936年）時考入當地頂尖的英校萊佛士書院（初中部），18歲（1940年）時考入原校的高中部，但在日軍佔領新加坡後中斷學業。戰爭結束後，李光耀榮獲大英帝國女王獎學金，並開始赴英國留學。

在留學英國初期，李光耀就讀於倫敦經濟學院，並在學習時受到導師拉斯基的社會主義理論影響，逐漸展現反殖民統治傾向，但在之後卻一直以「反共者」著稱。他曾在他的回憶錄中表示，「之所以討厭共產黨人，根源在於他們採用列寧主義（領袖集權）的方法，不在於他們的馬克思主義理想。」一年後，李光耀轉到劍橋大學攻讀法律，並於1949年畢業，隨後取得律師資格。同年，他與以前在萊佛士書院的同學柯玉芝（1921年生）結婚，現共育有兩個兒子（李顯龍、李顯揚）和一個女兒（李瑋玲）。

Lee Kuan Yew, Honorary GCMG, Honorary CH (Christian name: Harry, Chinese: 李光耀; pinyin: *Lǐ Guāngyào*; POJ: Lí Kng-iāu; born 16 September 1923; also Lee Kwan-Yew) was the first Prime Minister of the Republic of Singapore, from 1959 to 1990.

As co-founder and first secretary-general of the People's Action Party (PAP), he led the party to a landslide victory in 1959, oversaw the separation of Singapore from the Federation of Malaysia in 1965 and its subsequent transformation from a relatively underdeveloped colonial outpost with no natural resources into a "First World", Asian Tiger. He has remained one of the most influential political figures in South-East Asia.

Day 2: Curriculum Open House and Facility



Raffles Institution (Junior College)
Raffles Institution (Junior College)
(formerly Raffles Junior College) is a junior college in Singapore offering a two-year course for students. It is located in Bishan beside the campus of Raffles Institution. The Principal is Mrs Lim Lai Cheng (2007–present). She takes over from Winston James Hodge, (2001–2007) who stepped down as Principal on 17 December 2007 after leaving the school to assume a post at the Ministry of Education.[1]
A merger has been approved by MOE. Raffles Institution and Raffles Junior College has been merged into a single institution since 1 January 2009. Raffles Girls' School was reported to have rejected the idea of a merger.[2] In addition, a common Board of Governors for Raffles Institution and Raffles Junior College has been implemented since June 2008.[3]

Raffles Junior College
萊佛士初級學院
(Láifóshì chūjí xuéyuàn)
Maktab Rendah Raffles

10, Bishan Street 21, Singapore 574013
Singapore

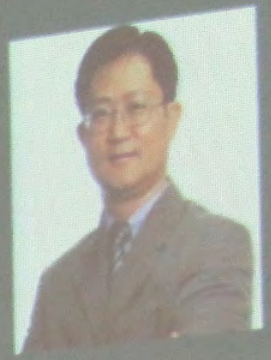
Information	
Type	Independent
Session	Full-day
Established	1982
Principal	Lim Lai Cheng
Enrolment	Approx. 2500
Campus size	8.65 hectares
Campus	Open concept
Colour(s)	Green, black, white
Website	Link

A Network of Scientific Advisers

Prof Peter Ng
Director, Raffles Museum of Biodiversity Research and Tropical Marine Science Institute

Asst Prof Shawn Lum
Nanyang Technological University

Assoc Prof Hugh Tan
National University of Singapore



Prof Lim Tit Meng
CEO-designate, Singapore Science Centre

Dr Rosemary Tan
CEO, Veredus Laboratories

Prof Fang Tai-Shan
National Taiwan Normal Univers

2010/01/20 11:36

Day 2: Open-Lab and accept as a Scientific adviser

2010 Raffles Curriculum Open House Programme

Date:20 January 2010 Venue:Raffles Institution (Junior College)

S/N	Time	Description	Venue
Curriculum Open House Lesson Observations (教學觀摩)			
1	0800 – 1130	Curriculum Open House: Observations of lessons for Mathematics, Chemistry, Physics and Biology (基礎科學)	Various classrooms
2	1130 – 1300	Lunch and Dialogue Session (意見交換)	
Raffles Science Institute's OpenLab (開放實驗研究室起用)			
3	1100 – 1300	Official Opening of Raffles Science Institute's Open Lab by Director-General of Education	RSI Open Lab
Instructional Programme Support Group Sharing (教學分享研討會)			
4	1330 –1400	IPSG registration	Amphitheatre
5	1400 – 1445	Welcome and opening followed by Keynote address	LT1
6	1445 –1530	Concurrent sessions A	Classrooms/Labs
7	1530 –1600	Tea Break	Amphitheatre
8	1600 –1730	Concurrent Sessions B	Classrooms/Labs
9	1730	End of Event	

Curriculum Open House

(i) to provide a platform for Raffles and other JC teachers to share their best curricular and instructional practices for critique and discussion by other educators,

(ii) to provide a forum for practitioners to interact and engage in discussion and exchange on curricular issues related to the specific subject disciplines. It is hoped that this mutual sharing of best practices and ideas will kick-start the establishment of professional learning circles that will raise teacher competency levels across all schools.

The programme comprises 3 segments:

(i) Lesson Observations,

(ii) Showcase of Raffles Science Institute's Openlab, and

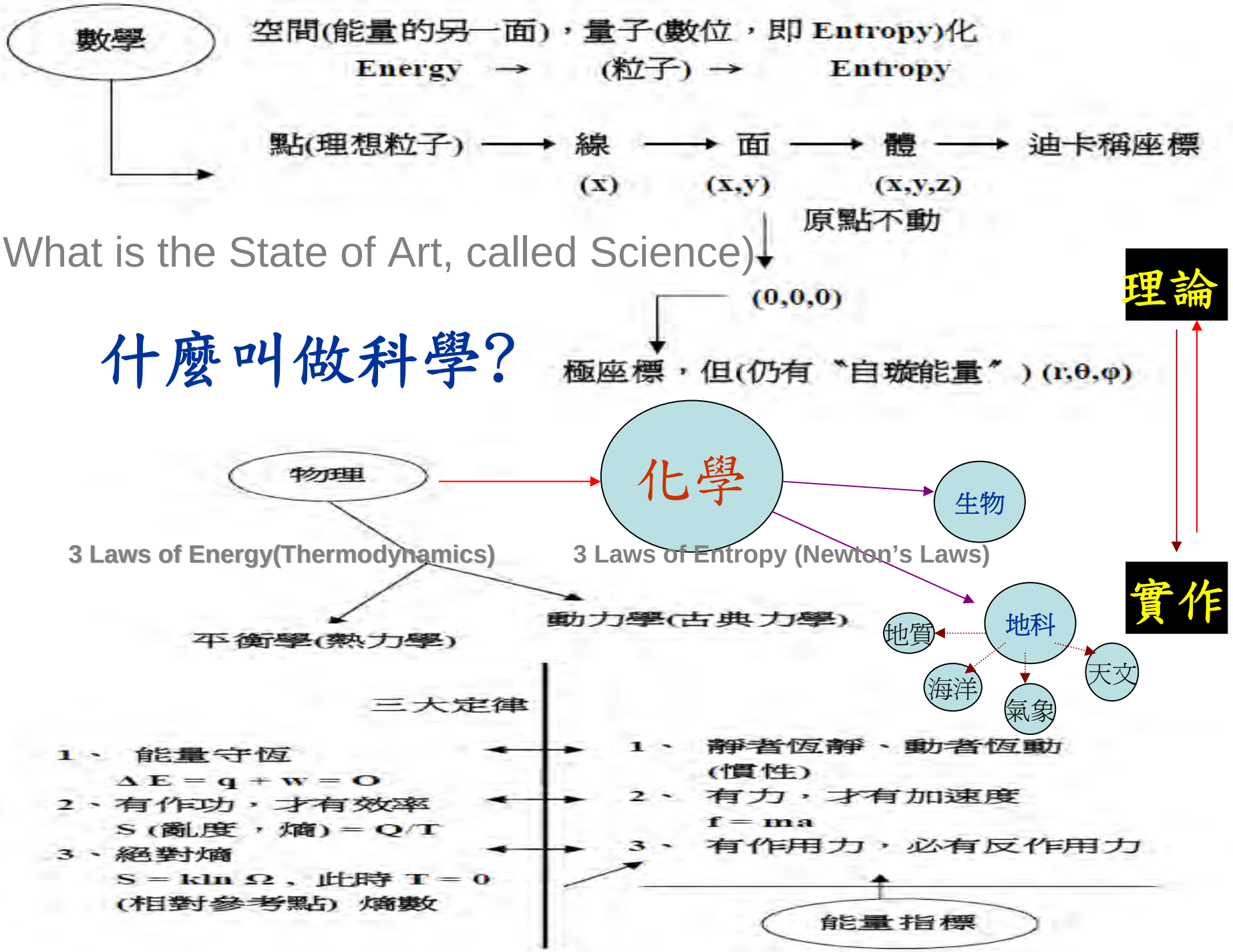
(iii) Sharing by Instructional Programme Support Group (IPSG).

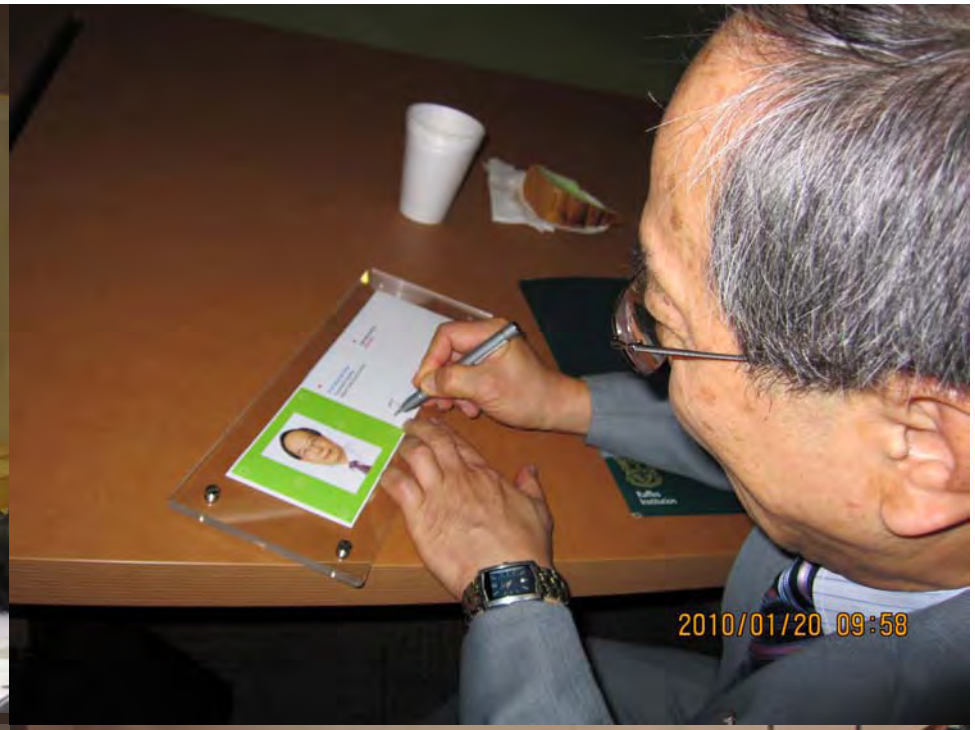
The programme schedule is available in Annex 1.

(i) Lesson Observations

Lesson Observations

The first segment of the programme involves lesson observations. Visitors are free to ‘drop in’ on lessons conducted by Raffles teachers. They are then invited to a dialogue session where they can meet with the teachers conducting the lesson for discussion. Visitors are encouraged to give feedback on the lesson observed, to offer constructive suggestions, to engage in discussion on pertinent issues related to the lesson and to share the challenges faced and strategies used in the teaching of their subject.


數學
空間(能量的另一面)，量子(數位，即 Entropy)化
Energy → (粒子) → Entropy
點(理想粒子) → 線 → 面 → 體 → 迪卡稱座標
(x) (x,y) (x,y,z)
原點不動
(0,0,0)
What is the State of Art, called Science)
什麼叫做科學?
極座標，但(仍有〝自璇能量〞) (r,θ,φ)
理論
實作
物理
化學
生物
3 Laws of Energy(Thermodynamics)
3 Laws of Entropy (Newton's Laws)
平衡學(熱力學)
動力學(古典力學)
地科
地質
海洋
氣象
天文
三大定律
1、 能量守恆
ΔE = q + w = O
2、有作功，才有效率
S (亂度，熵) = Q/T
3、絕對熵
S = kln Ω，此時 T = 0
(相對參考點) 熵數
1、 靜者恆靜、動者恆動
(慣性)
2、 有力，才有加速度
f = ma
3、 有作用力，必有反作用力
能量指標



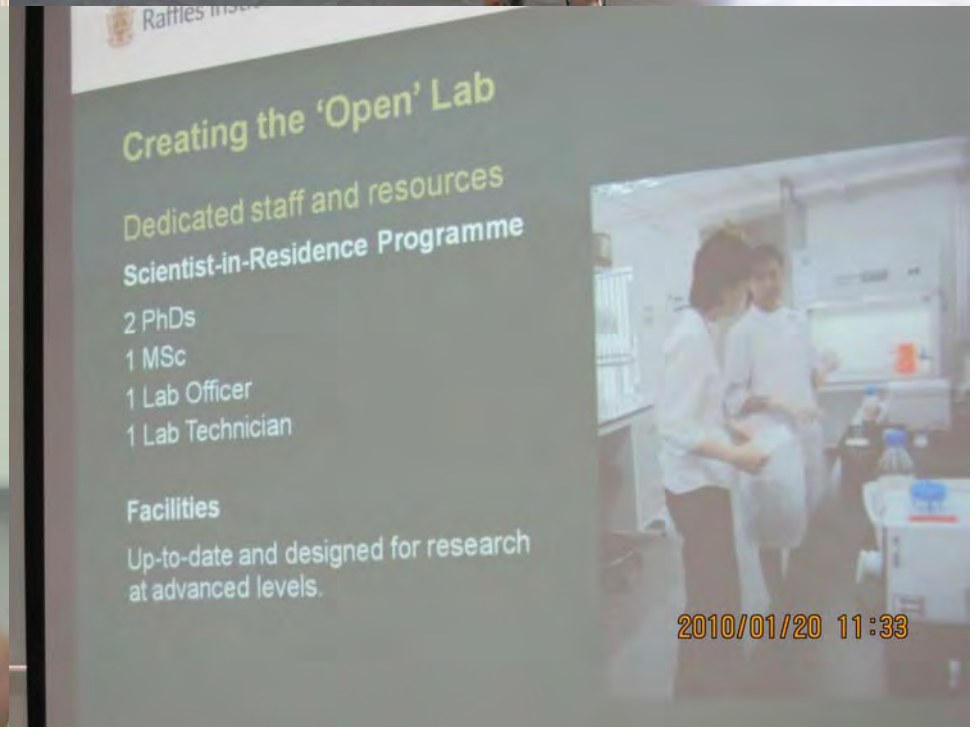
Mass-Scale General Science Class

Day 2: Open-Lab


The Raffles OpenLab
Nurturing the Thinker, Leader and Pioneer in
2010/01/20 11:31


Why an 'Open' Lab?
Making scientific research accessible to students:
• A safe environment for students to conduct research
• Readily available research equipment
• Access to scientists-in-residence within school
• An open community of inquirers
2010/01/20 11:32


2010/01/20 11:31


Creating the 'Open' Lab
Dedicated staff and resources
Scientist-in-Residence Programme
2 PhDs
1 MSc
1 Lab Officer
1 Lab Technician
Facilities
Up-to-date and designed for research at advanced levels.
2010/01/20 11:33

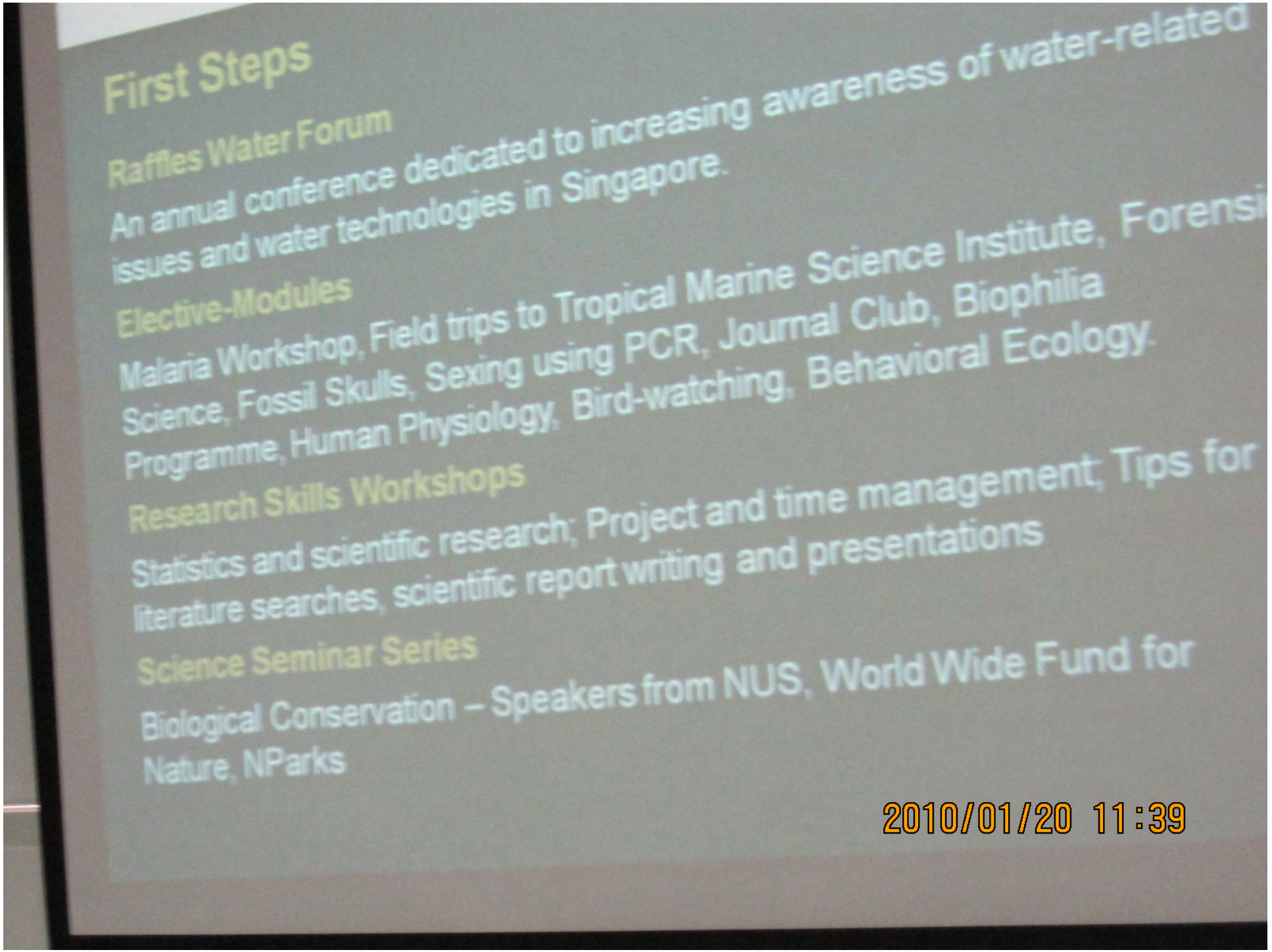
The OpenLab was officially launched on the 20th Jan 2010 by our Guest-of-Honour, Ms Ho Peng, Director-General of Education, Ministry of Education, Singapore. The OpenLab was built in June 2009 and has since been host to a variety of Independent student science research projects, science electives, scientific seminars and student-run science electives.

The OpenLab houses dedicated staff and resources with a Scientists-in-Residence Programme. And we have at present 2 PhDs, 1 MSc, 1 Lab Officer, 1 Lab technician. The facilities of the lab are up-to-date and designed for research at advanced levels.

Overseas Scientific Adviser

Prof Fang Tai-Shan

National Taiwan Normal University

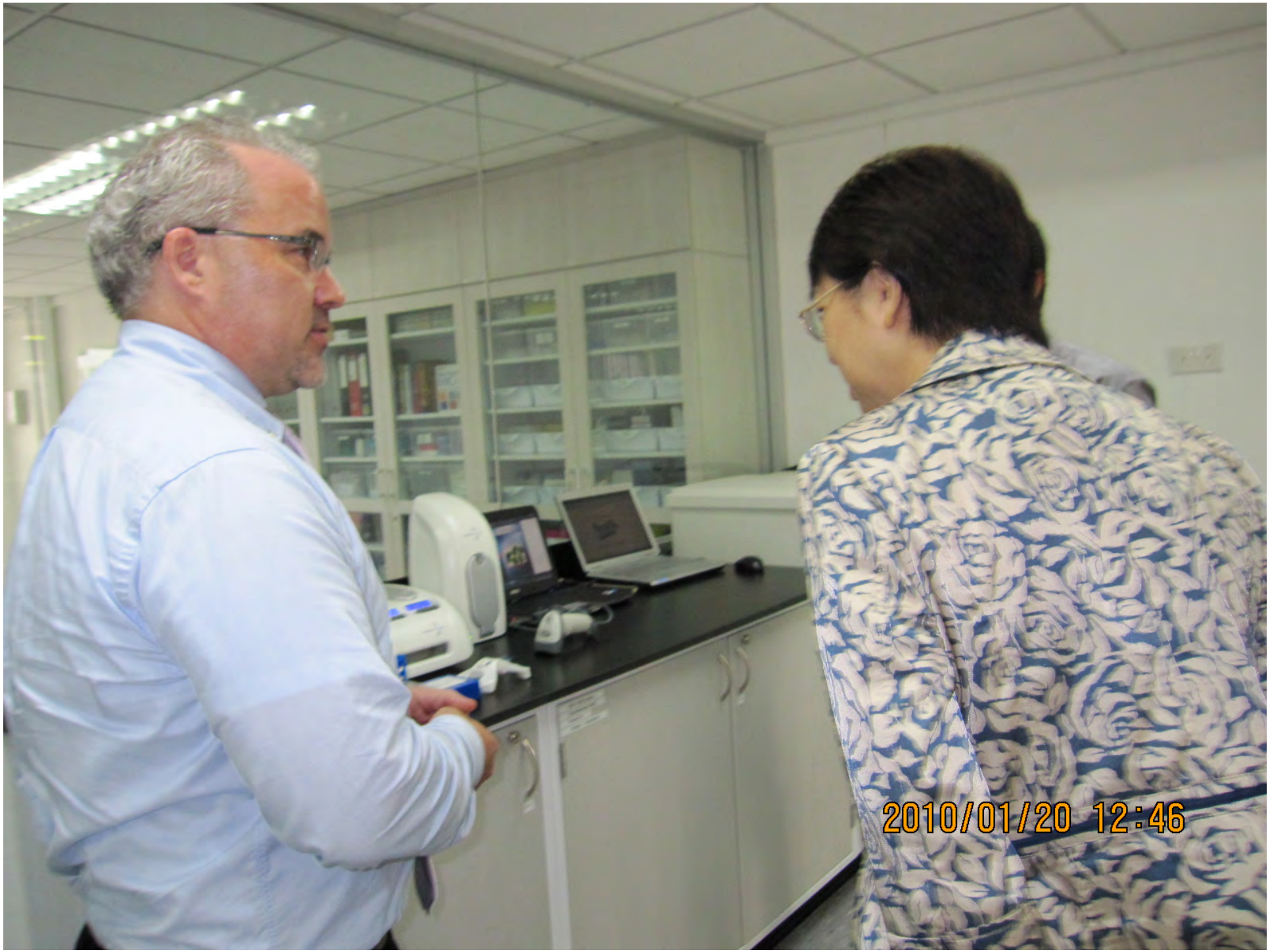

First Steps
Raffles Water Forum
An annual conference dedicated to increasing awareness of water-related issues and water technologies in Singapore.
Elective-Modules
Malaria Workshop, Field trips to Tropical Marine Science Institute, Forensi Science, Fossil Skulls, Sexing using PCR, Journal Club, Biophilia Programme, Human Physiology, Bird-watching, Behavioral Ecology.
Research Skills Workshops
Statistics and scientific research; Project and time management; Tips for literature searches, scientific report writing and presentations
Science Seminar Series
Biological Conservation – Speakers from NUS, World Wide Fund for Nature, NParks
2010/01/20 11:39


Raffles Institution
Looking Ahead
The World Food Programme
A programme that incorporates 1st hand experience of crop farming using micro-credit and a series of invited lectures on food security, genetically modified rice, climate-change, aquaculture and marine sustainabilily.
Raffles-Veredus Programme
More on this by our Scientific-industry partner, Dr Rosemary Tan, CEO, Veredus Laboratories.
2010/01/20 11:40


Phenology of Mangroves
Tan Yeong Tze Wilnard
Pang Jing-Mei Elaine
Mentors:
Mr N. Sivasothi, Lecturer,
Department of Biological Sciences, NUS
&
Dr. Adrian Loo, RI(JC)
2010/01/20 11:43


Upside-down
communities un
at St John's Is
Joc
Mentor: Dr
Teacher-men
Click to add notes
2010/01/20 12:23


veredus laboratories
Raffles – Veredus
Lab-on-Chip
Programme Lau
20 January 20
2010/01/20 12:31


2010/01/20 12:46

Press Release

83 Science Park Drive,
#03-02A, The Curie
Singapore Science Park 1,
Singapore 118258
Tel +65 6496 8800
Fax +65 6779 2850
Email: info@veredulabs.com

PRESS RELEASE

29 April 2009

Veredus Laboratories Updates VereFlu™ Lab-on-Chip to Specifically Detect the Current Strain of Swine Flu H1N1 in Addition to All Other Human Flu Strains

Singapore - April 29, 2009 - Veredus Laboratories today announced that the current version of VereFlu™ is able to detect, from a sequence perspective, the variant strain of H1N1 (swine flu) that is responsible for the Flu outbreak in Mexico and which has caused concern on a global scale. The VereID™ Biosystem and VereFlu™ launched in 2008, built on the STMicroelectronics lab-on-chip platform, is the market's first test which has integrated two powerful molecular biological applications, Polymerase Chain Reaction (PCR) and a microarray, onto a Lab-on-Chip platform. VereFlu™ can identify and differentiate human strains of Influenza A (H1, H3, H5, H7, H9) and B viruses, including the Avian Flu strain H5N1, as well as the current Swine Flu H1N1, all in a single test.

VereFlu™ is a portable lab-on-chip application for rapid detection of all major influenza types at the point of need. Unlike existing diagnostic methods, VereFlu™ is a breakthrough molecular diagnostic test that can detect infection with high accuracy and sensitivity, within two hours, providing genetic information on the infection that traditionally could take days to weeks to learn. With its high level of automation, users outside the traditional lab environment can easily perform the tests at the point of need.

"Within a few days of learning of this new mutation, we have updated our flu panel to include the detection of the new variant strain of H1N1 and expect to have these chips available shortly," said Rosemary Tan, chief executive officer of Veredus. "Once we've verified the efficacy of the tests on human samples over the next few weeks, we expect to be able to deliver a fast, reliable surveillance system that can be deployed globally to help monitor the current influenza situation."

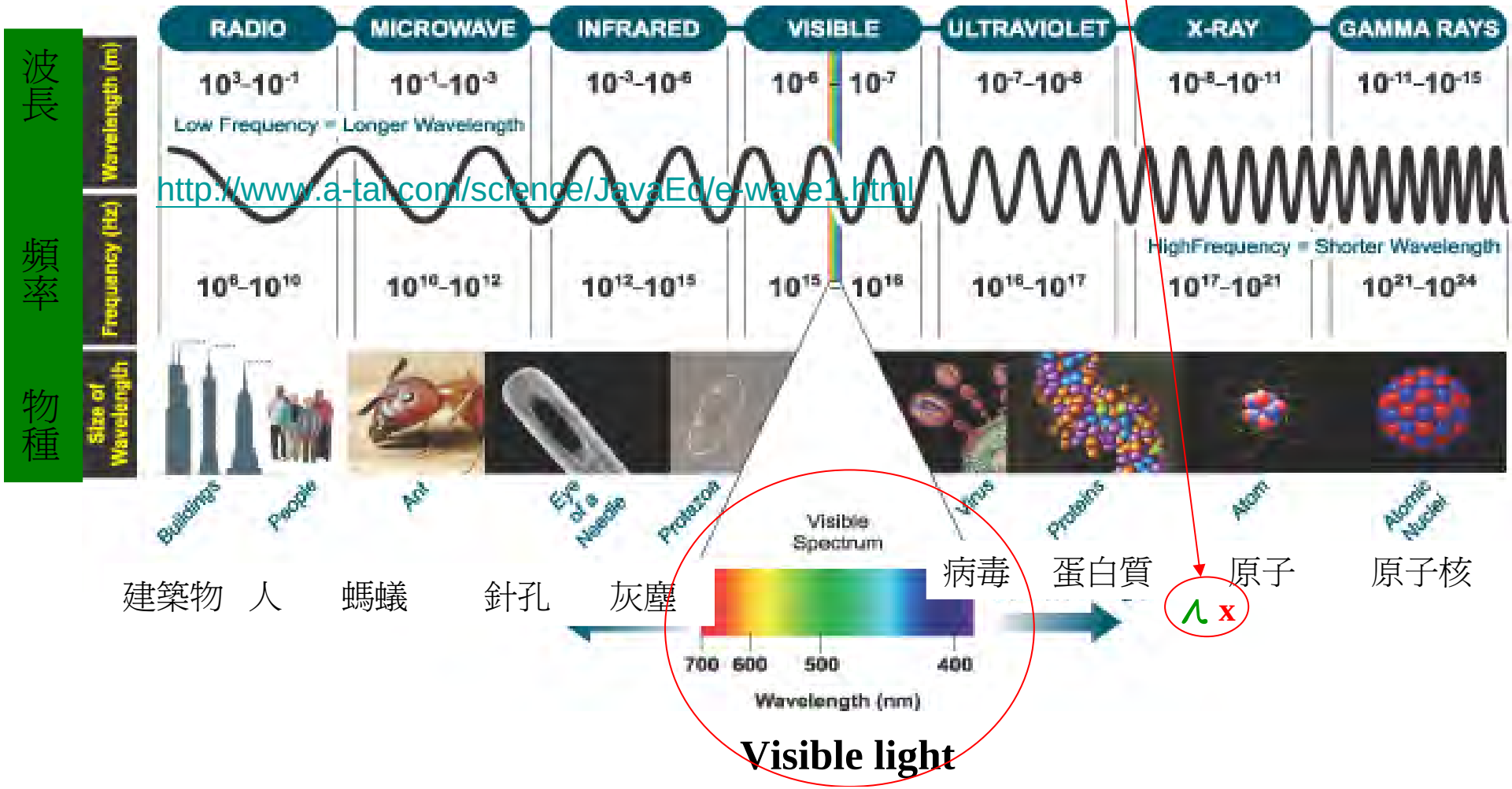
Interconversion of Energy and Entropy

由0到1 的相對論

複雜系統簡單化:n相位焦距單1相位（mass phase ⟶ x相位）

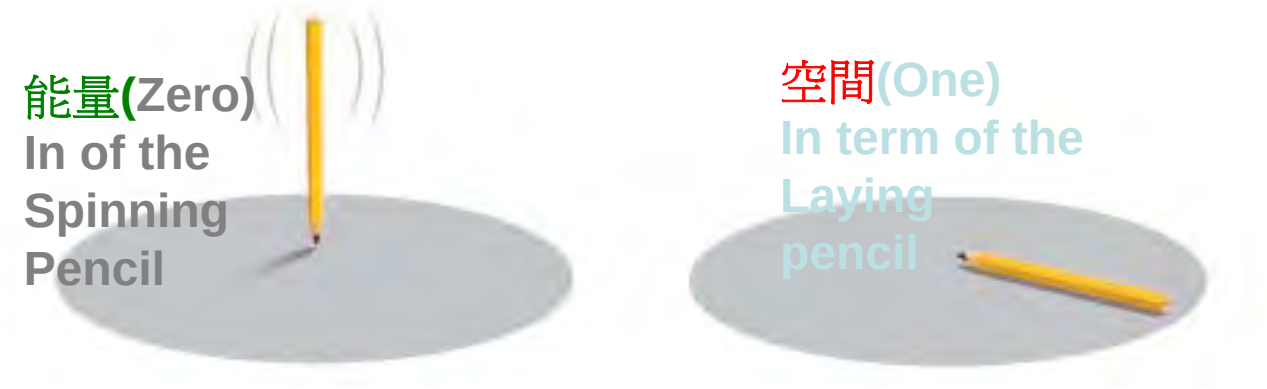
能量Zero【 $E = kT = mC^2 = h\nu = h\,C\,x / \lambda\,x$ (nm)≒ S 】空間One

$k = 13.8 \times 10^{-24}$ j /K　$h = 6.626 \times 10^{-34}$ j.s. ; s/K = 2.0827 x (10^{10})



零= 0
(Energy)

壹= 1
(Etropy)



Spontaneous broken symmetry. *The world of this pencil is completely symmetrical. All directions are exactly equal. But this symmetry is lost when the pencil falls over. Now only one direction holds. The symmetry that existed before is hidden behind the fallen pencil.*

生活中的自發破缺對稱

以筆尖立於桌面的鉛筆，若呈現完美對稱，其來自所有方向的能量應都相等。但鉛筆終究會倒下，此時對稱就被破壞。換句話說，鉛筆倒下後達到較穩定的狀態。

Theory $\rightleftarrows$ Reality

經由數理的創造力教育:自然與人文社會的對話

The Creative Education through Math and Science Education

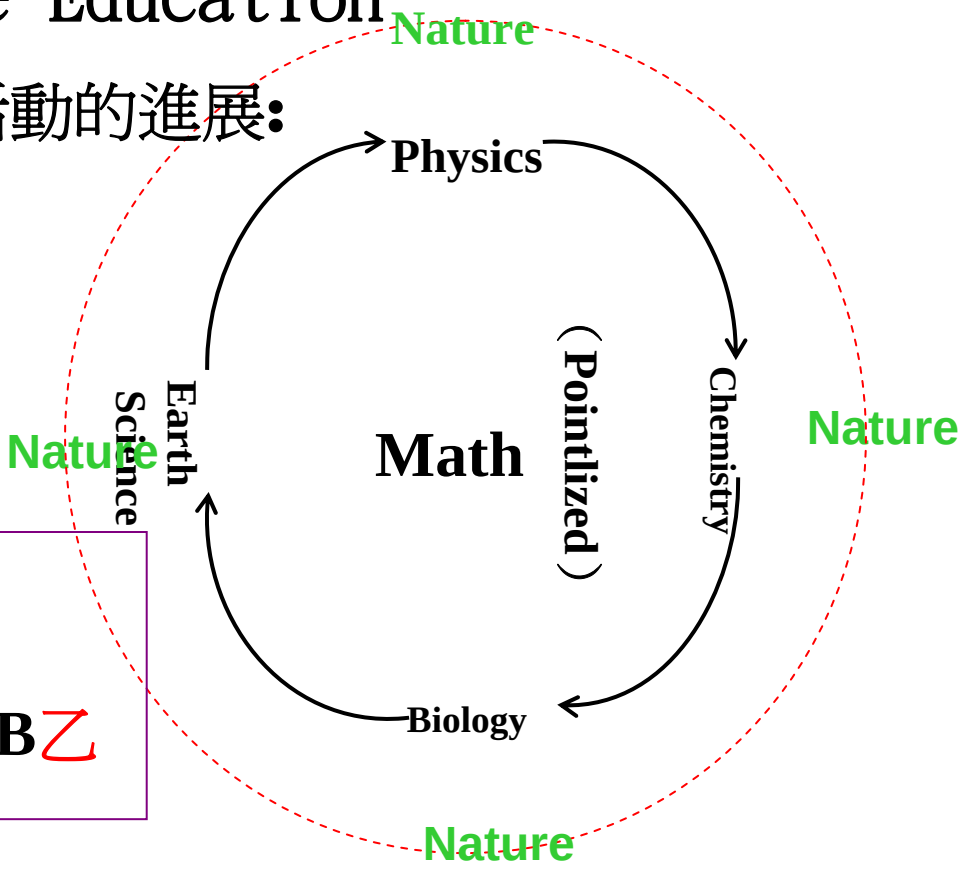
加成性(Extensive and Linear Dimension)

甲 A〔 +/ - 〕B 乙;

相對性 (Relativity and Non-Linear Dimension)

甲A 〔x / ÷〕B乙

人類科學活動的進展:



邏輯(Log) 〔甲A(x / ÷)B乙〕=

邏輯(Log)甲A〔 +/ - 〕邏輯(Log)B乙

【基礎教育與學術進展】

三度空間(實體,火商) →第四度空間(時間,焓) →第五度空間哲學,(博士,Ph.D.)

→*第六感(文藝創作數學)資優* (→宗教,昇華)

英國(劍橋800年) →美國(哈佛400年) →日本(東京150年) →台灣(台大80年)

*賀!!*台大擠進世界百大！生醫大躍進

Map of the *Dialogue Between Nature and Creativity*

Nature Dynamics (particulated):

(humans)	(thermos)	(electrons)	(photons)
Human-dynamics	Thermodynamics	Electro-dynamic	Photo-dynamics
$Q = 10^n$ (Brains?)	10^{30}(Boltzmans)	10^2(Fermions)	10^{∞}(Bosons)

Human Dynamics (social science):

GATT WTO (WTA) APEC Environmental Changes and Pollutions
Internet and Impact : Knowledge , Creative , Vision and Economics

Reversibility of Nature and Human (Dynamics Equilibrium):

(Money Market, Stocks) Electronis (e-business,material and biological science)

Social science (Economics) Nature Science

Integrated Science (Science, Engineering and Technology to the Art)

ΔG (Freedom) = ΔH (Enthusiastic)- T (localized constant) ΔS(Democratic) = 0

賀! 最新公布的英國金融時報2009年全球高階商管碩士班(EMBA) ，台灣大學排名40、中山大學排名48 !!

Efficiency of work = (work done)/ (locolized constant)

certainty = *k* (constant)* Ln (occasions)

台教育部：五年(2006-)
五百億繼續推動(2011-)

(ii) Showcase of Raffles Science Institute's Openlab

Raffles Science Institute Open Lab

This segment will showcase the Raffles Science Institute and its programmes. The Raffles Science Institute (RSI) was established in 2009 to develop peaks of excellence in science research. In its first year, the RSI carried out independent student research projects with partners such as Yong Loo Lin School of Medicine, Tropical Marine Science Institute, Ministry of the Environment and Water Resources, and the Raffles Museum of Biodiversity Research. Our research initiatives are centered on cutting edge research, the philosophy of science and science for humanity. An inaugural Water Forum was organised in July 2009 in collaboration with the Ministry of Environment and Water Resources, National University of Singapore, Delft Water Alliance and the Tropical Marine Science Institute to highlight to our students and teachers the national and global importance of Water as a resource, and how multi-disciplinary science was used to turn a fundamental problem for Singapore into rich opportunities that drive research and development.

The segment will include a tour of the RSI OpenLab, completed in June 2009 with the purpose of providing students a scientific hub where they can safely carry out independent science research under the expert guidance of capable lab technicians and Scientists-in-residence. Here, students who share a passion for science can interact with their like-minded peers, discuss papers in journal clubs and pick up techniques and ideas from accessible scientists who have a passion for both science and education. With an open concept, students can engage in their research projects whenever they have free periods or when class ends. The open concept also reinforces in students the understanding that science is driven by collaborative and multi-disciplinary research.

(iii) Sharing by Instructional Programme Support Group (IPSG).

JC-IPSG Sharing

The third segment comprises the Junior College Instructional Programme Support Group (IPSG) sharing for Biology and Chemistry. **16 Biology and 23 Chemistry presentations** on various topics will be conducted. Examples include *PBL: The Blood Mystery, Modelling Techniques to Teach Biochemistry, Structured E-Learning for Atomic Structure & Gaseous State and Garbage Enzymes.* It is envisaged that the exchange of **best practices and resources amongst the JCs** will lead to improvements in teaching and learning.

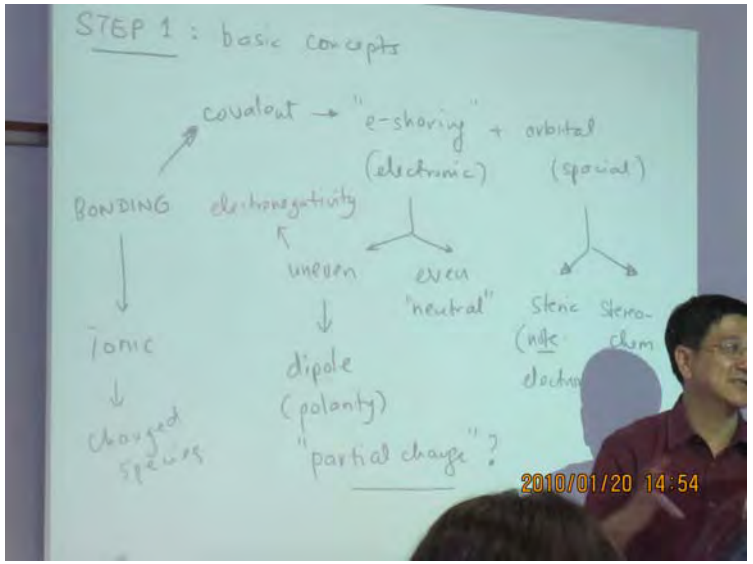
While the Curriculum Open House is limited to only a day, it is our hope that ***the event will serve as a catalyst*** that will lead to the development of a professional sharing culture, emphasizing teacher-driven action-research and collaborative learning. We believe that the Open House will be a meaningful professional development opportunity for our own teachers as well as teachers from other schools.

Time: 2.45 – 3.30 pm	Venue: B33	Code: STR_205
Category: **Teaching Strategies**		Format: **Seminar**

8. A Mechanistic Approach to the Teaching and Learning of Chemistry Professor Lai Yee Hing, National University of Singapore

Students often have difficulty with Organic Chemistry due to the vast array of disparate information they need to memorise as Organic Chemistry is usually taught by reactions of functional groups.

This presentation explores the teaching of Organic Chemistry through a mechanistic approach to enable students to appreciate and apply a Relatively small number of guiding principles to explain and interrelate existing fasts as well as to foretell products that may be expected from new reactions.



Time: 4.00 – 5:30 pm	Venue: Stamford Training Room	Code: STR_215

Category: **Teaching Strategies**

Format: **Seminar**

23.Farewell, Lecture? Lecture System in the Teaching of Chemistry

Lee Liak Phong, Raffles Institution (Junior College)

In the Middle Ages, when books were rare and very expensive, the only way to transmit information was for the teacher, who knew, to tell the students. And they would write it all down and take it away with them, like a bunch of scribes. Things have changed in the past five hundred years. In this information age, why, have we clung to this updated Lecture system to teach Chemistry?

This presentation cum workshop will describe the evolution of teaching of Chemistry from Lecturing to dynamically engaging students during class And improving how they learn.

CONCURRENT SESSION A (2.45 – 3.30 pm) 1~11

Time: 2.45 – 3.30 pm	Venue: Chem Lab 1	Code: DEM_201
Category: **Demonstration**		Format: **Workshop**

1. Magical World of Chemistry Tong Mui Noy (Mrs), Goh Soo Eng (Mdm), Lee Boon Keong (Mr), Chua Koh Lay Kelly (Miss), Pioneer Junior College

Students are generally captivated by the wide variety of colours of substances in the study of Chemistry. In 'A' level Chemistry, a major Inorganic topic is Transition Metals. However, students find it a chore to memorise the various colours and formulae of complex formation and ligand exchange reactions.

In this session, simple but attention-capturing demonstrations and hands-on experiments related to the 'A' level topics such as Transition Metal Chemistry and redox reactions, will be conducted. Students will be able to participate in some of the activities and their interest will be aroused to find out more about the chemistry of the reactions involved in this magic show.

Time: 2.45 – 3.30 pm	Venue: B21	Code: ENR_201
Category: **Enrichment Activities**		Format: **Seminar**

2.Using a Dialectic Soft Systems Methodology (DSSM) to construct a Template for Answering Organic Deductive Questions in Advanced Level **Chemistry**

Mrs Aileen Lim, Mr Low Kian Seh, Ms Tng Miao Hui, Mr Tearle Cheng, Miss Li Xuanjun, Temasek Junior College

The current practice of teaching students to answer organic deductive questions is via a lecture-tutorial system. Although the current lecture-tutorial system aims to improve students' results in answering deductive questions by enabling them to better grasp and apply the techniques of answering organic deductive questions basing on sample questions selected for tutorials, a number of students are still unable to grasp techniques to solve organic deductive questions two to three months before the GCE A level examinations.

It is realised that a student's knowledge in Organic Chemistry must go beyond a nodding acquaintance with its notions and notations. Even if Organic Chemistry is to remain merely a tool for that student, he or she will never be its master until he or she has understood why it is so formed and is practiced in its manipulations. Fuelled by this motivation, the research team embarks on a journey that uses Dialectic Soft Systems Methodology (DSSM) to construct a template for helping students in answering deductive questions in Organic Chemistry. DSSM allows us to collect and use gathered data to answer our questions concerning the problems faced by students when solving organic deductive questions and how can we help to overcome the problems.

Using DSSM, the attitudes and views of the students towards organic chemistry as well as the problems they faced when solving deductive questions (1st Dialectic) was first explored and analysed. The data was then used to construct a template to address the difficulties students faced when solving deductive questions (2nd Dialectic). The template was then refined by conducting a trial where a sample of students were allowed to use the template to solve a deductive question in organic chemistry and asked to comment on the problems or difficulties they encountered when using the template (3rd Dialectic). The comments were analysed and changes were made to template to address the problems students faced. The final version of the template was then evaluated by again allowing students to use the template to solve another deductive question in organic chemistry and comment on any problems of difficulties faced (4th Dialectic).

Not only has the use of the DSSM assisted in the construction of the template for students to solve organic deductive questions, it also allows the continual review and refinement of the template created over time, making each version more user friendly and comprehensive for subsequent batches of students that will be provided with the template. With each testing and feedback, previously unseen problems, inadequacies or limitations of the pedagogical method or learning tool would be revealed, allowing us to further refine it till the present form.

Time: 2.45 – 3.30 pm	Venue: Chem Lab 2	Code: HND_201
Category: **Hands-On/Experiments**		Format: **Workshop**

3.Design and evaluate electrolytic set-up to determine electricity supplied to the system

Mdm Yeo Chin Theng, Miss Tai Mei en, Miss Jacinta Lim, National Junior College

Objective: (i) To develop students' critical thinking skills and analytical skill when they evaluate their own set-up and conclude the best set-up by comparing with others. (ii) To reinforce the theory taught in lecture.
Brief description of the activity: Students were asked to make use of reduction potential to predict the products obtained at the anode and cathode during electrolysis. Video clips were then used to show whether they were accurate in their prediction. (note that the set-up for the electrolysis is not shown to the students) This is to reinforce theory taught in lecture. After which, the students were divided into groups of four to design a suitable set up to carry out electrolysis of copper sulfate solution. They were again asked to predict what they were going to observe at the respective electrodes. They were further challenged to determine the electricity supplied to the system by determining the gain in mass at the cathode. After which they were asked to evaluate the set-up to discuss the accuracy of this experiment. The students were forced to use their knowledge from other subject or other experiences to solve this problem. They were also encouraged to observe other set up to conclude which is the best set-up. This will develop students' critical thinking skills and analytical skill. The students were then asked to bring back the worksheet to carry out calculation to determine the volume of gaseous product obtained at the anode and the pH of the solution mixture after electrolysis.
Principle findings/outcomes: Students enjoyed themselves as they use their creativity to set-up the system. This hands on experience has created a long lasting understanding of an electrolysis set-up as they were forced to set it up without the help of lecture notes. In addition, they have to recall the relevant skills they have learnt in quantitative analysis to perform the task.

Time: 2.30 – 3.15 pm	Venue: Stamford Training Room	Code: STR_201
Category: **Teaching Strategies**		Format: **Seminar**

4.Organic Chemistry Cafe

Mr Ong Jiun Hoe, Mrs Celine Lim, Nanyang Junior College

Organic Chemistry Café (OCC) is a peer-tutoring seminar on organic chemistry utilizing the World Café concept. This is a fully student-centred learning approach incorporating degrees of differentiated learning by the use of a modular system.

OCC targets two groups of students. Higher ability students were roped in to be peer tutors and weaker students who may benefit from a slower pace of learning.

Through the preparation of lesson materials and coaching of their peers, this will help the higher ability students to internalize the concepts and better understand organic chemistry. For the weaker students, they learnt strategies to enable them to improve their level of understanding.

A relaxed and jovial ambience is used to increase the motivation level for both peer tutors and students. This is to encourage peer tutors to share their knowledge and students to ask questions and clarify doubts.

Time: 2.45 – 3.30 pm	Venue: B22	Code: STR_202
Category: **Teaching Strategies**		Format: **Seminar**

5.Youtube in Chemistry

Patrick Tong, Pioneer Junior College

Some experiments or demonstrations may be difficult to replicate in a classroom or lecture setting due to logistics or safety considerations. With teachers wanting to interest students beyond the books and lecture notes, Youtube can be a good source of video clips on demonstrations and experiments to introduce a topic or to illustrate the applications of a theory learnt.

This presentation aims to present some Youtube clips from different chapters (e.g. Group II, Transition Element, Electrochemistry, etc.) and how they can be used in lectures or tutorials to achieve different objectives. This can be an effective way to integrate Information Technology in education, with the students as an audience member or as a participant

.

Time: 2.45 – 3.30 pm	Venue: B31	Code: STR_203
Category: **Teaching Strategies**		Format: **Seminar**

6.A Pilot Study on using OrCganic, a Multiplayer Game Play to Enhance the Learning of Organic Chemistry

Koh Ching Hwee Sharon, Lee Lin Hoon, Sunarfa Supaah, Chao Chih Hang, St Andrew's Junior College

The challenge faced by our teachers when teaching Organic Chemistry is that the curriculum is very content-heavy and students do not find the traditional remedial teaching engaging. We decided to experiment with the infusion of game-based learning in the teaching of Organic Chemistry because of the popularity of online multiplayer gaming amongst Junior College students. A pilot study was conducted on three groups of students. They were divided into the OrCganic gaming group, the self-study group and a teacher-led remedial group. A pre-test and post test were also administered. Preliminary statistical analysis reveals that the OrCganic gaming group achieved results comparable to the remedial group. This finding demonstrates the potential of OrCganic gaming as an alternative teaching tool compared to traditional methods. Future action research plans will include the integration of different student learning styles in the implementation of OrCganic gaming sessions.

Time: 2.45 – 3.30 pm	Venue: B32	Code: STR_204
Category: **Teaching Strategies**		Format: **Seminar**

7.Addressing learning difficulties in stoichiometry and a common misconception in chemical bonding

Dr Yan Yaw Kai, National Institute of Singapore

In the first part of this presentation, a Powerpoint-based self-paced learning package on Stoichiometry will be shared. This package is targeted at students with weak foundations in Stoichiometry. It takes students from basic concepts, like elements and compounds, through formula-writing and balancing of equations, to the mole concept. Concepts are developed in a linear fashion, and typical questions that students may ask are used to guide learners in thinking through the concepts. In the second part of the talk, possible reasons for the misconception that longer bonds are always weaker than shorter bonds will be discussed. A teaching approach to prevent or rectify this misconception will be suggested.

Time: 2.45 – 3.30 pm	Venue: B33	Code: STR_205
Category: **Teaching Strategies**		Format: **Seminar**

8. A Mechanistic Approach to the Teaching and Learning of Chemistry

Professor Lai Yee Hing, National University of Singapore

Students often have difficulty with Organic Chemistry due to the vast array of disparate information they need to memorise as Organic Chemistry is usually taught by reactions of functional groups. This presentation explores the teaching of Organic Chemistry through a mechanistic approach to enable students to appreciate and apply a relatively small number of guiding principles to explain and interrelate existing fasts as well as to foretell products that may be expected from new reactions.

Time: 2.45 – 3.30 pm	Venue: B34	Code: STR_206
Category: **Teaching Strategies**		Format: **Seminar**

9.B-2-B and DIT Jamaliah Kamarudin, Chan Oi Ming, Yip Yeow Kwan, Chai-Lee Gui Wei, Millennia Institute

It is a fact commonly acknowledged by teachers that certain topics in Chemistry can be very “dry” and hence generate very minimal interest amongst students. This becomes a problem when students put in minimum amount of effort to understand these topics. Students’ development hence progress in the subject may be hampered if this situation is not rectified.

To cultivate interest, prior knowledge and proper basics are mandatory. Thereafter, interest can be sustained through ways that convince students of how systematically “organic” and inter-linked Chemistry concepts are and that they can be in control of their learning. It is hoped that this interest will ignite further into love for the knowledge of Chemistry.

Approaches taken are simple, interactive and easily modifiable to cater to the needs of students. They basically centre on instilling interest by helping students sequence their flow of thoughts hence establish links between concepts. The dynamic application of these approaches lies in the fact that students can continue to practise them anytime and anywhere, on their own or with their friends.

Apart from the enjoyment and enthusiasm that these approaches help to bring, students’ responses are also particularly useful in surfacing weaker students, misconceptions, common mistakes and the subject matter that students are weak and good at. Students are also accepting of the approaches as an alternative method of study. To address problems that students face, suitable modifications to the approaches or other follow-up actions are done.

Time: 2.45 – 3.30 pm	Venue: Bio Lab 2	Code: STR_207
Category: **Teaching Strategies**		Format: **Seminar**

10.Demystifying the Abstractness of Chemical Bonding Concepts and Linking to Real World Situations

Chua Tung Kian, Azmi Mohamed, River Valley High School

Chemical bonding comes across to students as one of the most content- and concept-intensive topics in H2 Chemistry. The purpose of our presentation is to:

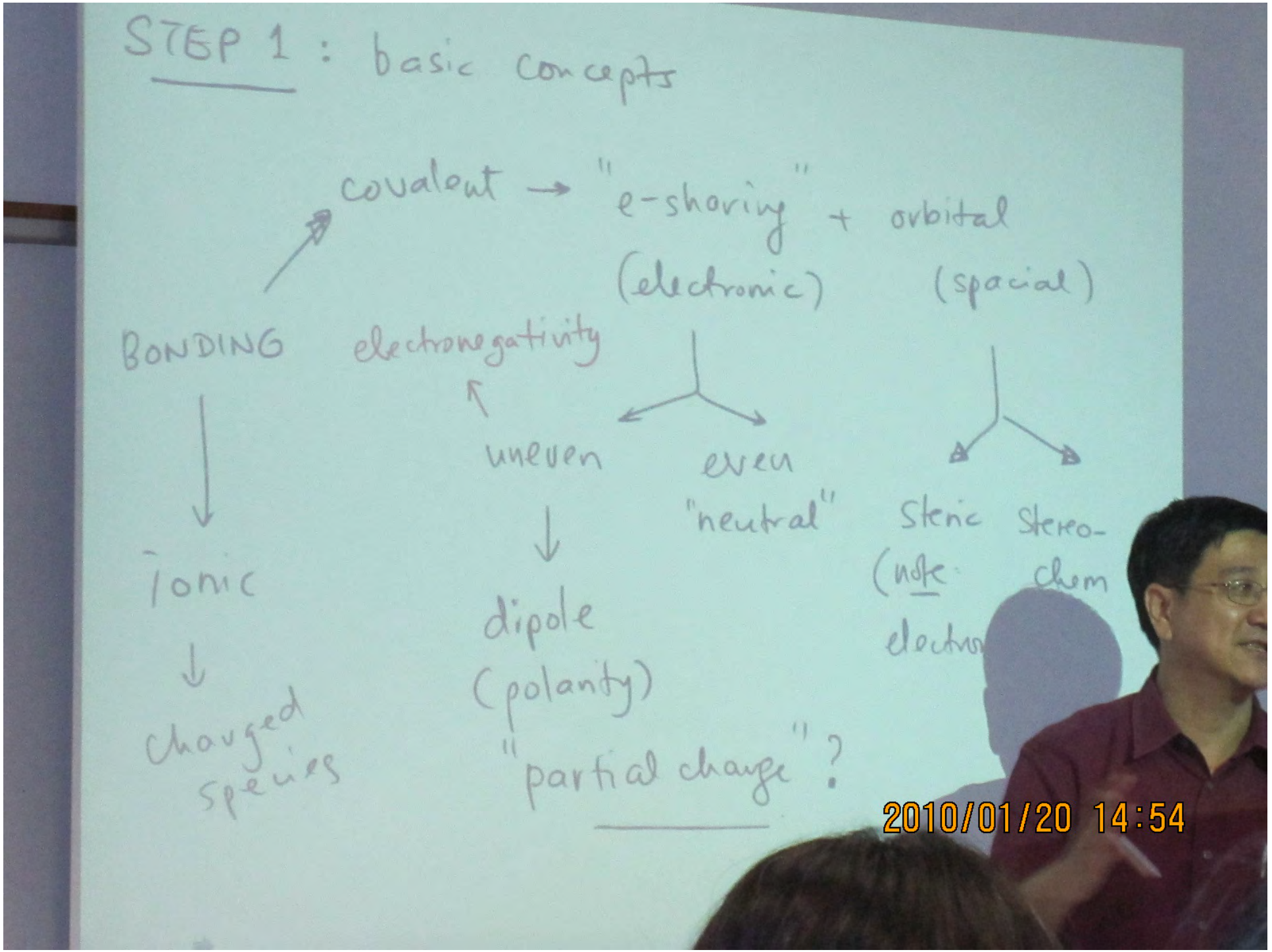
Introduce some ways to simplify the teaching of abstract concepts such as orbital theory for visual learners,

Introduce methods to spur thinking processes during the learning of chemical bonding concepts,

Introduce assessment methods for students to link concepts to real situations.

Objectives 1 and 2 are approached with demonstrations and thought-provoking ‘games’.

Objective 3 is approached with River Valley High School’s signature ASK principles.


STEP 1 : basic concepts
covalent → "e-sharing" + orbital
(electronic) (spacial)
BONDING
electronegativity
uneven
even
"neutral"
Steric
Stereo-
(note
chem
ionic
dipole
(polarity)
charged
species
"partial charge"?
2010/01/20 14:54

Time: 2.45 – 3.30 pm	Venue: Chem Lab 3	Code: STR_208
Category: **Teaching Strategies**		Format: **Seminar**

11.Effective Revision on Chemical Equilibrium Concepts

LIM CHER CHUAN, Victoria Junior College

After lecture, students can have difficulty in understanding the concepts in chemical equilibrium.

How the chemical equilibrium position shift when subjected to factors will be taught through a series of mini-experiments and videoclips. Through these, students will be guided to make logical deductions and understand the factors affecting the equilibrium position. Each experiment can be done in less than 3 minutes and hence it can provide a fast revision for students. The setup is simple and can be done in either classrooms or labs.

These experiments can cause a visual impact which can help them to understand the abstract concepts. This can help them to retain the information better.

CONCURRENT SESSION B (4.00 to 5.30 pm) 12~23

Time: 4.00 – 5:30 pm	Venue: Bio Lab 2	Code: DEM_202
Category: **Demonstration**		Format: **Workshop**

12.Chemical Demonstrations for the teaching of Electrochemistry

Tan Choon Siew, Cheng-Liau Ming Lee, Lee Yook Lean Patsy, Loy Colin, Hwa Chong Institution (Junior College)

Demonstrations are widely employed to facilitate the teaching of Chemistry. They promote the understanding of chemical concepts at a molecular level by providing links to the macroscopic aspect. In this workshop, we will share several chemical demonstrations that were used in the teaching of Electrochemistry for H2 Chemistry. A simple chemical experiment was used in the introductory lesson to engage the students as well as to recap on Redox Chemistry. Demonstrations were also used to illustrate concepts such as factors that affect cell potential and the electrolysis of aqueous salt solution.

Time: 4.00 – 5:30 pm	Venue: Chem Lab 2	Code: ENR_202
Category: **Enrichment Activities**		Format: **Workshop**

13.Garbage Enzymes

Cheong Soon Fong, Chang_Chi-Yao_Benjamin, Pioneer Junior Colleg

Objectives

To show how our kitchen scraps can be of use and to inform and enlist the help of teachers who are important agents of change

Approach/ methodology

We will ‘demonstrate and tell’.

Principal findings/ Outcomes

This method is easy and good for the environment and it helps to get rid of wastes by recycling to form a useful product which acts like a fertilizer and a cleaning agent.

Time: 4.00 – 5:30 pm	Venue: Chem Lab 1	Code: HND_202
Category: **Hands-On/Experiments**		Format: **Workshop**

14.HOTS in SPA design

Jee Wan Yi Stephanie, Hor Yuet Sim, Chan Pei Chen, Tan Chin Hui, Ng Xue Li Shirley, Millennia Institute

Students are often not able to see connections between theory and practice. Laboratory sessions can provide the link and are good opportunities for students to develop greater awareness of the limitations in theories. However, most experiments do not involve complex tasks and are usually closed ended. To train students to develop higher order thinking skills, students need to apply Paul's Wheel of Reasoning in designing an experiment to solve an authentic problem. They have to perform the experiment and assess their experimental design.

In this workshop, participants will design and carry out an experiment to determine the energy content in peanuts. At the end of the workshop, participants should be able to:

define and analyse the problem using Paul's Reasoning Wheel.
propose a suitable method to test their hypothesis.
carry out a safe experiment.
comment on the data and reliability of results obtained

Time: 4.00 – 5:30 pm	Venue: Chem Lab 3	Code: HND_203
Category: **Hands-On/Experiments**		Format: **Workshop**

15.Use of Drop Counter and Data Logger for Double Indicator Titration

Ang Gay Leng, Wong Teck Hee, River Valley High School

End-points for most acid-base titrations carried out in the school laboratory can be determined fairly accurately using pH indicators. For titrations for which colour changes at the end-points are not distinct, e.g. double indicator titration, the drop counter and data logger can serve as the alternative method to determine the equivalence point.

The workshop intends to share with all participants a practical lesson developed for RVHS Year Five students. In this workshop, the participants will first learn how to set up and calibrate the drop counter and pH sensor. After which, they will experience the use of the drop counter and data logger to determine the equivalence points for a double indicator titration. We will also share our experience in using the drop counter and pH sensor.

Time: 4.00 – 5:30 pm	Venue: B34	Code: HND_204
Category: **Hands-On/Experiments**		Format: **Workshop**

16.On the use of computational chemistry and other gimmicks for the teaching of chemical bonding

Adam Idu Jion, Tampines Junior College

We find that chemical bonding is a difficult topic. In particular, the visualization of molecules (bond length and bond angles), and the idea of a lattices for metals, ionic compounds and molecules are not easily grasped by students in our college.

As part of our learning circle, we incorporated the use of a free molecular visualizer into our tutorial questions.

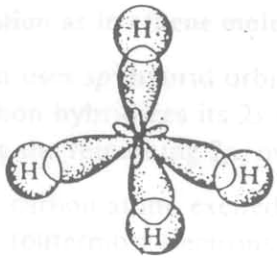
Students were able to gain confidence in their prediction of the shapes of molecules via VSEPR theory.

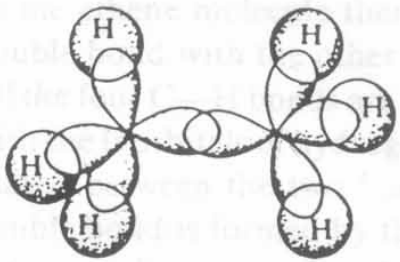
Time: 4.00 – 4.45 pm	Venue: B21	Code: STR_209
Category: **Teaching Strategies**		Format: **Seminar**

17.Difficulties in visualizing orbital arrangement of hybridized orbitals? Balloon Modelling will do the trick. Lee Gui Wei, Millennia Institute

Issues: Students usually have problems visualizing how the hydridised orbitals normally come together to give the shape of the molecules even with the help of molecular models.

Approach: With the aid of balloons (http://www.themagichall.com/product_detail.php?pid=192) , students will be able to visualize how the hybridized orbitals when arranged in the most optimum way (application of VSEPR theory) will give them the following:





Time: 4.45 – 5.30 pm	Venue: B21	Code: STR_210
Category: **Teaching Strategies**		Format: **Seminar**

18.Designing an engaging and interactive e-learning module for Alkanes

Wong Hoe Sing, Chua May Ling, Meridian Junior College

The teaching of Organic Chemistry using e-learning is an effective way to engage students in self-directed learning. It also offers the flexibility for students to access the information at anytime and learn the concepts at their own pace. From a MJC survey conducted, it indicates that most of the students appreciated and enjoyed e-learning modules when interactive and engaging elements were incorporated into the design of the modules.

This presentation aims to share with the participants how e-learning modules created using Lectora can be used in teaching the Chemistry of Alkanes. By leveraging on available internet resources, relevant multimedia animations and videos (from yTeach) were included to engage students and enhance their understanding of the concepts. Some of the key considerations used in the designing and developing of the module such as scaffolding, and the use of hypermedia to support learning will be discussed during the presentation. The presentation will also highlight the mode of assessment used in monitoring students' learning of Alkanes after the delivery of the module. The strength of the e-learning module and the improvements that could be made to this module based on the students' feedback will also be shared.

Time: 4.00 – 4.45 pm

Category: **Teaching Strategies**

19.Structured E-Learning for Atomic Structure & Gaseous State

Liu Lijun, Karen Au, Serangoon Junior College

Objective: To incorporate a structured framework for E-Learning in Chemistry such that students take ownership of their learning. It also allow the unit to evaluate on the effectiveness of such structured on-line lesson should it be implemented in the event of school closure (e.g. SARS or H1N1 outbreak).

Approach: The structured framework involves 2 stages. Stage 1 provides opportunities for students to do cooperative learning and stage 2 allow the students to work independently.

Outcome: Students are capable of learning certain chemistry concepts (atomic structure & gases) independently (either in groups or individual) with less reliance on teachers.

Time: 4.45 – 5.30 pm	Venue: B22	Code: STR_212
Category: **Teaching Strategies**		Format: **Seminar**

20.ENABLER – an ICT-based initiative to improve performance of average students in Chemistry

Ms Ma Jialin, Mrs Chai Chung Mun, Mr Goh Kunli, Mrs Ong Yee Ling, Anderson Junior College

In schools today, teachers and students face a constant challenge – insufficient attention given to average graders ('C' and 'D'). In most schools, there are differentiated programmes to cater to the learning needs of the high ability learners as well as the weak students, 'S' and 'U' graders.

In our college, the Chemistry Department attempts to address this issue by implementing the ENABLER Programme, aimed at enabling the 'C' and 'D' graders to improve their academic performance in Chemistry.

In the first year of implementation of this Programme, the 'C' and 'D' graders in the 2nd Year are identified in Term 2 and they are given selected revision questions to do before the ENABLER Lectures. Teachers will go through the questions in detail during the small group lectures held in the evenings in Term 2 on a weekly basis. There were many difficulties encountered as students and teachers were extremely pre-occupied with CCA trainings and college events.

In the second year of implementation, the 'C' and 'D' graders were again identified in Term 2 of their 2nd Year. ICT was used to enhance effectiveness of this programme through the use of vodcasting. On a fortnightly basis, a vodcast on the questions and detailed solutions was published on the school e-learning portal. Students had to submit their work for checking after going through the vodcasts.

During the course of the year, 'S' and 'U' graders also took their initiative to learn at their own pace, by referring to the question analyses and the answering techniques presented in the vodcasts. This ENABLER Programme has received very encouraging feedback from students.

Time: 4.00 – 4.45 pm

Category: **Teaching Strategies**

21.E-Learning Module for Inorganic Qualitative Analysis Loo Kian Hin, Hwa Chong Institution (Junior College)

This project explores the use of videos to teach the reactions of aqueous cations and anions with common reagents, and the Group II and Group VII chemistry in the A-Level syllabus. A series of four exercises in an e-learning format was made available to the students over a period of one term. The results show that the students' performance in a ten-item multiple choice test improved substantially after undergoing the e-learning module.

Time: 4.45 – 5.30 pm	Venue: B32	Code: STR_214
Category: **Teaching Strategies**		Format: **Seminar**

22.Facebook as an online tool for learning **Science**

Daphne Tan, Lee Cheng Leng, Innova Junior College

This presentation explores the advantages and limitations of utilising Facebook as an online platform for the teaching and learning of Chemistry at the Pre-University level. Facebook is a popular social networking tool which connects people from all over the world. Tapping on its popularity, an action research project was conducted by Innova Junior College teachers with first year Pre-University (JC1) students to study the effectiveness of using Facebook in the teaching of Chemistry.

In the course of this action research, Facebook was utilised as a revision tool, an assessment tool as well as a peer-to-peer teaching tool. It was also used as an introductory tool for the teaching and learning of new topics. This research showed that Facebook can be a versatile platform where a creative online learning environment can be created that is both rich in Chemistry resources as well as conducive for academic discussion.

Through the use of Facebook and the internet, students and teachers are able to contribute to academic content and discussions. This presents a great opportunity for students to take ownership of their own learning and be active content creators instead of passive consumers. The strengths and limitations of using Facebook as an online learning environment will be further discussed in this presentation.

Time: 4.00 – 5:30 pm	Venue: Stamford Training Room	Code: STR_215
Category: **Teaching Strategies**		Format: **Seminar**

23.Farewell, Lecture? Lecture System in the Teaching of Chemistry

Lee Liak Phong, Raffles Institution (Junior College)

In the Middle Ages, when books were rare and very expensive, the only way to transmit information was for the teacher, who knew, to tell the students. And they would write it all down and take it away with them, like a bunch of scribes. Things have changed in the past five hundred years. In this information age, why, have we clung to this updated Lecture system to teach Chemistry?

This presentation cum workshop will describe the evolution of teaching of Chemistry from lecturing to dynamically engaging students during class and improving how they learn.

Time: 4.00 – 5:30 pm

Category: **Teaching Strategies**

24.Use of digital games to engage students in the teaching of Chemistry

Lee Yeow Hwee, Pioneer Junior College

Through the use of ICT-infused classroom games, lessons that integrate learning and entertainment are created for Pre-University JC1 and JC2 students.

Easy-to-use game builder software styled after Jeopardy and Who Wants to Be a Millionaire are utilised to create an effective game-based learning environment to engage students during chemistry lessons.

The exhibit features actual lesson material and footage from classroom lessons. Participants will also be given a hands-on session where they will create a chemistry digital game.

Taiwan's Uncle Lee(1):台灣的李表哥---- Polytics

President Lee Teng-hui

李登輝（1923年 1月15日 －），台灣政治家、農業經濟學家，台北 三芝人，曾任中華民國 總統（1988年 － 2000年）。他是中華民國自1947年行憲以來，首位由公民直選產生的總統，是第一位出生在台灣本土的總統，日治時期名爲"岩里政男"，在國際上有"民主先生"之美譽 (期間解放了思想、新聞和學術的政治束縛，有人將此過程讚之爲" **寧靜革命** "，許多台灣民眾和國外民眾對此給予正面評價，李登輝也因身爲推動者而獲得台灣的" 民主之父 "等美譽)。

李登輝被認爲是中華民國民主化、本土化的主要推動者。 在台灣民主轉型以及中華民國本土化的歷史過程中，首先容許了國內新聞媒體對官方的嚴厲批評，也解除了往日政府對政治異議人士的囚禁和監控。 中華民國值此轉變時期，李登輝身任國家元首，因其國策決定和操作，而產生了各種正負面效應。 [3]卸任總統後，李登輝被新政黨台灣團結聯盟奉爲精神領袖，也被視爲台灣本土化運動的領導人物。

Lee Teng-hui (simplified Chinese : 李登輝 ; traditional Chinese : 李登輝 ; pinyin : *Lǐ Dēnghuī* ; born 15 January 1923) is a politician of the Republic of China (commonly known as " Taiwan "). He was President of the Republic of China and Chairman of the Kuomintang (KMT) from 1988 to 2000. He presided over major advancements in democratic reforms including his own re-election which marked the first direct presidential election for the Republic of China.

Taiwan's Uncle Lee(2): 台灣的李表哥----Science

The Nobel Prize in Chemistry 1986: Yuan T. Lee 1/3 of the prize (in Hsinchu, Taiwan) b.1936 ; **Dudley R. Herschbach** 1/3 of the prize USA; **John C. Polanyi** 1/3 of the prize Canada

"for their contributions concerning the dynamics of chemical elementary processes"

Taiwan's Uncle Lee(3): 台灣的李表哥---Art

Ang Lee's performance in Arts: Oscar best movie and best director

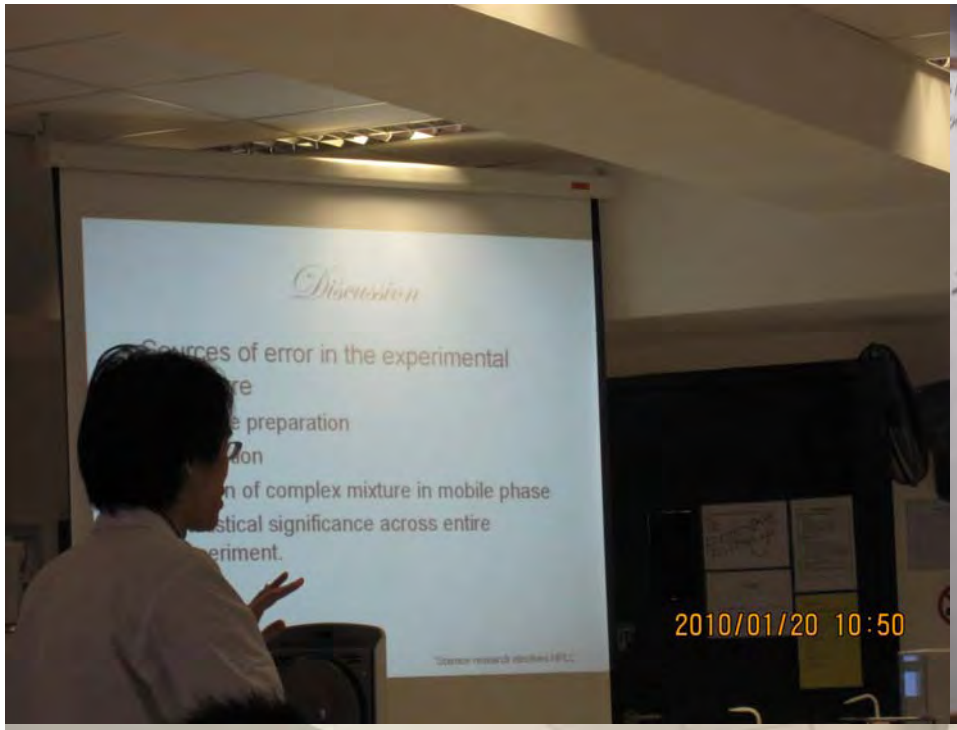
2001年以臥虎藏龍獲金球獎最佳導演獎
2006年斷背山獲金球獎最佳導演獎
2006年以斷背山獲奧斯卡金像獎最佳導演獎
2008年以「色，戒」在威尼斯影展得到金獅獎


2010/01/20 1


2010/01/20 10:22


2010/01/20 10:48


2010/01/20 10:49


Discussion
Sources of error in the experimental
preparation
of complex mixture in mobile phase
stical significance across entire
eriment.
2010/01/20 10:50


Injection/ul
Conc./ppm
10
5
978
10
5
650
20
619
10
528
324.1
2010/01/20 10:56


2010/01/20 11:00


2010/01/20 11:00


2010/01/20 11:03


2010/01/20 11:01


2010/01/20 11:00


2010/01/20

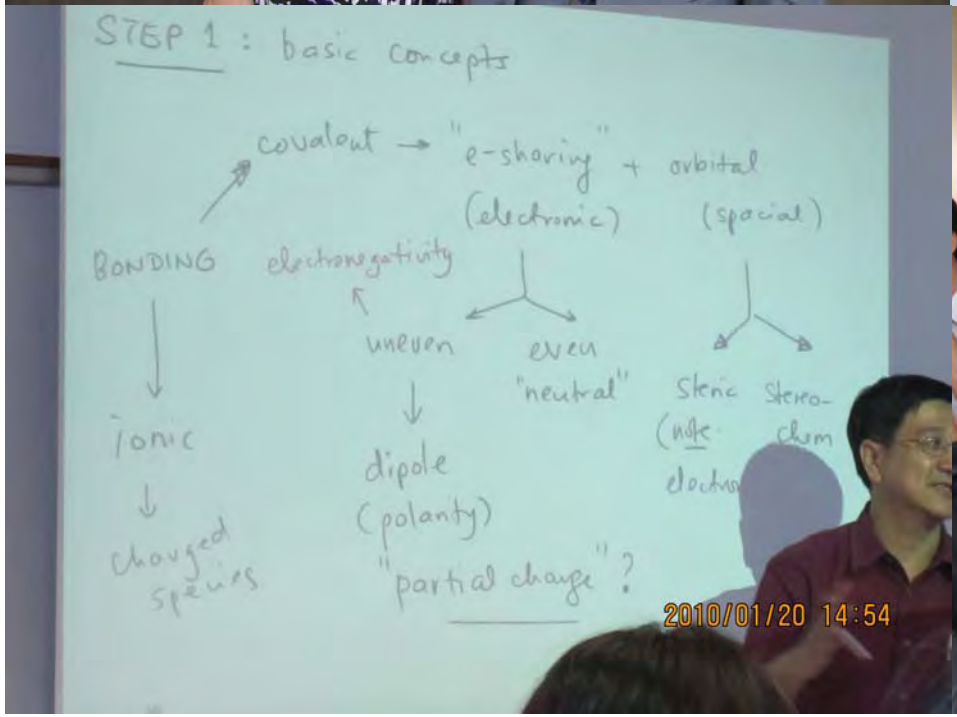

2010/01/20 1


2010/01/20 11:04


2010/01/20 11:07


2010/01/20 15:42


2010/01/20 15:41


STEP 1 : basic concepts
covalent → "e-sharing" + orbital
(electronic) (spacial)
BONDING
electronegativity
uneven
even
"neutral"
Steric
Stereo-
chem
ionic
dipole
(polarity)
charged species
"partial charge"?
2010/01/20 14:54


2010/01/20 15:42


Day 3: Dialogue Session with Chemistry Students
Meeting with Phase I Training—List of Invited Students;
1.Chester Chen Deyu
2.Fong Jie Ming Nigel
3.Goh Su Fen
4.Kaushik Subramanian Venkataraman
5.Lee Kwok Hao
6.Li Yi Wei Tony
7.Low Zhao Kai
8.Lum Jian Yang
9.Shaun Ee Kai Ern
9.Tan Kia Hau Matthew
11.Tng Jia Hao Barry
12.Zhang Qinze Arthur
13 Zhang Wei
england
2010/01/21 09:03

Singapore Team *(2 Golds 2 Silvers)*

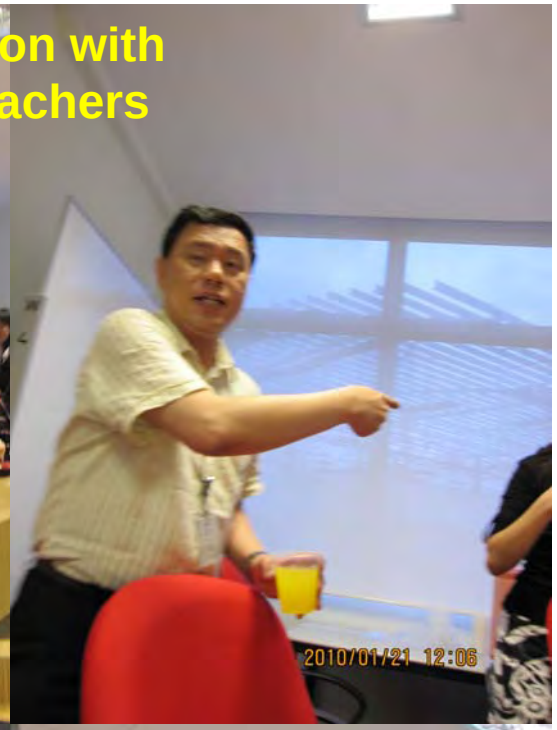
2. (RI)Fong Jie Ming Nigel *(gold) ranked as no. 26*

8. (RI)Lum Jian Yang *(gold)ranked as no. 27*

11.(RI)Tng Jia Hao Barry *(silver)ranked as no. 45*

Khu Boon Hou Dereck (from華僑高中)***(silver)ranked as no. 68***

Day 3: Discussion, Lunch, Engagement Session with Raffles Academy and Chemistry Olympiad Teachers




2010/01/21 14:44


2010/01/21 15:10


2010/01/21 20:45

2010/01/21 14:45


2010/01/21 20:02


2010/01/21 20:45

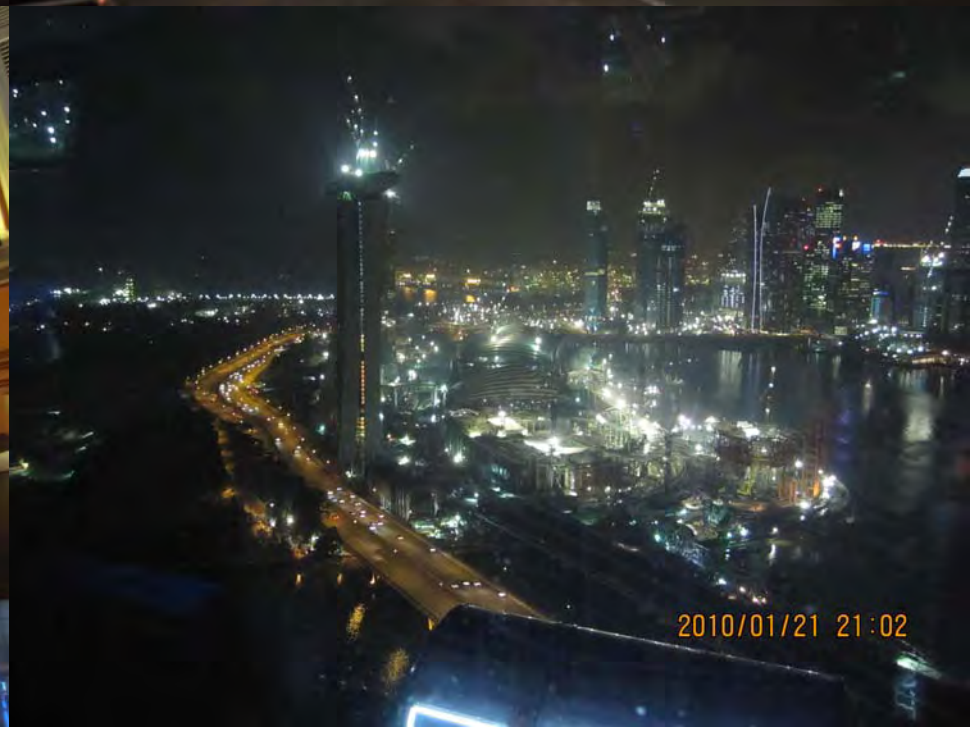

2010/01/21 15:08


NCHANTING beyond words
Welcome ようこそ Welcome ようこそ Welcome
欢迎光临 Selamat datang 欢迎光临 Selamat datang
ようこそ Welcome நல்வரவு Welcome ようこそ
Selamat datang 欢迎光临 Selamat datang 欢迎光临
Benevenuto 환영합니다 Willkommen 환영합니다
Bienevenue Bienvenido Bienevenue Bienvenido
Welcome-lah Benevenuto நல்வரவு Benevenuto
Bienvenido Bienevenue Bienvenido 欢迎光临
Welcome 환영합니다 Willkommen Welcome-lah
2010/01/21 20:39


THE FULLERTON HOTEL
2010/01/21 21:33


2010/01/21 21:46


Szechuan and Cantonese Cuisine
2010/01/21 21:42


2010/01/21 21:02

Day 4

----- Original Message -----
From: Reavley Munn Ye
To: 方泰山教授
Sent: Friday, January 22, 2010 4:32 PM
Subject: RE: With sincere thanks from Raffles Institution (Singapore)

Dear Prof Fang,
We hope that you've had a safe flight home to Taipei. It was an absolute pleasure having you with us for the past 3 days and we hope that the experience has also been a pleasant and meaningful one for you.
We were indeed honoured by your presence at our Curriculum Open House and at the opening of the Raffles Openlab. We are also very grateful for your generosity in sharing your rich experiences as a science educator with our Chemistry teachers during the engagement sessions. Your workshop was not only thought-provoking, it was filled with many practical strategies for improving the way teachers teach Chemistry. You have certainly inspired our teachers to reflect on their craft and their approach to Chemistry Education.
On a personal note, I have been enriched by the many delightful conversations we've had about Chemistry and its relationship with literature, politics and society at large. Your passion as a scientist and your insights as a scholar are indeed inspiring. I look forward to meeting you again, either in Taipei or Singapore, and wish you a wonderful year ahead in 2010.

With warmest wishes and sincere thanks,
Munn Ye_____

Reavley Munn Ye (Mrs)
Dean, Raffles Academy (Junior College)
Talent Development and Management
• Tel: +65 64199815 • Fax: +65 64199898
Raffles Institution (Junior College) • 1 Raffles Institution Lane, Singapore 575954 • http://www.ri.edu.sg
Nurturing the Thinker, Leader & Pioneer

謝謝萊佛士書院
全體師生 四天三夜
熱情周詳的接待!
Thank you all of RI's Hospitality during my 4-days- 3-night's visiting