

**A New Taxonomy of Four 'Knows' Under The Three  
Five-Year Strategies on Information Technology (IT) in  
Education**

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# Introduction

- First Five-year Strategy: Information Technology for Learning in a New Era (1998/99 to 2002/03) (EMB,1998)
- Second Five-year Strategy: Empowering Learning and Teaching with Information Technology (2003/04 to 2008/09) (EMB,2004)
- Third five-year Strategy: Right Technology at the Right Time for the Right Task (2008/09 - Current) (EDB,2008)
  
- Five Review Studies after Three Strategies:
  - Preliminary Study –HKU (2000/01)
  - SITES M2 –HKU (2003)
  - Overall Study – HK Polytechnic U (2004)
  - Phase (I) Study on Evaluating the Effectiveness of the ‘Empowering Learning and Teaching with IT’ Strategy – The HK Institute of Education (2004/2007)
  - Phase (II) Study on Evaluating the Effectiveness of the ‘Empowering Learning and Teaching with IT’ Strategy – HKU (2004/2007)
  
- Although EDB had achieved results beyond its original objectives, obstacles still affect the use of IT in learning and teaching in three main aspects – schools, teachers and students.

# Objectives

- Introduce a Knowledge Management (KM) concept and develop a new taxonomy of Four 'KNOWS' to identify any obstacles affecting the use of Information Technology (IT) in teaching and learning under the past and existing ITED strategies in Hong Kong
- Study the effectiveness and efficiency of the strategies on Information Technology in Education, both from IT and KM perspectives
- Study a KM project for IT drawn from current research

## Problems and Challenges over a decade

- Limited resources vs. Resource misallocation
- Purpose of 'Richness' vs. 'Reachness'
- Impacts of 'Information Overflow' and 'Island of Information'
- Common ground in the definition of 'Information' vs. 'Knowledge'
- Implementation of 'Information Repository' vs. 'Knowledge Repository'
- The effectiveness of the current education system (IM vs. KM perspective)
- Guidance to teachers and students on how to take an effective approach on the new direction in pedagogical practices

# Literature Review

- Information vs. Knowledge (Turban et al., 2002)
  - Data: Collection of facts, measurements and statistics
  - Information: Organized or processed data
  - Knowledge: Information that is contextual, relevant and actionable
- Information Management vs. Knowledge Management
  - Put everything together in a repository and manage it →KMS (Rosenberg, 2009)
  - In different disciplines, individual, teams and organization (Young, 2009)
- ITED strategies from IT and KM perspective in the HK Education sector ; complement to each other

# Theorising knowledge and the relationship to KM

- Two different properties of knowledge (Polanyi, 1958)
  - (a) Explicit knowledge (b) Tacit Knowledge
- KM definitions in different dimensions.
  - HRM, personal psychology, economic, technological, social, operational and organisational (Wiig, 1993; Hahn & Subramani, 2000; Alavi & Leidner, 2001)
- HKEdCity : Funded by Quality Education Fund (QEF)
  - Information Repository vs. Knowledge Repository
  - Any KM strategy and motivate knowledge sharing culture ??
  - KM Cycle
  - Quality and Quantity of knowledge
  - Transfer knowledge to the right person at right time

# Theorising knowledge and the relationship to KM

- Four different kinds of knowledge (Lundvall and Johnson, 1994)
  - (a) Know Who: Who knows what and who knows what to do
  - (b) Know What: Knowledge about 'facts' How many people in HK?
  - (c) Know How: Skill – ability to do something
  - (d) Know Why: Knowledge about principles and laws of motion
  
- A revised taxonomy of four 'knows'
  - (a) Know Who (e.g. Knowledge contributor, Knowledge beneficiary, CKO, Subject matter expert)
  - (b) Know What
    - The quality and quantity of knowledge;
    - Technical skill knowledge vs. Subject knowledge
  - (c) Know How (KM Cycle)
  - (d) Know Why (Driving forces)

# KM PROJECT DESCRIPTION - WETLAND PROJECT

- Analyze the significance of KM practices; and its impacts and outcomes of a KM project.
- Wetland Project:
  - The study of wetland ecology of the students' country/place through project learning;
  - Collaboration with local wetland centres in the students' country/region to share resources and findings, and to share these findings with students from other regions (Wetland Project, 2008).



Participating Wetland Centres

Since the announcement of the programme in August 2007, 13 wetland centres from 9 countries in Asia have registered in the WLI-Asia Inter-school Education Programme on Wetland Conservation. They are:

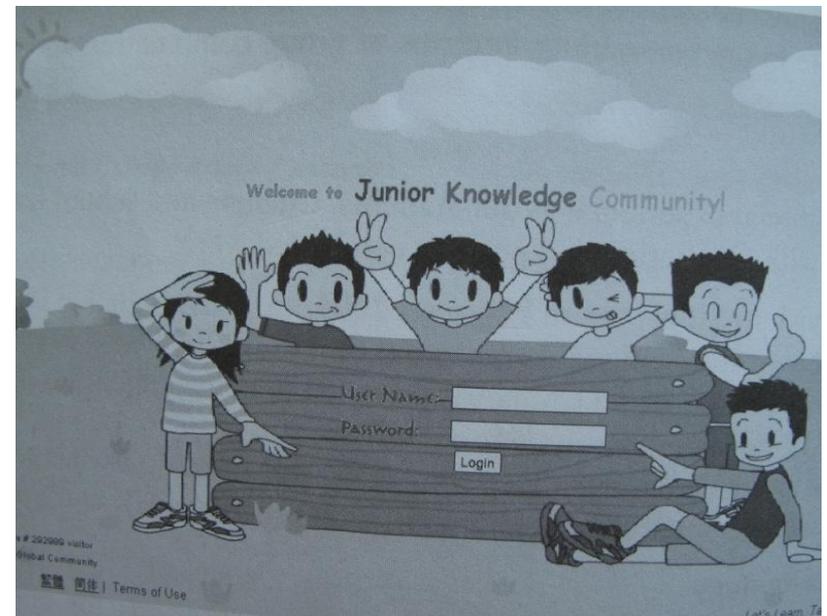
Participating Wetland Centres	Country / Region	Description
1. <a href="#">Nijhum Dweep Wetland Education and Training Centre (Bangladesh Wetland Bureau)</a>	Bangladesh	<a href="#">View</a>
2. <a href="#">Conservation Action Trust</a>	India	<a href="#">View</a>
3. <a href="#">Society for Research in Ecology and Environment</a>	India	<a href="#">View</a>
4. <a href="#">Korean Federation for Environmental Movement</a>	Korea	<a href="#">View</a>
5. <a href="#">SMK Teloi Kanan GEC Wetland Centre</a>	Malaysia	<a href="#">View</a>
6. <a href="#">Kota Kinabalu Wetland Centre</a>	Malaysia	<a href="#">View</a>
7. <a href="#">Akuarium Tunku Abdul Rahman (Zoo Negara)</a>	Malaysia	<a href="#">View</a>
8. <a href="#">Wetland Centre Sandspit, Karachi (WWF Pakistan)</a>	Pakistan	<a href="#">View</a>
9. <a href="#">Muraviovka Park for Sustainable Land Use</a>	Russia	<a href="#">View</a>
10. <a href="#">Sungei Buloh Wetland Reserve (National Parks Board)</a>	Singapore	<a href="#">View</a>
11. <a href="#">Nature and Agriculture Education Centre (WWF Thailand)</a>	Thailand	<a href="#">View</a>
12. <a href="#">Suzhou Education Technology Centre</a>	China / Suzhou	<a href="#">View</a>
13. <a href="#">Hong Kong Wetland Park (Agriculture, Fisheries and Conservation Department)</a>	China / Hong Kong	<a href="#">View</a>

Best viewed with IE 6.0 or above

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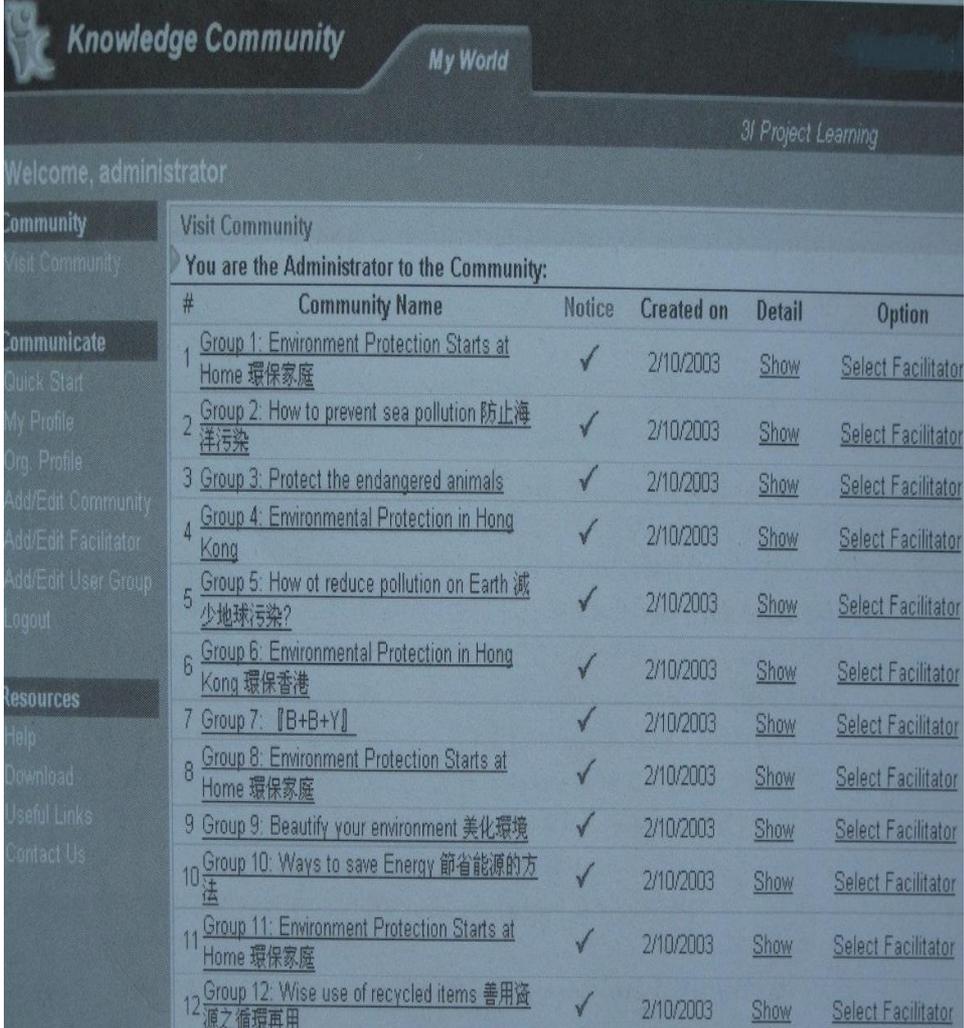
## Knowledge Community : 3-I Project

- 3-I projects were funded by the Quality Education Fund (QEF) of the Education Bureau (EDB) and have been implemented in the Knowledge Community (KC) since 2006 . The projects, involved 745 Primary 5 students, 25 teachers and the principals from four leading primary schools in Hong Kong.
- Three dimensions were classified in 3-I Project Learning (Tan, 2007):
  - **Interdisciplinary** – Apply and build knowledge from more than one subject;
  - **International** – Building knowledge with a global perspective;
  - **Inter-school**–Learning from and collaborating with schools of a different learning culture



# Knowledge Community Structure

- The knowledge structure can provide **innovative** methods to support knowledge capture, such as different thinking types and scaffolds.
- They have been used in the 3-I Project, which helps students to construct a **thinking-type structure** and link up the essential key points in their minds.



The screenshot shows a web interface for a 'Knowledge Community'. The header includes the site name 'Knowledge Community', a user profile 'My World', and a navigation path '3I Project Learning'. A welcome message 'Welcome, administrator' is displayed. A sidebar on the left contains navigation links: 'Community', 'Visit Community', 'Communicate', 'Quick Start', 'My Profile', 'Org. Profile', 'Add/Edit Community', 'Add/Edit Facilitator', 'Add/Edit User Group', 'Logout', 'Resources', 'Help', 'Download', 'Useful Links', and 'Contact Us'. The main content area displays a table of community groups with the following data:

#	Community Name	Notice	Created on	Detail	Option
1	Group 1: Environment Protection Starts at Home 環保家庭	✓	2/10/2003	Show	Select Facilitator
2	Group 2: How to prevent sea pollution 防止海洋污染	✓	2/10/2003	Show	Select Facilitator
3	Group 3: Protect the endangered animals	✓	2/10/2003	Show	Select Facilitator
4	Group 4: Environmental Protection in Hong Kong	✓	2/10/2003	Show	Select Facilitator
5	Group 5: How to reduce pollution on Earth 減少地球污染?	✓	2/10/2003	Show	Select Facilitator
6	Group 6: Environmental Protection in Hong Kong 環保香港	✓	2/10/2003	Show	Select Facilitator
7	Group 7: 『B+B+Y』	✓	2/10/2003	Show	Select Facilitator
8	Group 8: Environment Protection Starts at Home 環保家庭	✓	2/10/2003	Show	Select Facilitator
9	Group 9: Beautify your environment 美化環境	✓	2/10/2003	Show	Select Facilitator
10	Group 10: Ways to save Energy 節省能源的方法	✓	2/10/2003	Show	Select Facilitator
11	Group 11: Environment Protection Starts at Home 環保家庭	✓	2/10/2003	Show	Select Facilitator
12	Group 12: Wise use of recycled items 善用資源之循環再用	✓	2/10/2003	Show	Select Facilitator

# Conclusion, Reflections and Recommendations

Study its effectiveness, use insights from this application to refine or redevelop the model, examine its limitations and suggest areas for improvement.

- Education Bureau (EDB):
  - Aim at achieving “Richness” and “Reachness”;
  - Provide more resources or managerial support;
  - Set up comprehensive KM strategies to identify the obstacles by the guidance of the four new ‘KNOWS’ taxonomy.
  
- School/ KM Project:
  - Top management official should have clear and common grounded KM concept;
  - Define the roles and responsibilities of different individuals;
  - Conduct more introductory KM sessions and discussion groups;
  - Use valid indicator to benchmark the effectiveness of Information Technology.

# Conclusion, Reflections and Recommendations

- Teacher:
  - Act as a facilitator who should motivate the culture of knowledge sharing within the learning community;
  - Aid of sophisticated KM/IT tools
- Student:
  - Personal knowledge management;
  - Bonus for knowledge building and sharing;
  - Improve the moral standards of participants by building trust and respect for the community

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