

Knowledge Building and Teacher Professional Development

知识建构与教师专业发展



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Learning to Learn

Healthy Lifestyle
Breadth of Knowledge
Learning Skills
Language Skills
Habit of Reading
National Identity
Responsibility

Basic Education Curriculum Guide
Building on Strengths
(Primary 1 - Secondary 3)

Four Key Tasks

- Reading to Learn
- Moral & Civic Education
- IT for Interactive Learning
- Project Learning

Thinking Schools, Learning Nation

Contemporary Issues and Challenges

PEARSON
Prentice Hall
For display

Edited by Jason Tan & Ng Pak Tee

Changing World 不断变化的世界

AMERICAN ASSOCIATION OF SCHOOL LEADERS

STANDARDS FOR THE 21st-CENTURY LEARNER

21st Century Skills Education & Competitiveness

A RESOURCE AND POLICY GUIDE

PARTNERSHIP FOR 21ST CENTURY SKILLS

Changing Education 不断变革的教育

What is needed for 21century?
21世纪需要什么样的人才?

Facing the 21st century challenge



Exam...
Competition
Passive learning
Teacher know-hows

What does your class look like?

你的课堂是什么样的？如何通过ICT改变学生的学习？

Challenges?



Learning for 21st century 廿一世紀學習

*ICT and Technology-enhanced learning for
education innovation* 科技創新

Knowledge building *Communities* 知識建構社群

- 
- How to help students to be active learners and knowledge builders? How to teach innovation?

如何让学生成为积极主动的学习者和知识建构者？

-
- How to help teachers from passive to active inquiry?
- 如何帮助教师从被动接受者转变为主动探究者？

What is Knowledge Building? 知识建构?

它是什么? Students working together (as scientists) contributing and creating new ideas for the community 学生以**共同体**的形式, 像**科学家**一样, **创建新知**

pose questions, construct explanation, test ideas, rise above, collective advances

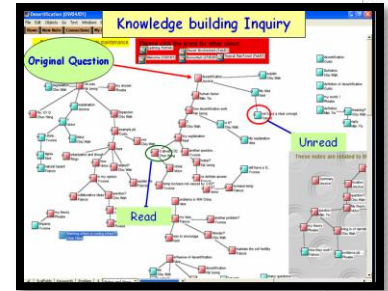
Knowledge Forum 知识建构平台

它为什么对学生和老师如此重要?

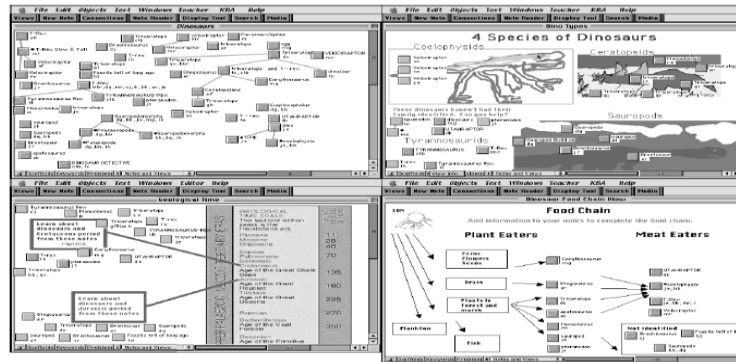
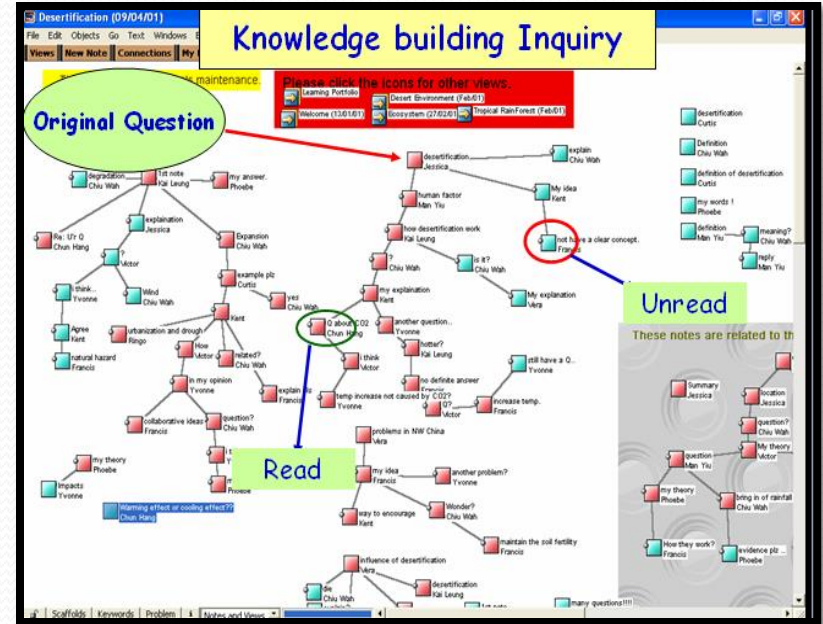
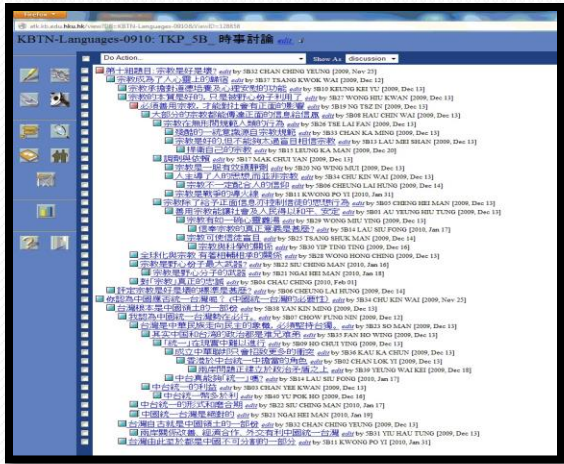
Epistemic Agency 培养学生自主自力和解决问题的能力

Improvable Ideas 通过深化讨论来改进社群知识

Community Knowledge 群雄献技, 互补不足, 共享成果



Features of Knowledge Forum 知识建构平台

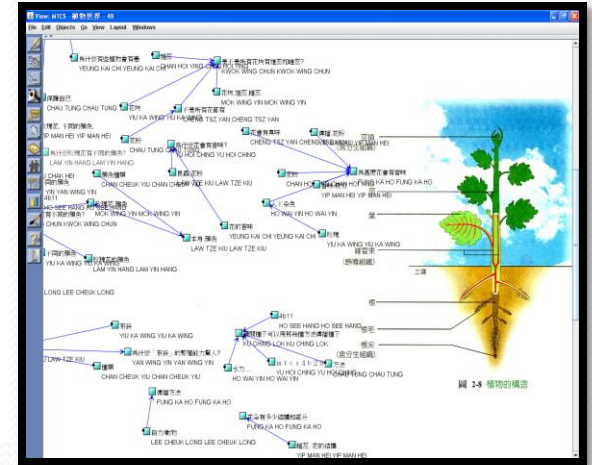
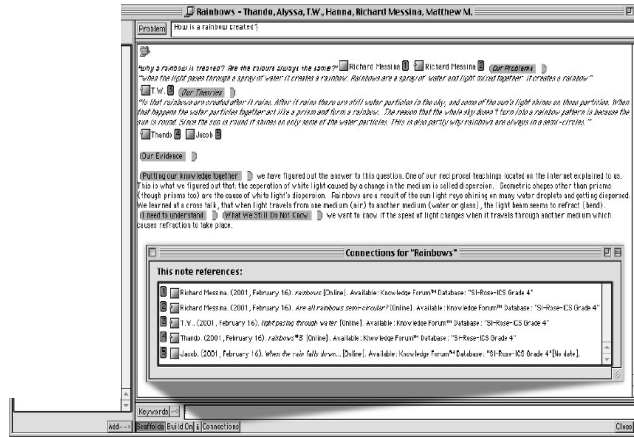


Database created by students
学生创造的知识数据库

Knowledge Forum features

1. Scaffolds 鷹架
2. Graphic Views 圖表
3. Rise-above 升华

- (我的問題)
- (我的觀點)
- (我的新看法)
- (我的理據/原因)
- (參考資料/新資訊)
- (集合我們的意見)



My theory

I need to understand
New information

This theory cannot explain
A better theory

Putting our knowledge together
Source of Information

Examples

Note: 總結筆記 - CHAN CHEUK YIU

File Edit Style Objects Publish Windows

Note Authors Connections Info History

▼ 植物

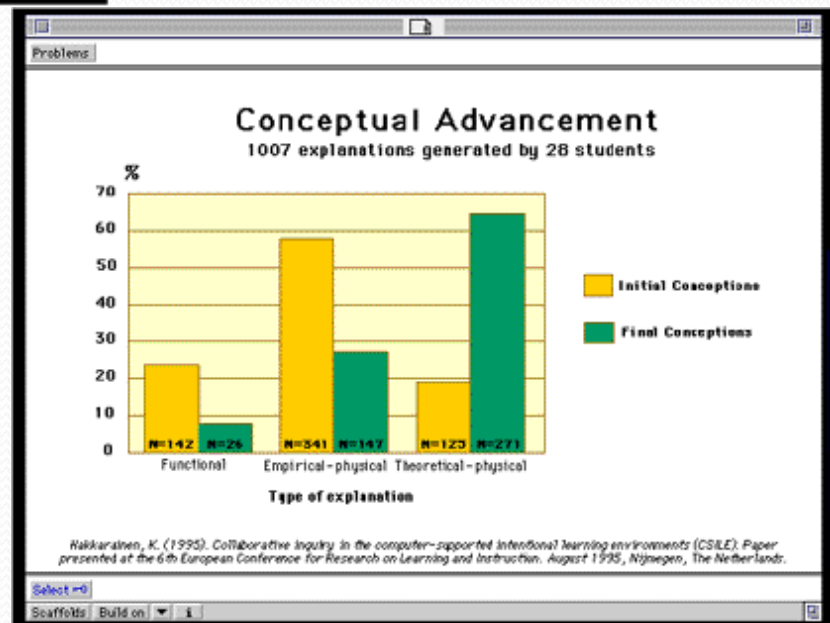
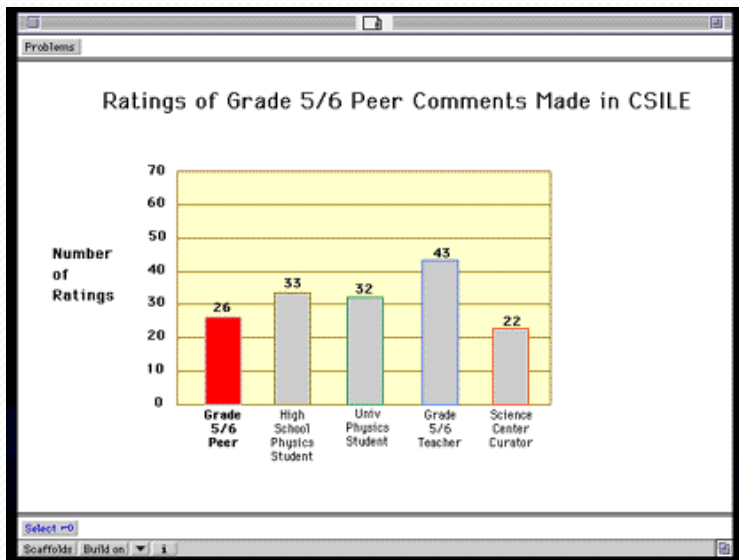
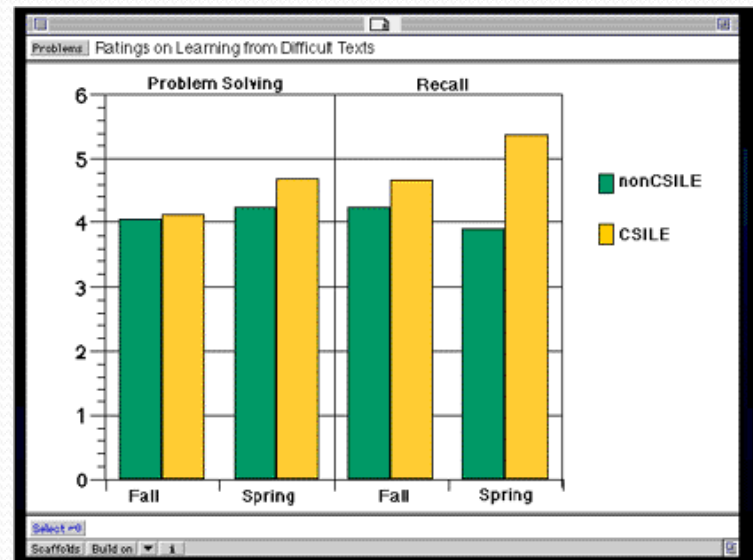
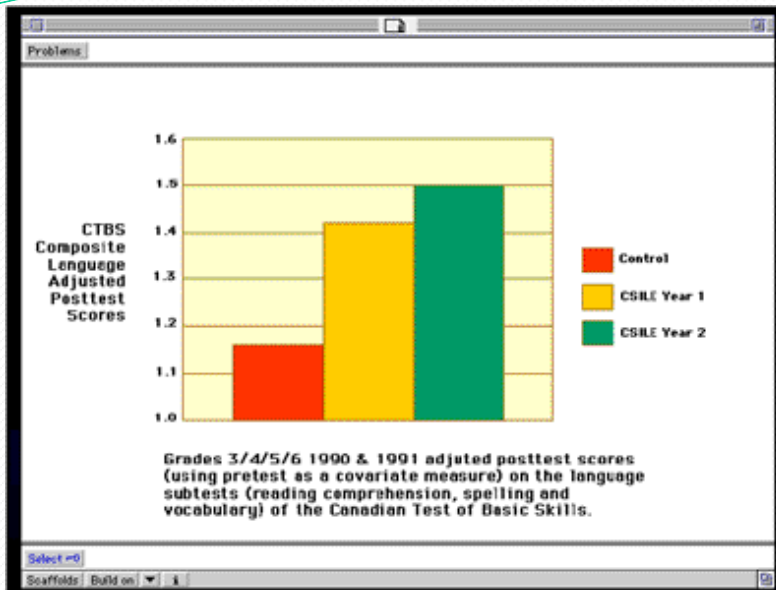
Problem

我的筆記 從這個單元中，我學會「花的結構包括有花萼、花冠、雄蕊、雌蕊」

花朵有多少結構和部份，雄蕊生產花粉，雌蕊則接受花粉。花冠能保護花蕊，共吸引昆蟲傳播花粉。心萼可保護花冠和花蕊，並支持花朵。

Keywords

Add Insert Drawing Build-on Annotate Close



Knowledge building in Asian-Pacific Context

知识建构在亚太地区的应用

- Curriculum and Syllabus
课程与大纲
- Examination-oriented System
应试教育系统
- Emphasis on assessment & performance
注重评估与成绩

What is bleach? How can bleach be made chemically? You may know the term '1 to 99 diluted bleach' from the media nowadays. What does it mean?.....

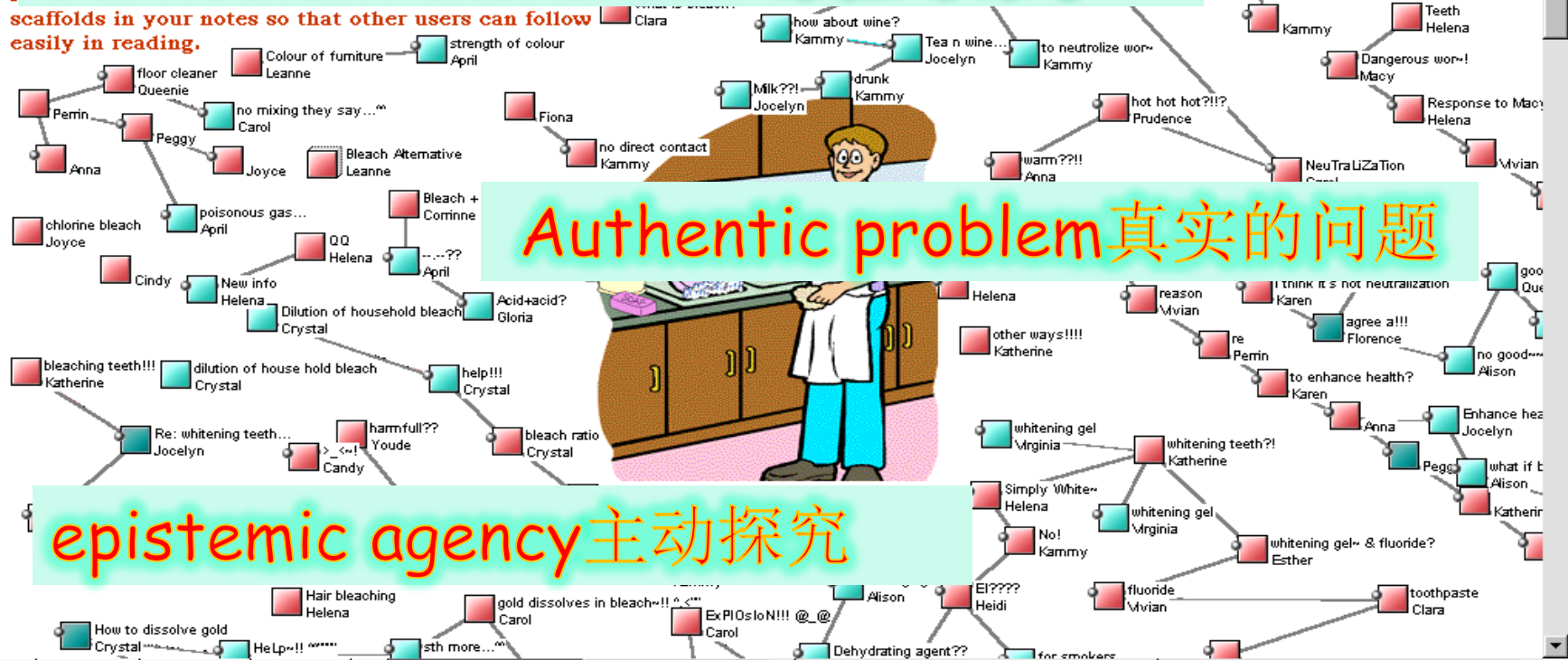
'Bleach' is one of the chapter to be studied in F.4 (after the holiday) and you may find it in Book 2 Unit 33. You can have some discussions about this popular chemical

- neutralization
- Welcome
- Acids and bases
- Mole calculations
- Group project
- Hair chemistry
- Challenge problems
- Preparation of salt
- Ammonia
- Debate



Curriculum & textbook 课程与课本

scaffolds in your notes so that other users can follow easily in reading.



Authentic problem 真实的问题

epistemic agency 主动探究

Shifting Cultivation(11/05/01)

File Edit Objects Go Text Windows Editor Help

Views New Note Connections My Reader Display Tool Search Media

Learning Portfolio
Tropical RainForest (Feb/01)
Ecosystem (27/02/01)

Welcome (13/01/01)

What is SC?? Kai Leung

My View Kent

Reminder Eddy's view Yvonne

commercialized? Hei Lam

SC is not total Francis

some information Ringo

SC not commercial Kai Leung

problem solve Phoebe

SC not Commercialized Kent

Commercial farming is not SC Man Yiu

my response Francis

staying long is still SC? Yvonne

dont mix it together! Phoebe

No longer SC!

an u make a conclusion? Yvonne

CP vs SC Jessica

main living s Francis

finding e.g. to explain Francis

same idea!! nne

disagreement Man Yiu

disagreement Phoebe

Destructive Man Yiu

Wah why? Mctor

my point of view Phoebe

the changes make Yvonne

My view Chun Hang

agree Phoebe

disagree Mctor

Come Ringo

SC may affect human Kai Leung

wider view Jessica

different view Jessica

nutrient cycle and technology Francis

something not clear

Q Chun Hang

Ringo

Scaffolds Keywords Problem i Note and Mview

開始 Old Virus Definiti... elee 在 'ell... Knowledge F... Shifting Culti... Microsoft Po...

AM 10:34

Shifting Cultivation is Ecologically Destructive.

This view is under C

Improvable Ideas

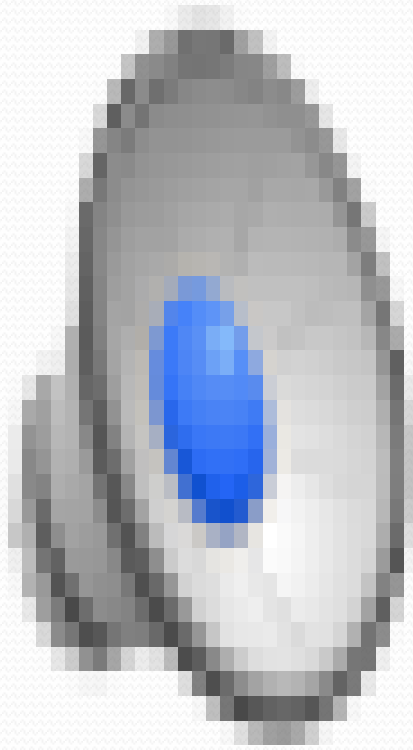
不断改进知识

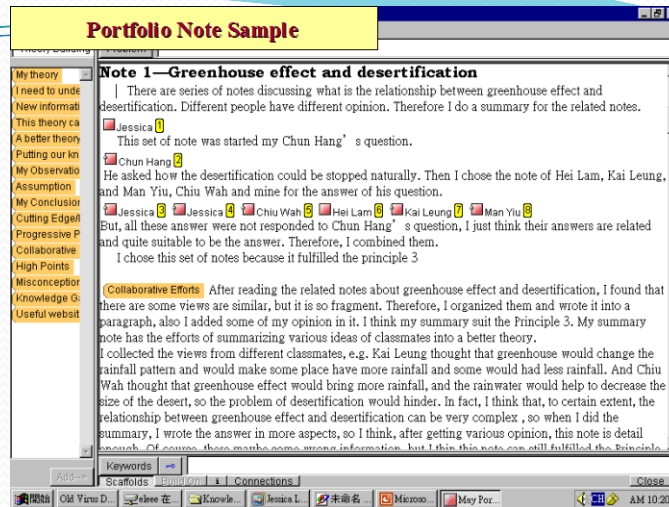
Related to Curriculum

与课程相关

Movie Clip of KBTN

...knowledge building





Portfolio Assessment
Teacher-researcher
Collaboration
International award





How to help teachers learn new pedagogy and adopt innovation?

The Knowledge Building Teacher Network

知识建构教师社群

Addresses goals of educational reforms in Hong Kong
回应香港教育改革的目標



Ministry-University-School
Partnership -
政府—大学—学校的合作

University researchers working with a group of 'expert' teachers funded by Ministry supporting new teachers on developing knowledge building practice in schools

大学研究人员与一群专家教师，在政府的支持下，帮助一批新手教师在学校开展知识建构。

Kbtn-resources.cite.hku.hk

Some Participating Schools

KBTN-Schools: KBTN- Knowledge Building in Action: Participant Schools [edit](#)

KB Participating Secondary Schools 06-07 [edit](#)

- [\(CCCKTSS\) The Church of Christ in China Kei To Secondary School - Home](#)
- [\(CCCMKC\) The Church of Christ in China Ming Kei College - Home](#)
- [\(CC\) Cognitio College \(Kowloon\) - Home](#)
- [\(CCYMSS\) Caritas Chong Yuet Ming Secondary School - Home](#)
- [\(CMYSS\) Catholic Ming Yuen Secondary School - Home](#)
- [\(EC\) Elegancia College - Home](#)
- [\(HNC\) Ho Ngai College - Home](#)
- [\(LSS\) Lutheran Secondary School - Home](#)
- [\(PKC\) Pui Kiu College - Home](#)
- [\(RC\) Raimondi College - Home](#)
- [\(SHCCC\) Sacred Heart Canossian College of Commerce - Home](#)
- [\(YOTKPSS\) Yan Oi Tong Tin Ka Ping Secondary School - Home](#)

KB Participating Primary Schools 06-07 [edit](#)

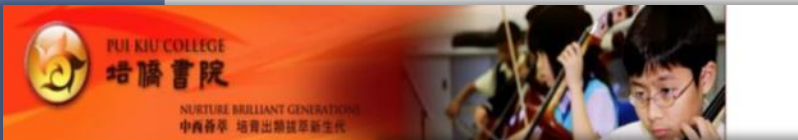
- [\(CCCKWPS\) The Church of Christ in China Kei Wah Primary School - Home](#)
- [\(APSSS\) Alliance Primary School Sheung Shui - Home](#)
- [\(GCEPSATKO\) G.C.E.P.S.A. Tseung Kwan O Primary School - Home](#)
- [\(KTVHTS\) Kam Tsin Village Ho Tung School - Home](#)
- [\(LSPS\) Li Sing Primary School - Home](#)
- [\(IC\) HKUGA Primary School 6A](#)
- [\(PKC\) Pui Kiu College - Home](#)

ools: (RC) Raimondi College - Home [edit](#)

[Link to Raimondi College Databases](#)
[Link to Raimondi College Databases](#)

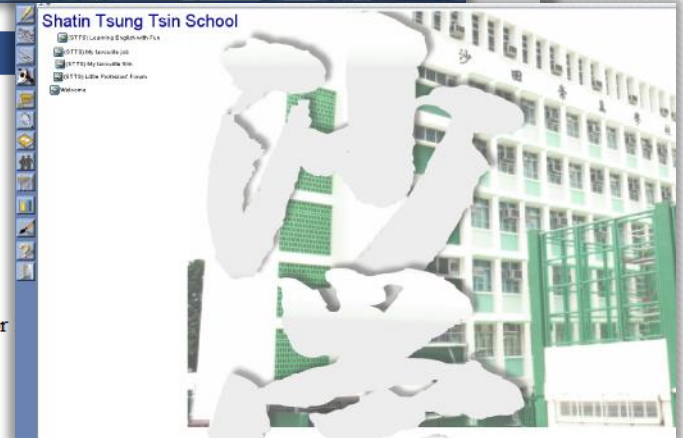


Student Performance [edit](#) [edit](#)

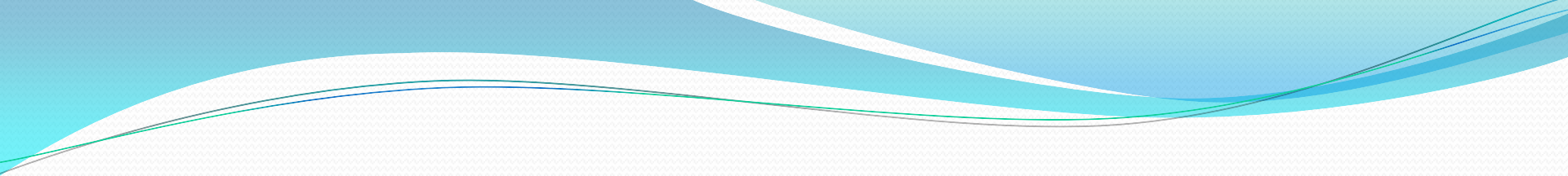


KBTN-Schools2: (SSYHNC) SSY Ho Ngai College - Home [edit](#)

Welcome to SSY Ho Ngai College Knowledge Forum Homepage [edit](#)



Apr



- Students as knowledge builders
...teachers also as knowledge
builders

- 学生作为知识建构者....老师也作为
知识建构者

University-Based Workshops



Teachers experiencing knowledge building

knowledge building discourse
討論交流, 建構為優

教師作為主動學習者

- 建構於每個同學的共同知識.. 建構
- ② 如何建構知識?(分組時)
 - ③ 分組時的好/壞意見。
 - ④ 如何處理討論後的資訊?
如何有效地討論問題?
如何評估學生所學(DI)?

12組





Teachers as active learners 教师作为积极的学习者



Knowledge Building Wall



Teachers
Inquiring into
knowledge
building
principles




Teachers empowering teachers

教師賦予教師能力



Workshops 研讨会



Workshop for student leaders
学生领袖研讨会

Student ambassadors
学生大使



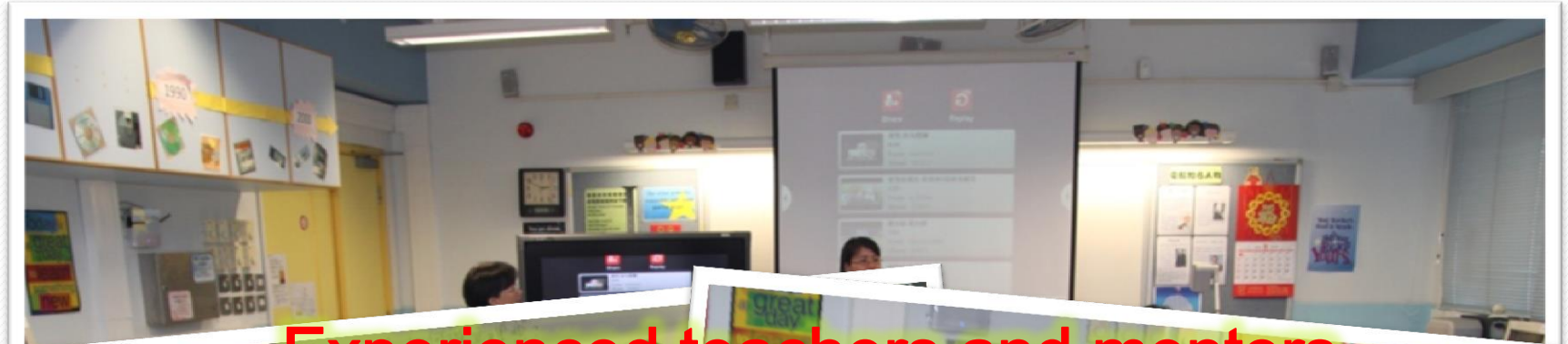
Students and teachers working together



学生与教师共同探究



KLA Meetings



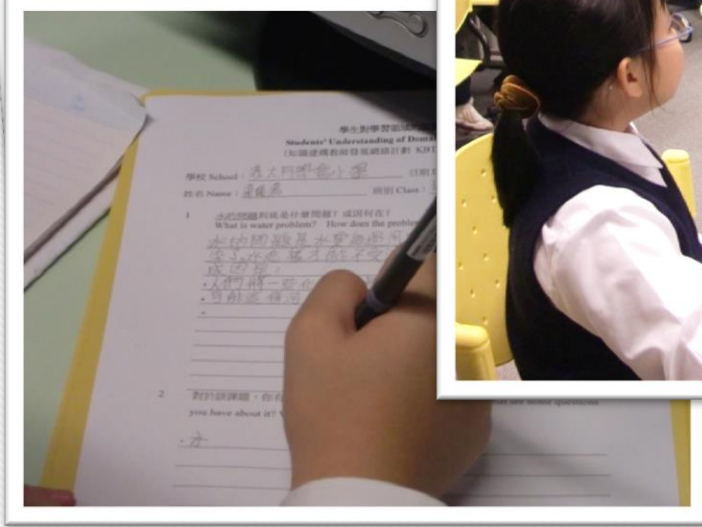
Experienced teachers and mentors
Helping new teachers

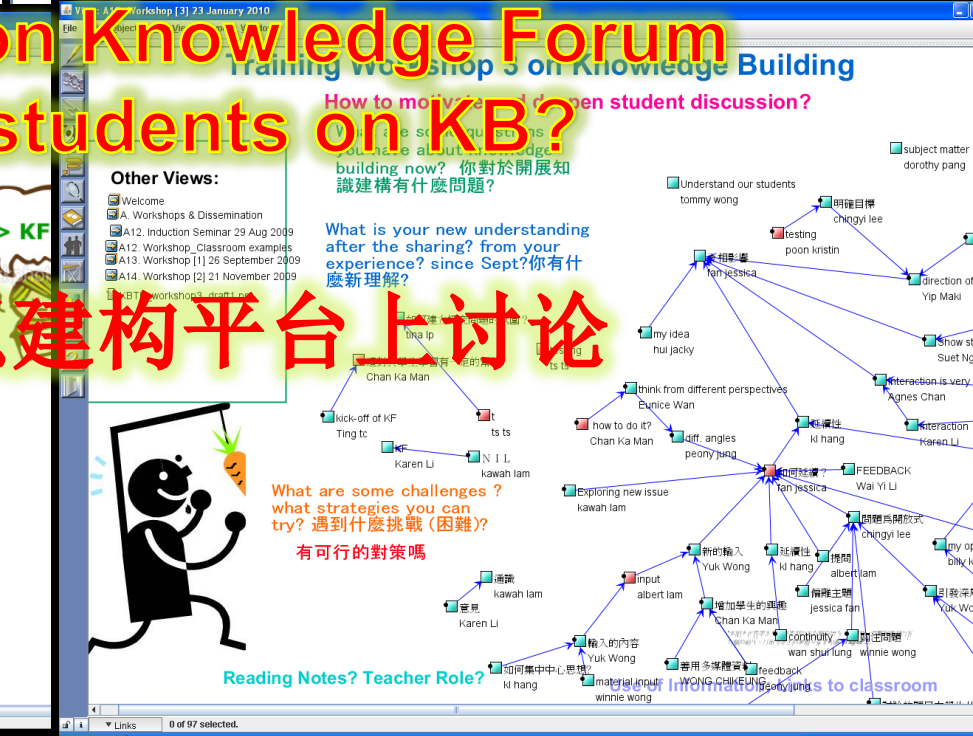
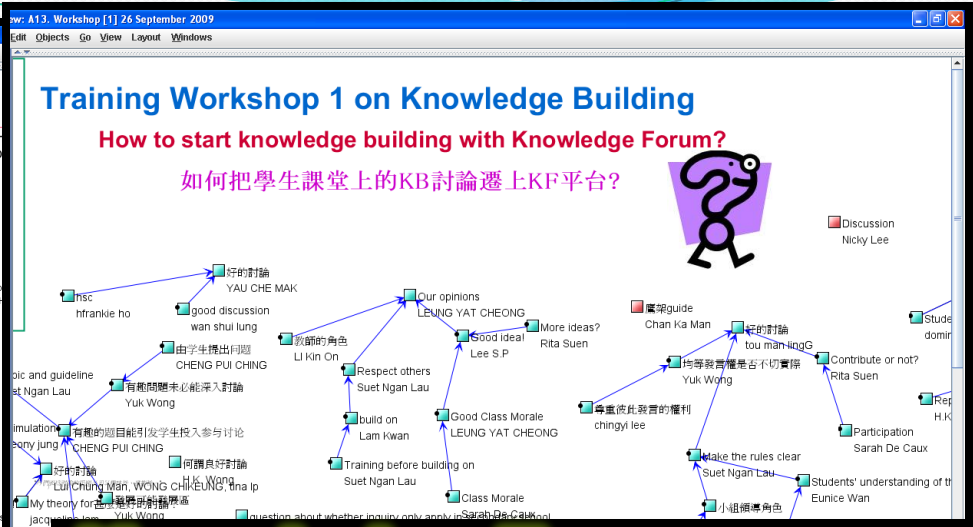
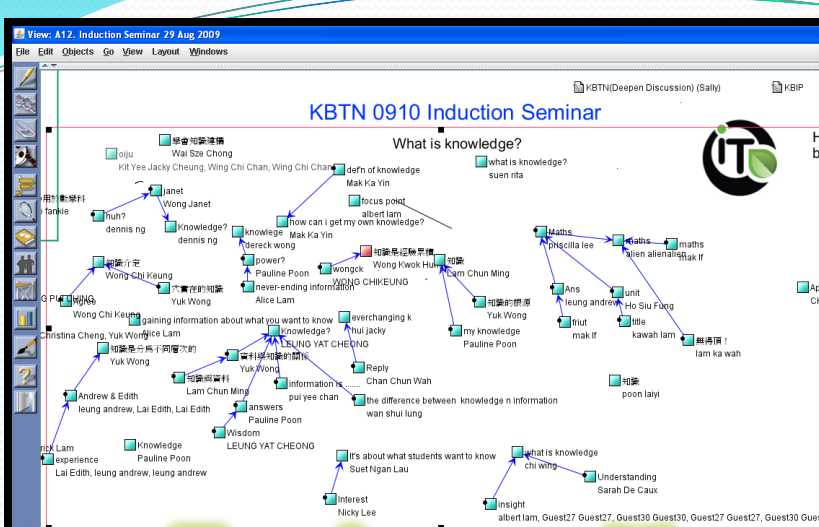
专家教师与新手教师协同教研



港大同學會小學 P.5 – GS: Water Problem

Classroom visits from mentors
来自导师的课堂参观



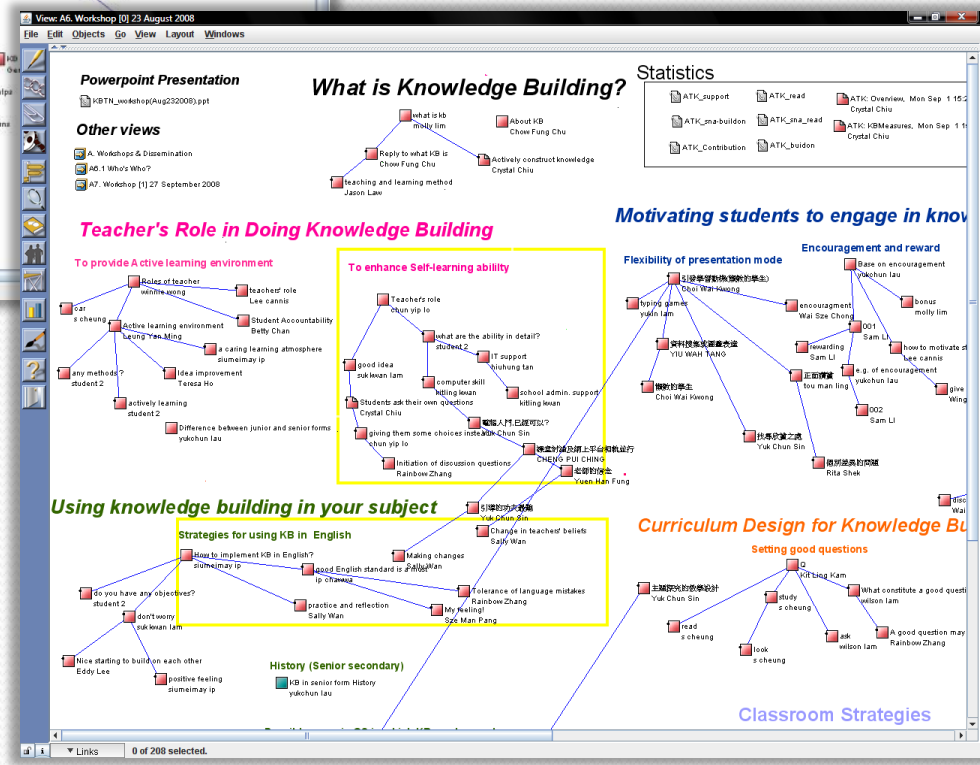


Teachers writing on Knowledge Forum
 -How to motivate students on KB?

教师在知识建构平台上讨论



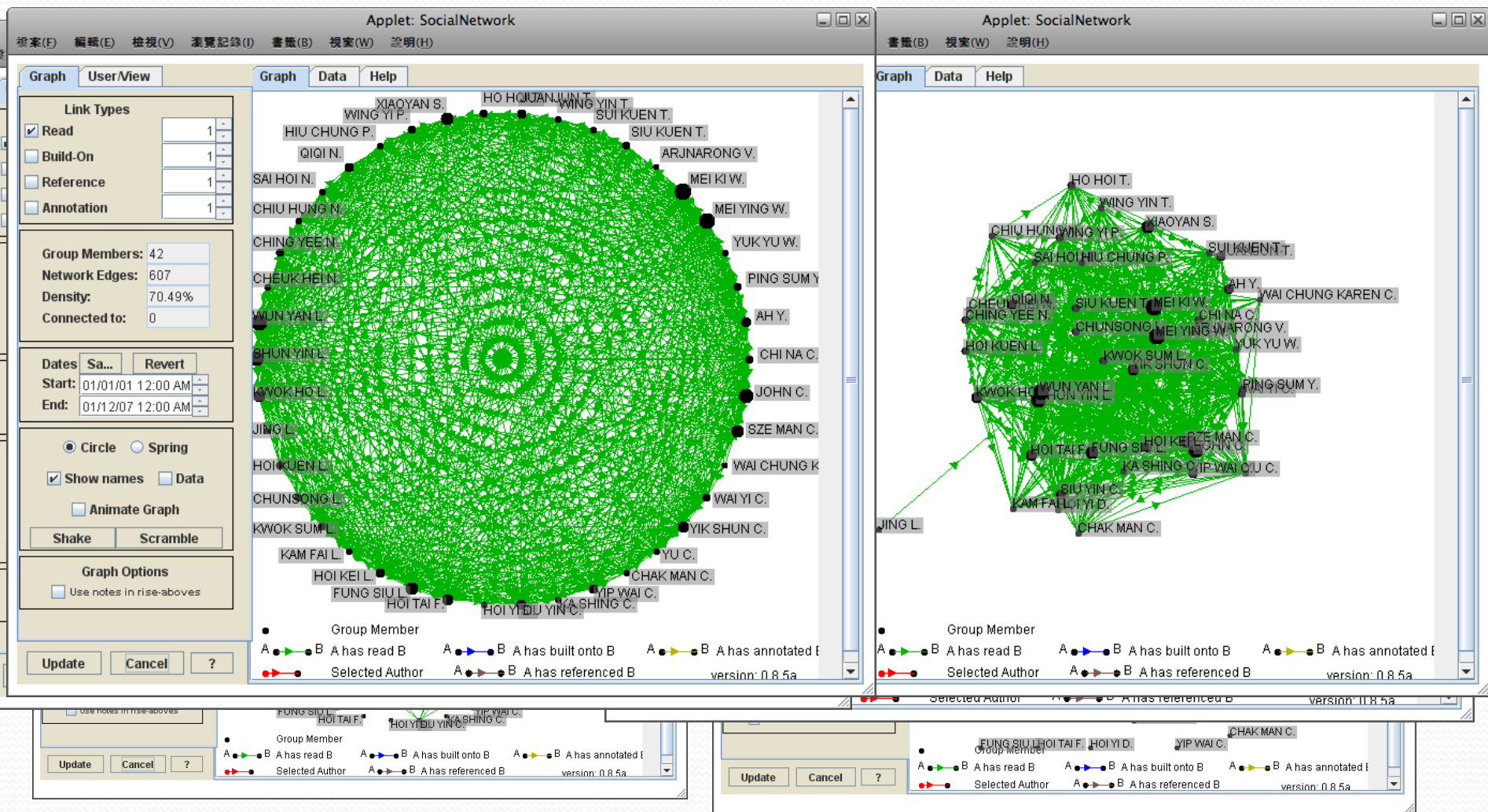
Knowledge Forum for collective advances 知识建构平台促进社群知识发展



Technological Support 技术支持

Assessment for learning Using Technology

运用技术评估与促进学生的学习





Diverse expertise in Knowledge-building Community

多领域的专家知在识知识建构社群



Geography 地理

Chemistry 化学

What is bleach? How can bleach be made chemically? You may know the term "1 to 99 diluted bleach" from the media nowadays. What does it mean? ...

"bleach" is one of the chapter to be studied in F.4 (after the holiday) and you may find it in Book 2 Unit 33. You can have some discussions about this popular chemical in the SARS period.

Please give an appropriate title, keywords and outline in your notes so that other users can follow easily in reading.

World Problems: Collaborative Learning Design

Welcome View

Topics for discussion: Three Sub-views

Empowering Curricula

Portfolio Assessment

The Earth's Major Plates

Primary science 小学科学

Chinese 中国语文

Improve Ideas!

Current Views

Old Views

Analysis

Liberal Studies 通识教育



為什麼每份工作的薪金都會那麼低?

除了被綁外還有甚麼出路?

為甚麼有這麼多的低下階層?

為何政府不查清楚這些工人有沒有需要?

為甚麼農民工子女會在教育上受到不公平的待遇?

消化系統

课堂案例

可持續發展
 香港的環境保育
 樂善堂王仲銘中學
 知識建構計劃

立體腦圖

Learning is constructive
 Activating Prior Knowledge

人生交叉點

Learning is contextual
 Uses different examples

知識牆

Learning is constructive –
 Making student Ideas Visible

我們的反思 Our Reflection

Reflecting on Learning
 Technology makes it possible
 for students of different abilities
 to learn from each other



尋城記

Learning is contextual & situated
 Field visits

知識論壇 - B

Learning & building knowledge together
 supported by technology

問題展銷會

Classroom culture – Students sharing
 and exploring in peers

協作學習

Learning is social, students
 co-constructing understanding

設計問題

Student Ownership, Self-Regulated
 Learning



我們的反思 Our Reflection

Reflecting on Learning

Technology makes it possible for students of different abilities to learn from each other

教學迷思

營造課堂氣氛：
其實未參加KF計劃前，
係咪唔識營造課堂氣氛呢？

自主自力的學習
VS
單向性的答問/資料搜集

教學流程

1. 教導學生如何設有層次的問題
2. 預習有關課題，引起討論及相關課題的興趣
3. 寫出已有知識，不明白及想提問的問題
4. 匯學生分組KB討論及找出最有價值的問題
5. 匯報揀選該問題的原因
6. 教授使用KF的技巧及注意事項
7. 讓學生在KF進行討論
8. 繼續KB討論進行知識統整
9. 評估學生的學習成果
(佔測驗分的10%，就著學生的課堂討論及網上回應的參與度，切合主題，筆記內容，結構組織)

根據已有知識寫出他們已知的事情及匯報

- 在課堂上派發白紙，讓學生利用十分鐘時間，寫出他們對植物已知的事情
- 學生匯報已知的事情

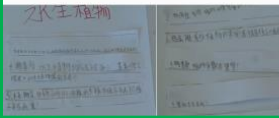


植物世界

根據已有知識寫出他們不明白的事情

- 在課堂上派發白紙，讓學生利用十分鐘時間，寫出他們對植物不明白及想知的事情

學生分組討論及找出最有價值的問題



在教學過程中遇到的困難及應對策略

學生在過程中遇到了以下的困難：

- (1) 學生在預習階段無法從課外資源獲取知識
- (2) 部分學生在問題討論階段不是從科學的專業角度討論
- (3) 有關性的知識與課程所要求的知識有所偏差

應對策略(針對第一、二、三項困難)：

- 當堂提供相關科學資訊
- 預習階段先提供，以作提問的基礎，在堂中繼續活動，令部分學習困難的學生
- 當堂提供科學知識
- 引入一些提問的提問技巧「為什麼？」、「為什麼？」，引導學生由已知知識及已有知識中推測出問題
- 教師預先預習學生的學習問題，以引導學生由科學知識的正確方向思考。

知識與課程相關

- 教師設計了資料與問題相關度多，與學生知識相關度低，與課程內容相關的問題
- 當堂提供與課程內容相關的資訊，令學生能從科學知識中獲取相關資訊
- 教師預先預習學生的學習問題，以引導學生由科學知識的正確方向思考。

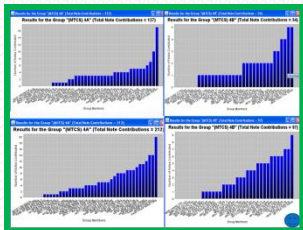
課堂掌控

- 當堂提供與課程內容相關的資訊，令學生能從科學知識中獲取相關資訊
- 教師預先預習學生的學習問題，以引導學生由科學知識的正確方向思考。
- 教師預先預習學生的學習問題，以引導學生由科學知識的正確方向思考。

天主教明德學校

匯報揀選該問題的原因 全班篩選三條最有價值的問題 教授使用KF的技巧及注意事項

- 利用電腦鐘時間教授學生：
- 使用KF的態度
- 使用KF的技巧
- 使用高質的注意事項
(我的看法/我不明白/新資訊/更好的看法)
- 讓學生上KF討論有關問題



在教學過程中遇到的困難及應對策略

學生在過程中遇到了以下的困難：

- (1) 學生不懂就課題篩選具探究價值的問題
- (2) 部分學生所提問的問題只是關於資料性或事實性的提問
- (3) 所探討的知識與課程所要求的知識有所偏差

應對策略(課堂展開一連串的過程工作)：

豐富學生的知識和學習興趣	> 閱讀資料及影片、利用周遭校園環境、在家中種植植物、全方位學習日
問題的技巧	> 重溫六何法的基本概念 > 找一些過往曾教授的單元或議題作出提問
度架的使用	> 引入一些簡單的度架概念「我學會了」及「我不明白」，然後讓學生把已觀看過的資料按照類別記下 > 把討論的結果張貼於班房的壁報(XB wall)內，張貼後讓全班同學就相關的問題作出回應或意見
甄選具探究價值問題	> 他們把記下的資料與同組組員分享，然後在組內甄選一些具探究價值的問題 > 找一些甄選探究價值問題的準則發表意見，然後向全班匯報 > 為學生提供量表，然後提供一系列問題讓學生就問題的探究價值進行排序。 > 全班匯報：全班同學就各組問題的排序結果再進行討論，學會了具探究價值問題的準則及定義
撰寫筆記	> 學生不懂在討論區撰寫筆記，這與學生的撰寫筆記技巧及電腦知識有關 > 教授如何尋找及篩選相關的重要資料 > 度架的使用，以及筆記的撰寫須包含主句、理據或事實證明、資料出處及個人看法等資料 > 在電腦室向全班同學示範，讓他們均掌握撰寫筆記的技巧

Teacher Guide 教師手冊



Professional Development Network for
Knowledge Building in Schools
知識建構教師發展網絡計劃

A Teacher's Guide
to
Knowledge Building

知識建構
教師手冊
中文版

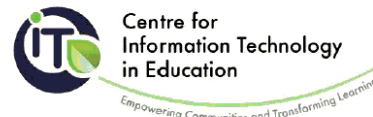


Professional Development Network for
Knowledge Building in Schools
知識建構教師發展網絡計劃

A Teacher's Guide
to
Knowledge Building

知識建構 教學策略
教師手冊
(第二版)

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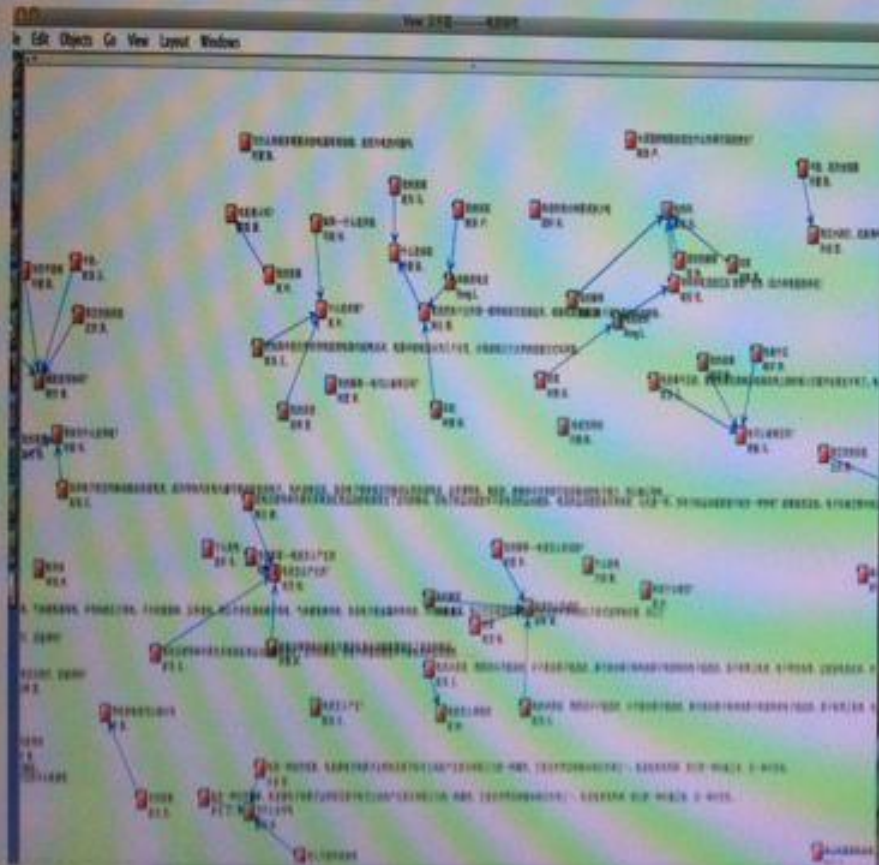
Professional Development Network for
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知識建構秘笈—
老師建構心得大傳授

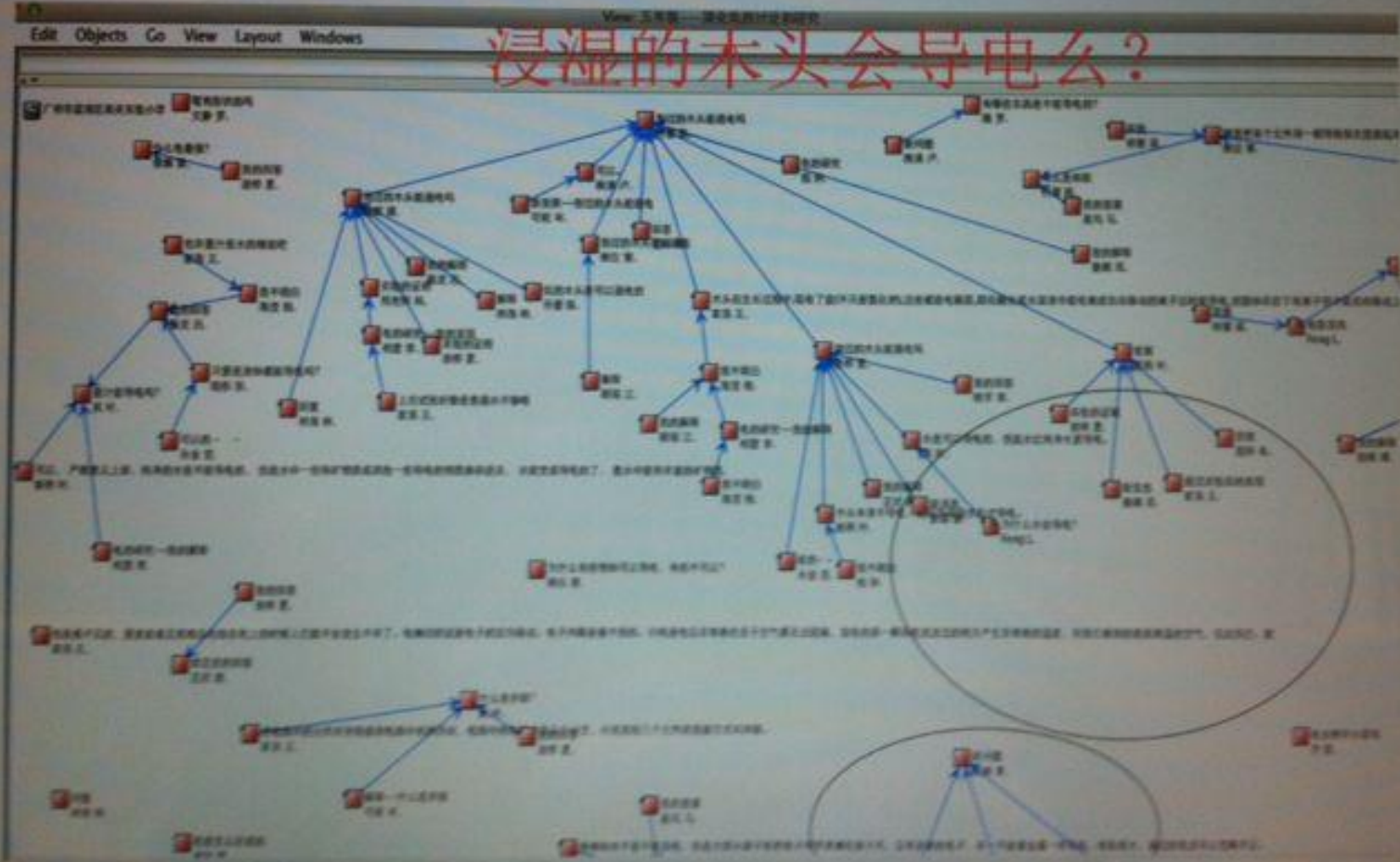


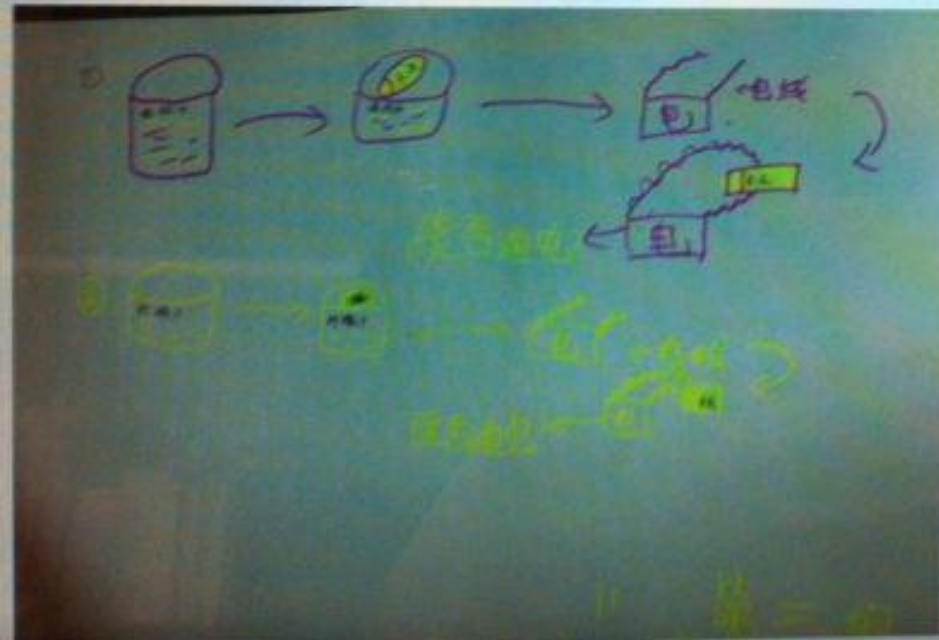
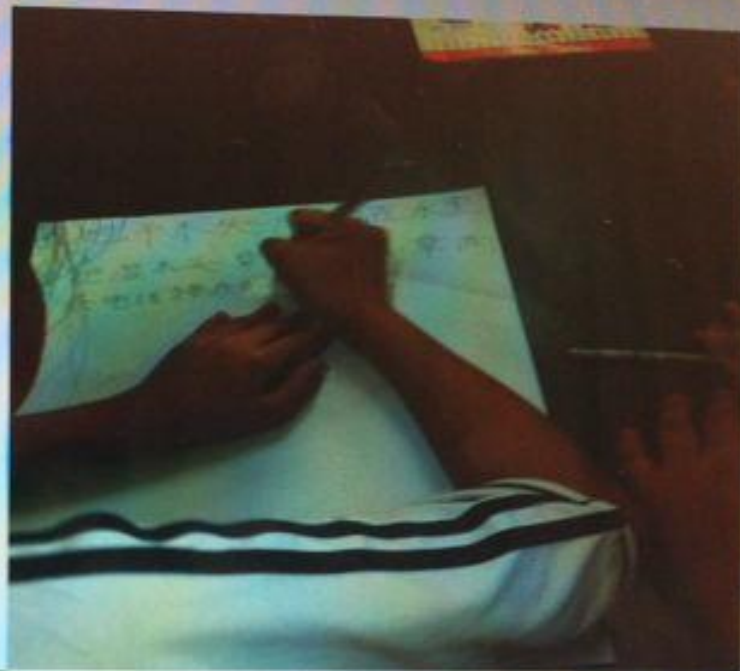
广州西关实验小学知识建构范例 ———五年级“电的研究”

关于电的研究

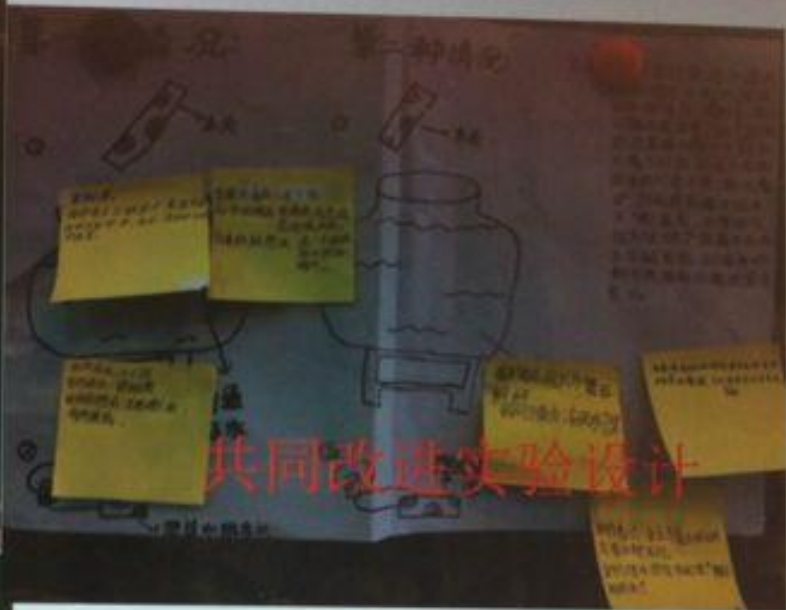
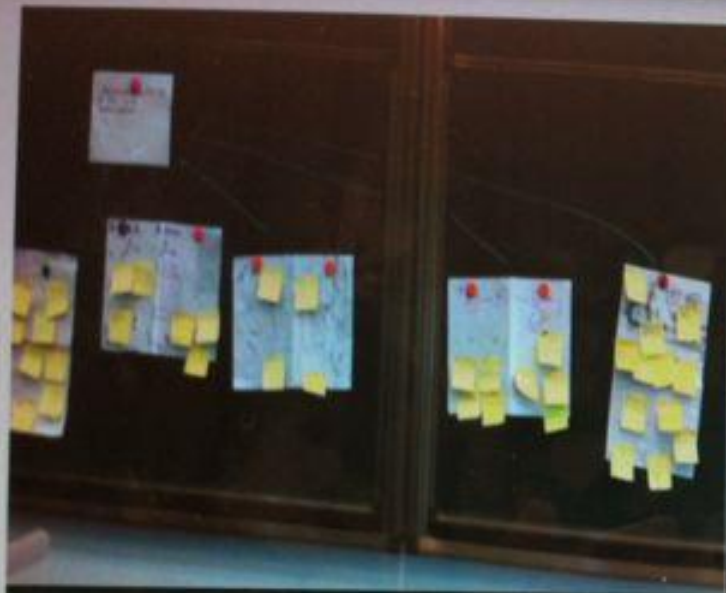


深化电的研究





小组实验设计



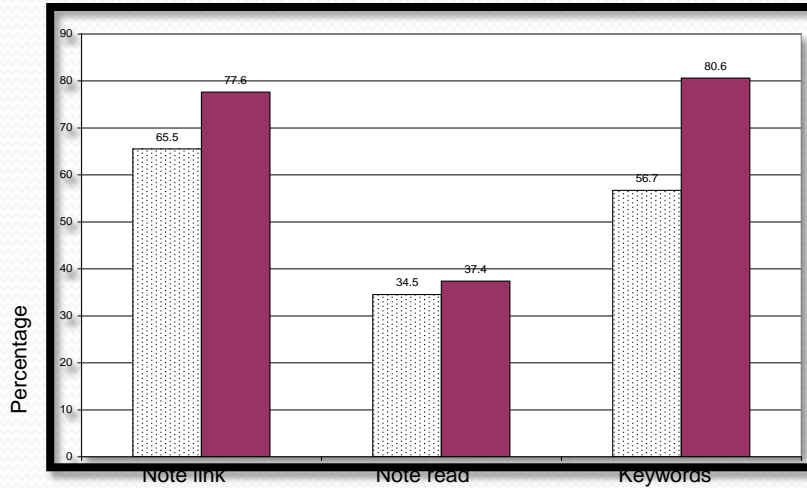
我的发现
我的新想法
我的看法
我的理由
我的新想法
(有待改进)

鹰架

将学生在KF讨论的观点显现在课堂中，
通过实验验证这些观点，
共同改进这些观点

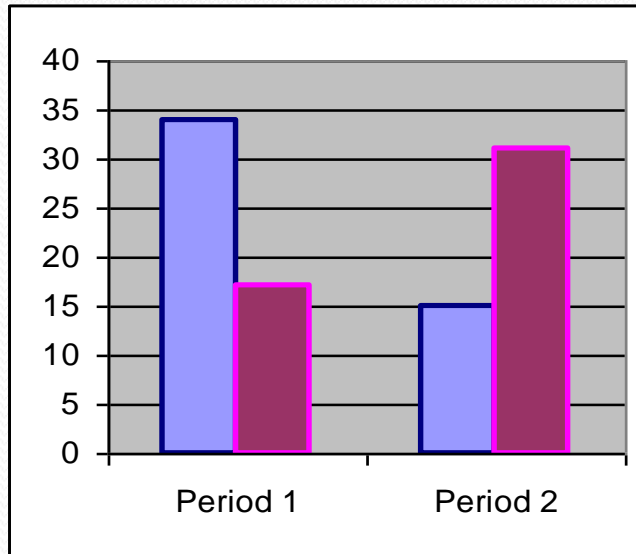
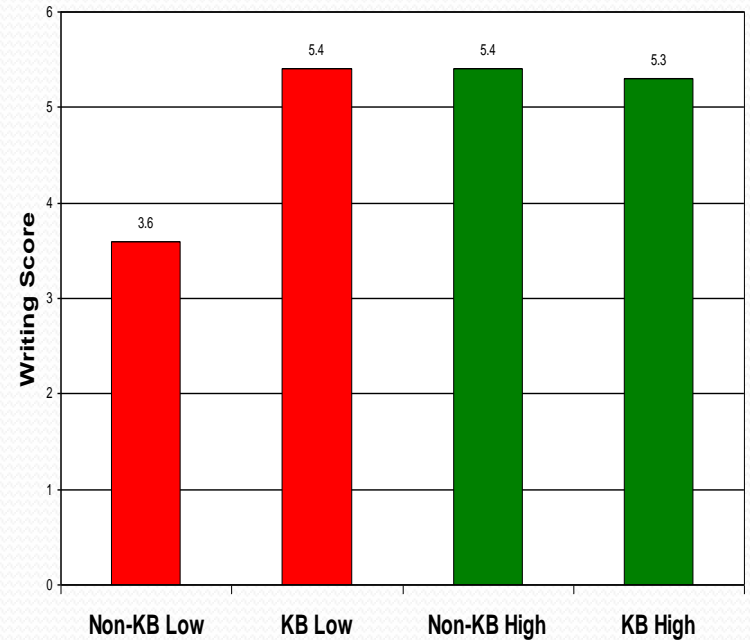
知识建构与考试评核

Forum Participation
论坛参与



No-KBP
KBP

Essay Exam: Conceptual understanding
概念理解



Depth of inquiry
深度探究

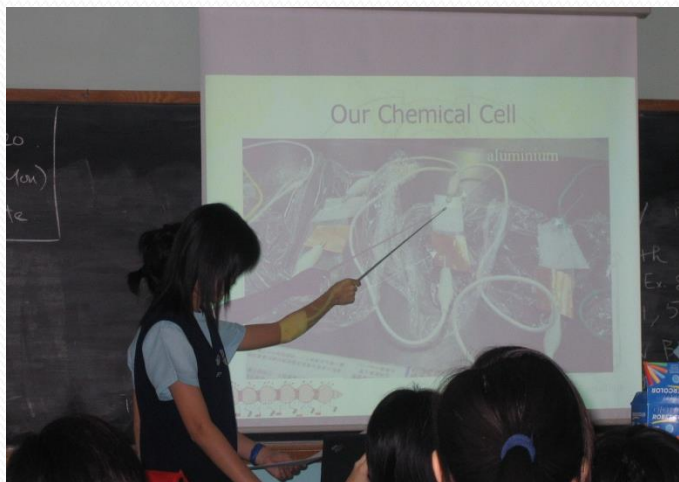
Scientific Inquiry 科学探究

Maryknoll School, F. 6 Chemistry

玛利诺中学，6年级化学



	2007 study		2009 study	
	KB	Comparison	KB	Comparison
Pre-EB scores	11.40	11.49	11.03	11.17
Post-EB scores	12.38	11.47	11.60	11.40
Pre-test %score	18.25	20.90	13.80	14.10
Post-test %scores	55.33	52.34	57.30	49.10
Final examination	78.20	74.90	71.03	70.85



Summary of successful ICT teacher development 成功的教师发展计划的特点

REFLECT on your own, school & district experience 反思你的经验

1. From single seminars to **extended** learning 从单研讨会至延伸学习
2. From passive learning to active involvement; **teachers as learners, inquirers and knowledge builders** 从被动至积极参与
3. From focus on ICT techniques to **what students have learned...online student learning and idea improvement** 从注重教学技巧至学生的学习
4. From ICT activities and tasks to **PRINCIPLES** (why) (从活动, 任务, 至原则) for **generative** teachers
5. From personal to teacher groups and **online teacher communities** supported by **teacher leaders** and ICT tools 从个人学习到社群
6. Evidence-based with **student assessment data** (and exam) 循证支持

Technology must go hand in hand with pedagogy change and student learning

Students and teachers help each other advance in knowledge building
communities enriched with technology 自主自力，不断探索，群体进步，创建新知

学生与教师共同作为知识建构者，推动社群知识的发展！

