

**TDG Project**  
**Developing Personal Knowledge Management**  
**Training Curriculum Guide**

Active Learning with  
Collaborative Learning Tools

Eric Cheng  
Department of Curriculum and Instruction  
The Education University of Hong Kong  
[eckcheng@edu.edu.hk](mailto:eckcheng@edu.edu.hk)

# abstract

- This paper presentation will introduce how collaborative eLearning tools influenced a group of pre-service teacher trainers in The Education University of Hong Kong. This study highlights how such tools were integrated into an instructional design teacher training programme. Free, and easy to use blended learning tools that promote active learning will be introduced.

- Why KM?
- What is Knowledge?
- What is Knowledge Management?
- What is Personal KM?
- Why is PKM related to learning?
- How to develop PKM?

# Why KM?

## Keeping deep knowledge from being lost

*It is one thing to lose one key executive or long-time employee but when they are retiring at an escalating rate, the consequences can be very hard to overcome. With a plan and the right BCM software, an Illinois company safeguarded its business secrets and made itself more efficient in the process.*



**Sascha Ohler**  
Technology  
Partner  
Management  
Team Lead  
Perceptive  
Software

### Feedback

E-mail Author

### Article Info

**Published:** Apr 12, 2010

**Categories:** Management, ECM,  
Records Management, Retention,  
Workflow, Business Services,  
Federal, Financial Services

### Socialize This Article

Bookmark on del.icio.us

Add to StumbleUpon

Tweet this

Send to a Friend

### Dig Deeper

- Read more about the experience of Illinois Mutual



The first baby boomer to file for Social Security benefits did so more than two years ago and the drum beat of boomers retiring has been growing louder ever since.

There are about 76 million baby boomers, those born between the years 1946 and 1964. According to Census Bureau data, 3,463,670 baby boomers or an average of 66,600 a week, will turn 62 in 2010 and so be eligible for Social Security.

With the escalating rates of retirement, companies are facing a widespread, comprehensive loss of knowledge. Add to that the hundreds of thousands of experienced workers whose positions were victims of the economic downturn and the result has been a brain drain that might set business back years.

There are techniques like shadowing and technologies like enterprise content management (ECM) that can be used to identify, capture, keep and share all of that experience for those companies that act.

Yet too few companies have come to recognize the issue and too many are just paying lip service to it, said knowledge management and technology expert Carl Frappaolo.

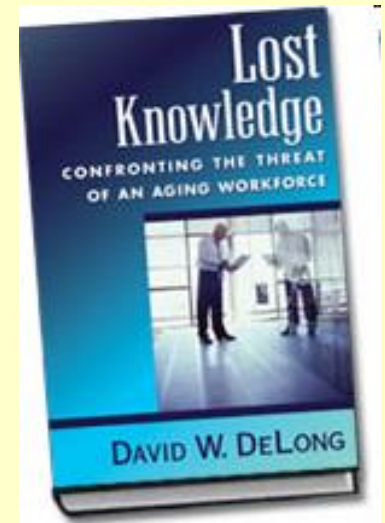
"If you recognize it, then do something about it," said

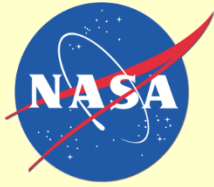
Baby Boomer Retirements

Source : <http://www.incontextmag.com/article/Keeping-deep-knowledge-from-being-lost>

# Knowledge lost threaten to organization survival

- Workforce changes
  - [Retirements, mid-career turnover, re-organizations, etc.] lead to knowledge loss which leads to decreased innovation and reduced efficiency/increased costs and reduced capacity for growth.
- How to Capture knowledge becomes important!
- Eight keys to more effective knowledge transfer
  - <http://www.ericmackonline.com/ica/blogs/emonline.nsf/dx/knowledge-retention-a-framework-for-action>





# NASA Lost Memory

- Loss of knowledge of manned space flight (putting a man on the moon)
  - Loss of Apollo Mission **Documents**, esp, the critical set of blue prints for the Saturn booster, the only rocket with enough thrust to send a manned lunar payload on its way
  - Loss of documents for landing on the moon
- Unlearned lessons from Challenger accident
  - NASA has a culture that is **resistant to criticism and to change (mental model)**
  - **ineffective communication**

Petch, G. 1998. The cost of lost knowledge.  
Knowledge Management Magazine, October.  
<http://www.kmmagazine.com>.



# What is knowledge?

Knowledge	Positivist Perspective	Social Constructivism Perspective
Definition of Knowledge	<ul style="list-style-type: none"> <li>● As an <b>object</b></li> <li>● A <b>justified true belief</b>.</li> <li>● possess by people</li> <li>● “A collection of representations of the world, which is made up of a number of objects and events” (Chiva &amp; Alegre 2005, p53).</li> </ul>	<ul style="list-style-type: none"> <li>● Socially constructed as <b>a process</b>.</li> <li>● created by people</li> <li>● Not as a representation, but as constructing or creating acts (Vo, 2012)</li> <li>● “Neither universal nor abstract rather depends on context” (Chiva &amp; Alegre 2005, p58)</li> </ul>
Existing Form	<ul style="list-style-type: none"> <li>● Visible, objective and rational</li> <li>● Explicit knowledge</li> <li>● Can be codified and stored</li> </ul>	<ul style="list-style-type: none"> <li>● Unseen, subjective and experience based.</li> <li>● Tacit knowledge</li> <li>● Shared through communication</li> </ul>
Location of Knowledge	<ul style="list-style-type: none"> <li>● Locates at written and verbal information recorded in video, audio, data based and documents</li> </ul>	<ul style="list-style-type: none"> <li>● Resides in knowledge individuals’ minds and/or communities of practice</li> </ul>
KM strategies	Codification	Personalisation



# Data, Information and Knowledge

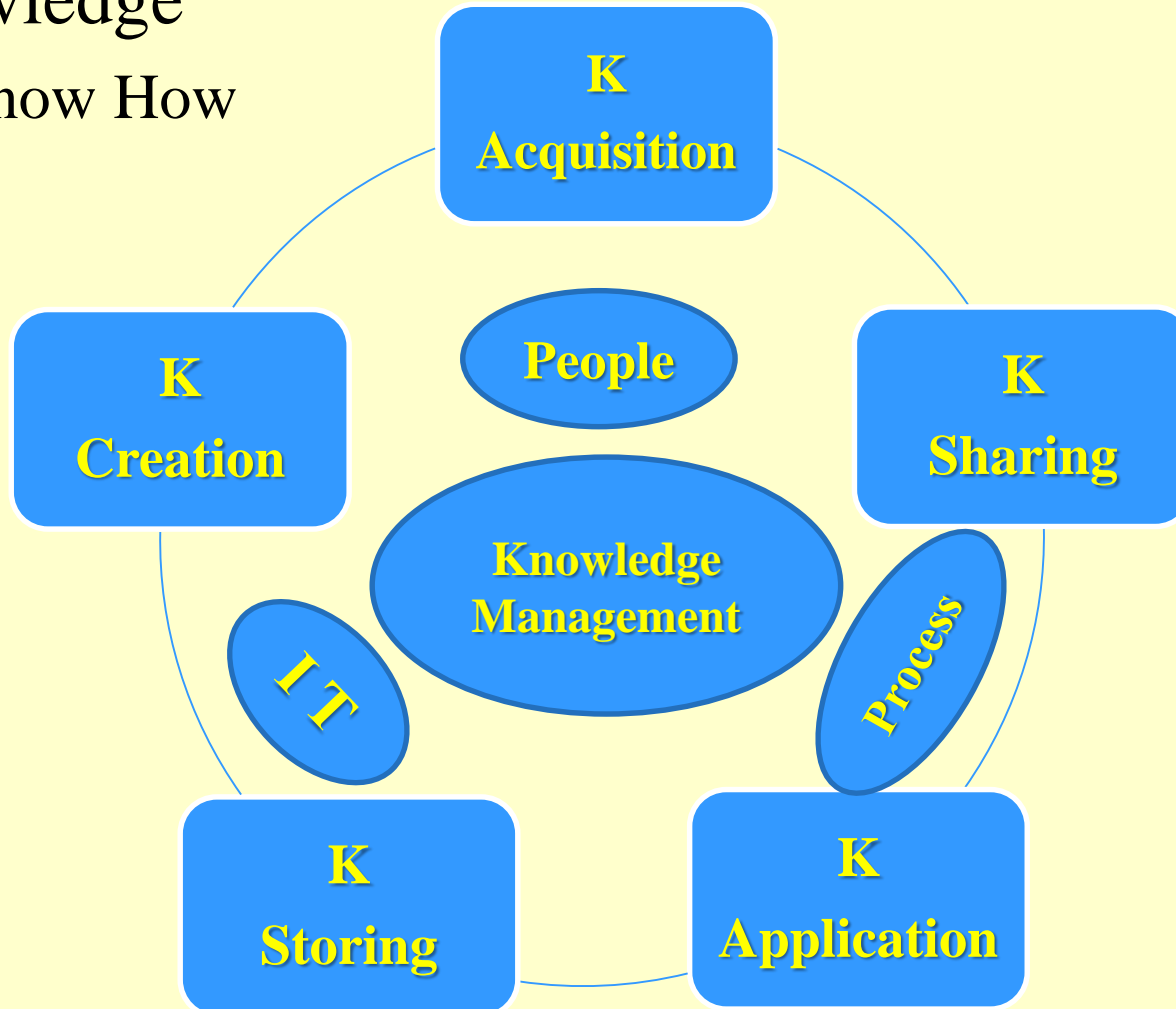
- (Data)
- (Information)
  - Data in Context
- (Knowledge)
  - Information with Action





# What is KM?

- KM is strategic management process that focuses on knowledge
  - Know How



# **What is Personal Knowledge Management ?**

# Why PKM

- Organization KM need individual support!
- Learners need learning skills to survive in the knowledge society!
  - Increasing the amount of information do **NOT** automatically make learners more informed or **knowledgeable**.
  - If a learner cannot manage and meld the accumulation of information through their daily experience and study to **construct knowledge** in a systematic fashion, their learning will not be effective.
- To develop learners with this **competency** is an important **lifelong education** issue.



# Why PKM?

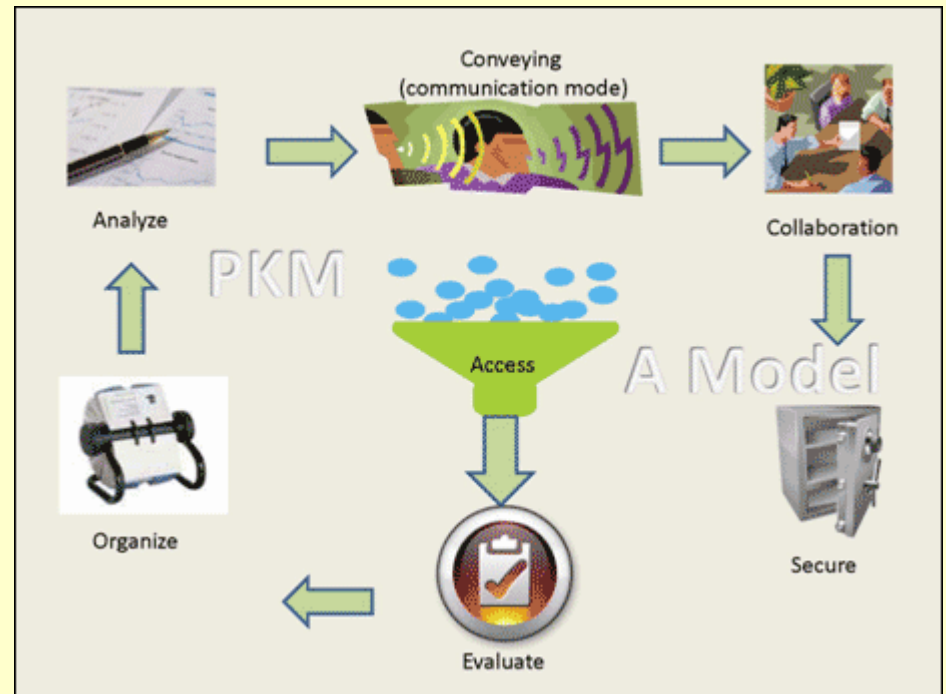


## Learning to Learn

- **lifelong education** issue have be address by proposing a *learning to learn* slogan in the Education policy document.
- The policy suggests that teachers **should develop student learning competence** for acquiring knowledge through various methods.
- **How to develop pre-service teacher with this** competency for teaching could be a significant research issues.
- To develop learners with PKM **competency** is an important **lifelong education** issue.

# *Personal Knowledge Management*

- PKM is **a competency and set of skills** to organize and integrate important information such that it becomes part of an individual's personal knowledge base (Frاند & Hixon 1999).



PKM could be **injected into an educational framework** for undergraduate education in order to **bridge the gap** between general education and other subject disciplines (Dorsey et al 2000).



# *Aims of the Study*

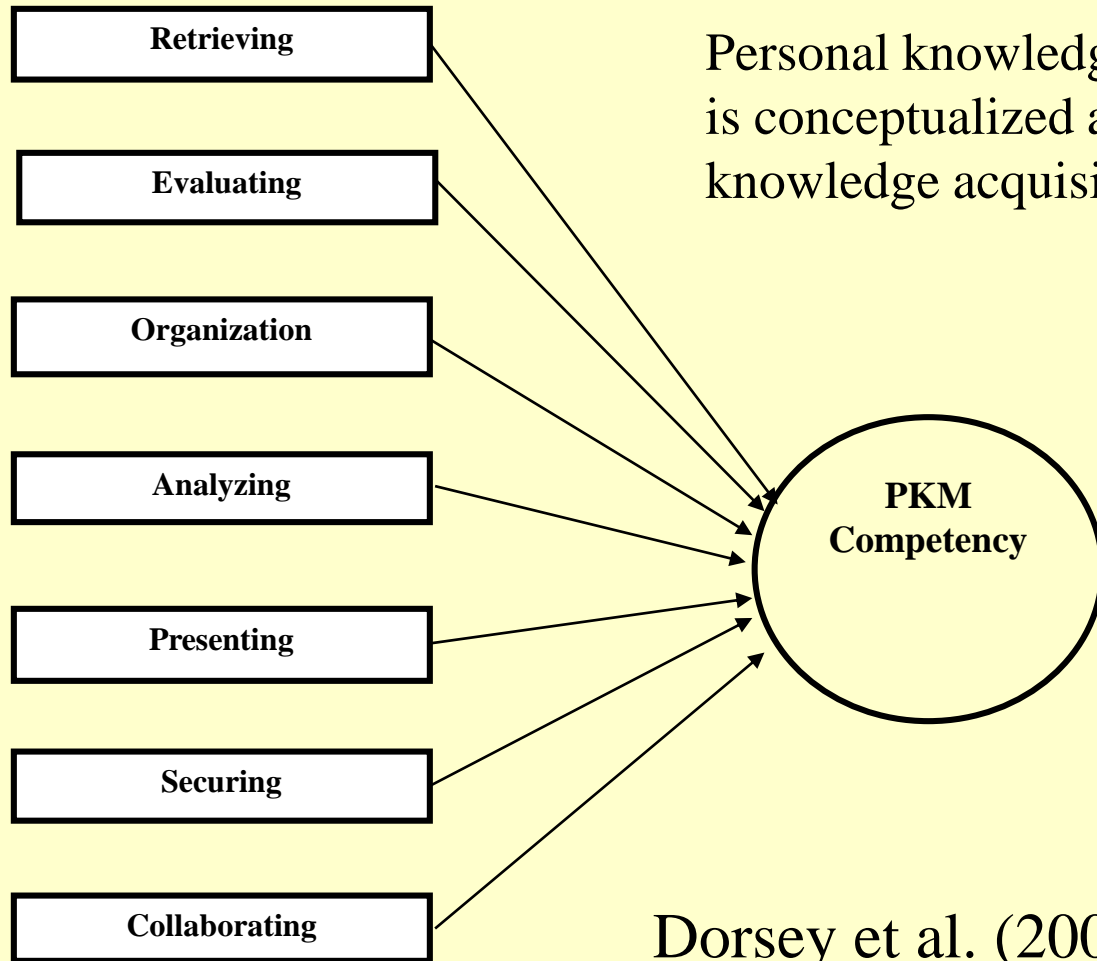
- *Investigate the relationships* of PKM skills of pre-service teacher and their knowledge acquisition.
- *Validate a set of instrument* for measuring PKM and knowledge acquisition.
- *Construct a PKM model* for pre-service teacher learning.
- *Develop a PKM curriculum to enhance* PKM competency
  - Programme structure
  - Elearning tools



# Literature on PKM

- **Conscious strategy**
  - Frand & Hixon (1999)
- **Skills based information literacy,**
  - Avery, Susan; Brooks, Randy; Brown, James; Dorsey, Paul; and O'Conner, Michael. (2001) & Dorsey P. (2000)
  - Skyrme, D.J., (1999)
  - Hyams. R. (2000)
- **Problem solving** activities with specific cognitive, information, social and learning competencies,
  - Wright, K. (2005)
- **Technology-centric view**
  - Tsui E (2000)

# *Conceptual Framework for Measuring PKM Competency*



Personal knowledge management (PKM) is conceptualized as a competency for knowledge acquisition

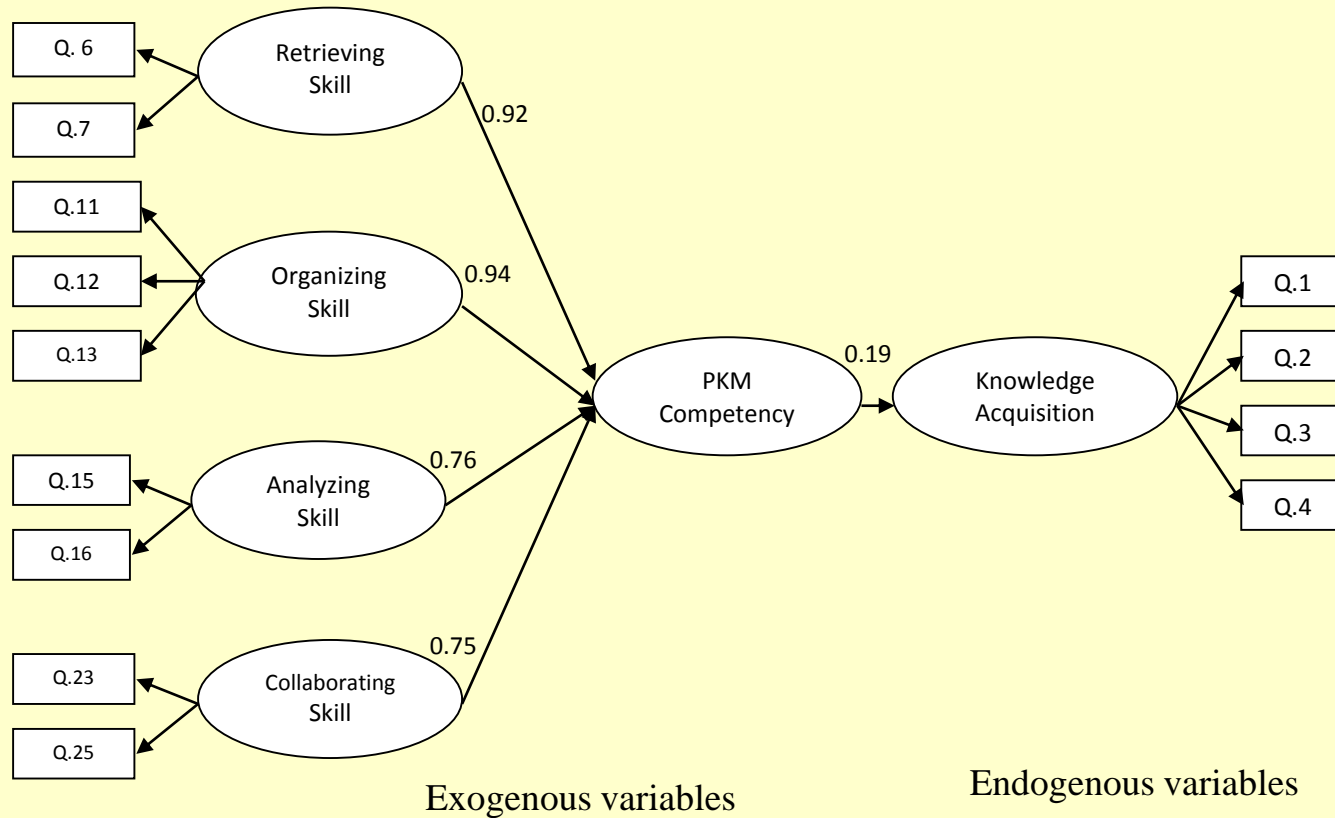


Dorsey et al. (2000)

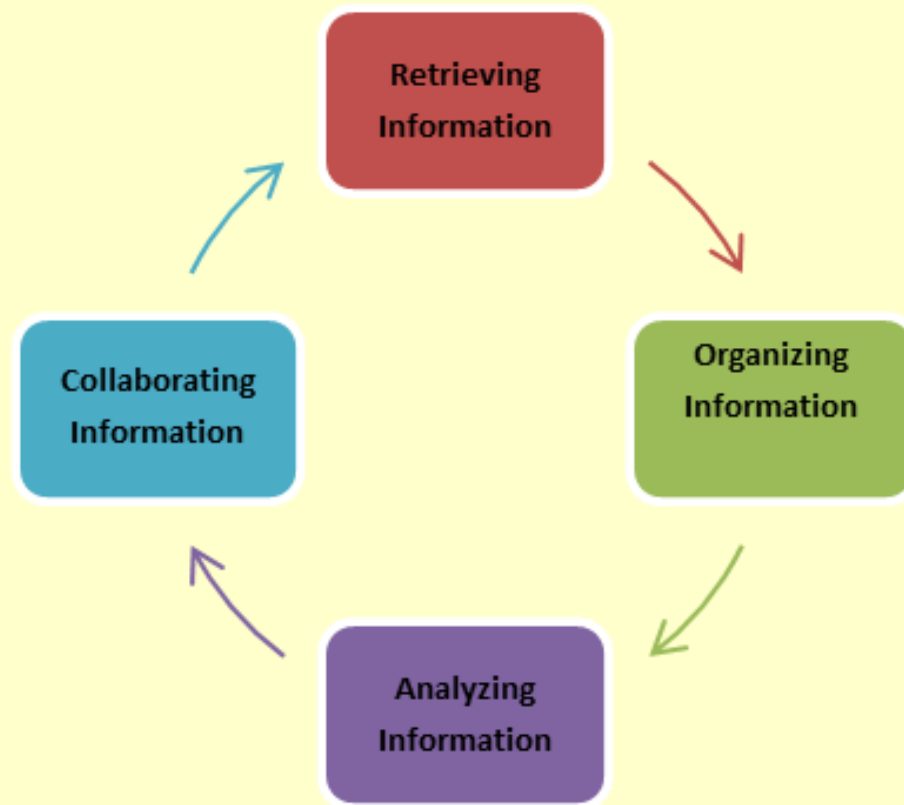
# Result for the Structural Model

**Table 2 Goodness of fit Statistics of the Structural Equation Model**

$\chi^2$	df	p-value	RMSEA	SRMR	CFI	NNFI	IFI
<b>70.6</b>	59	0.1433	0.031	0.044	0.99	0.98	0.99



# PKM skills for information acquisition



# **How to develop PKM?**

# Literature Review on PKM Curriculum

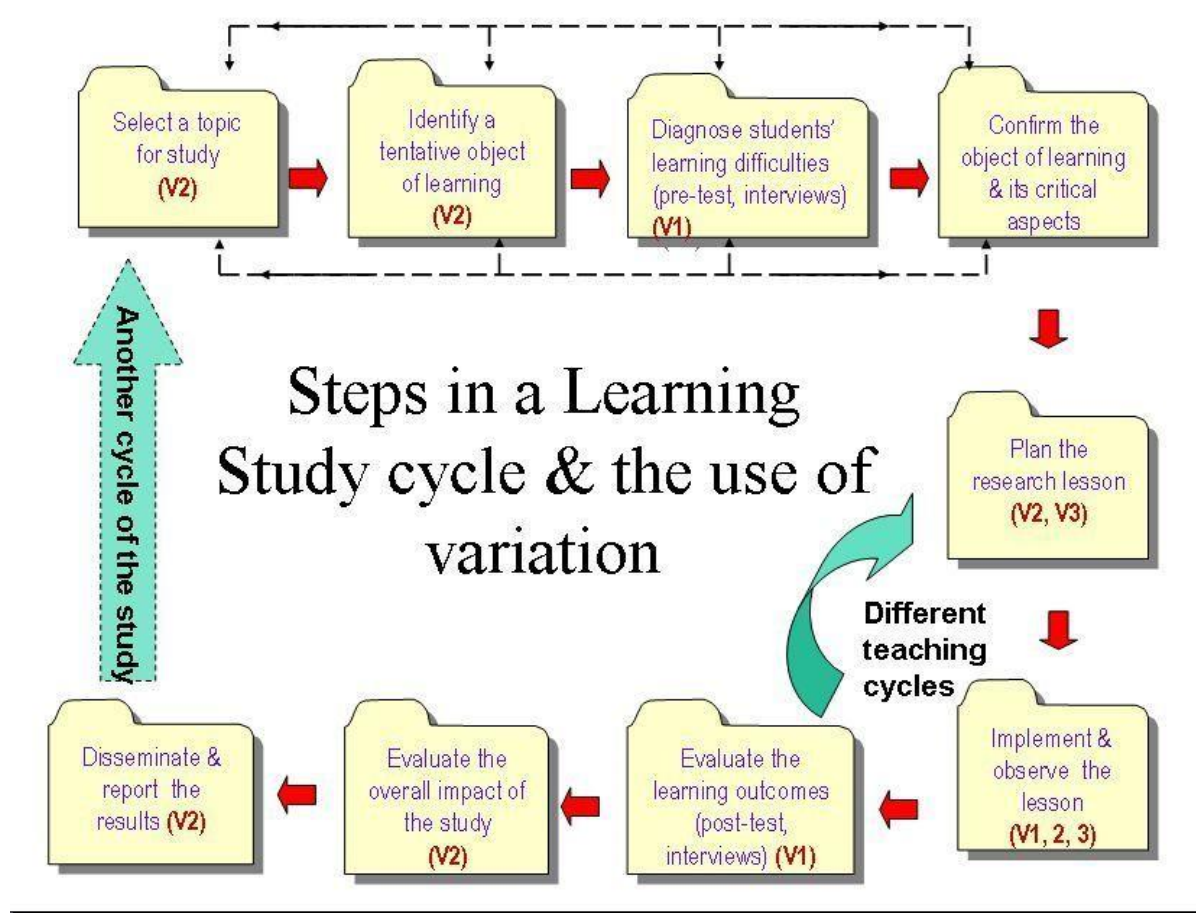
- Assigning *collaborative tasks* (Hauge & Wittek, 2003)
- Know how to apply *statistical, search and collaboration software* is compulsory skills for managing knowledge in a knowledge society
- Using *e-learning activities* (Pettenati, M.C., Cigognini, M.E. (2009)
- Integrate with *collaborative action research* into the pre-service teacher education curriculum.
  - This could be significant assistance to pre-service teachers in *retrieving, organizing, analyzing and collaborating information* across all disciplines.

# Learning Study / Action Research Course

- Aims to develop pre-service teacher
  - instructional design skills;
  - teaching competency and
  - clinical experience
- It provides a platform for pre-service teachers to internalize the knowledge learned in other courses through their research lesson practicum



# Course Map of Learning Study Course



# Learning Activities

- **Tutorials**
  - Present variation theory
    - Learning study framework, Variation theory, Lesson analysis ,Case Presentation
  - Decomposition variation theory by
    - Setting object of learning and critical features
    - Formulating test paper
    - Trying microteaching
    - Conducting data analysis for pre and post –test
- **Consultation meeting**
  - Further decomposition of variation theory by
    - Pre-Lesson consultation for instructional design (variation theory)
    - post-lesson conferencing on lesson analysis for improving
- **Research lesson implementation**
  - conduct in school (real class context)
  - video capture for lesson analysis
  - conduct the post test immediately

Figure 3. Result for the structural model

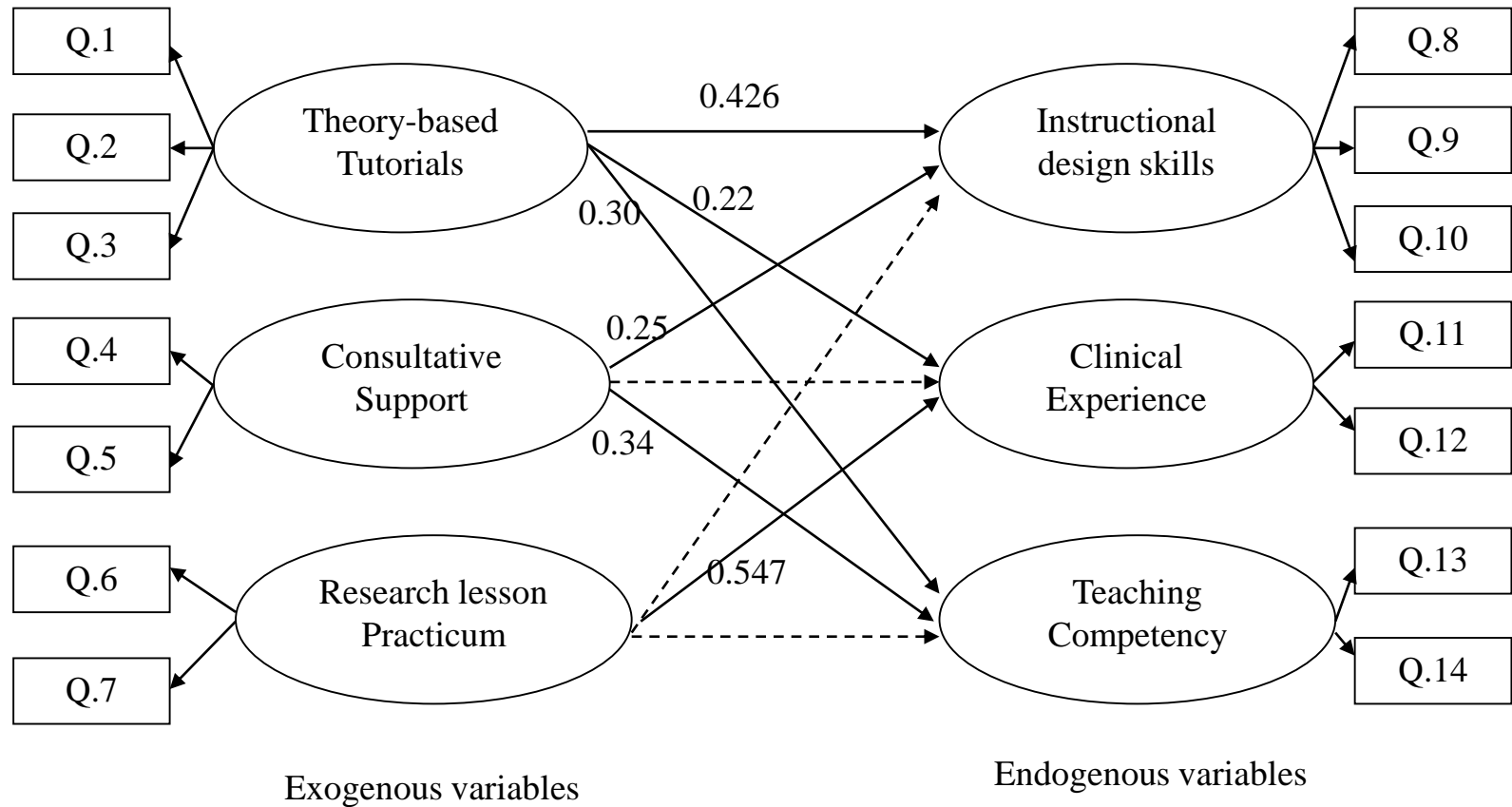


Table 2. Goodness of Fit Statistics of the Structural Equation Model

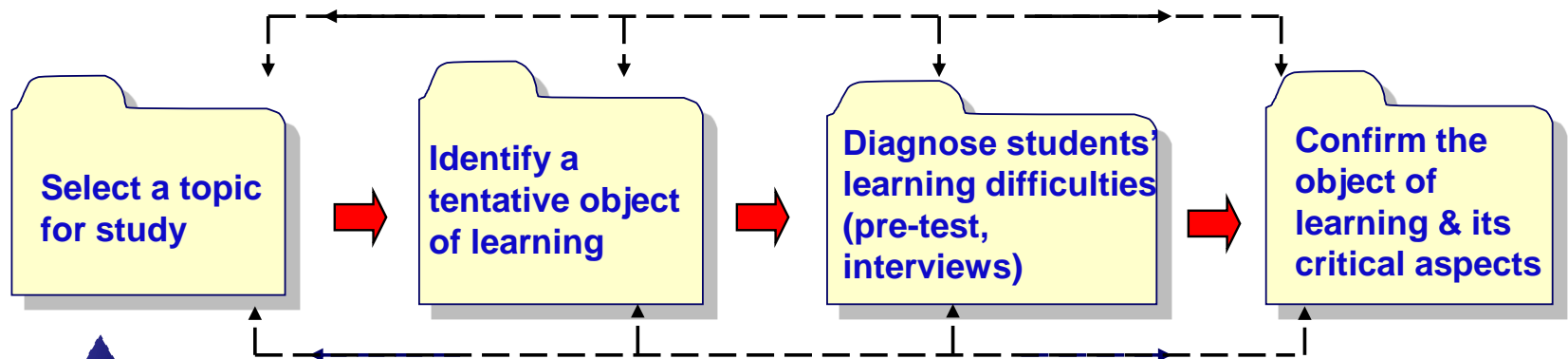
$\chi^2$	df	p-value	RMSEA	SRMR	NNFI	IFI
58.1	58	0.4748	0.001	0.019	1.00	1.00

# Infusing PKM Skills into Action Research Course

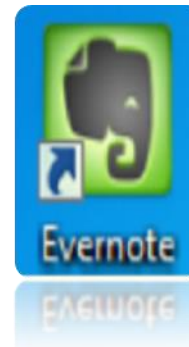
- Learning study course involves several groups of pre-service teachers to work on the *design, implementation, testing, and improvement* of one research lessons through practising their PKM skills.
- They have to *retrieve, evaluate, organize the teaching materials*, to *analysis student learning difficulties* and to present their thinking throughout the course.
- Learn by **online video**
- **Communicate with me through whatap**
- The focus of the research lesson lies in a specific teacher-generated problem, goal, or vision of pedagogical practice, which is carefully planned in collaboration with classmates with *google applications* , observed by other classmates *via VBLC*, recorded for further analysis and reflection, and discussed by all classmates of the learning study course.
- During the course, pre-service teachers are taught the theories and practice of Learning Study and **PKM tools in tutorials**, and then work together in small subject groups through **collaboration tools** with support and guidance from the instructors to implement the Learning Study project.
- The training model of this project involves the development of participants' PKM skills by conducting cognitive, metacognitive, e-learning and collaborative learning activities.

# Interventions: Application of PKM tools

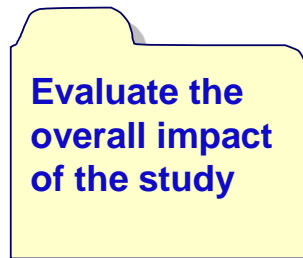
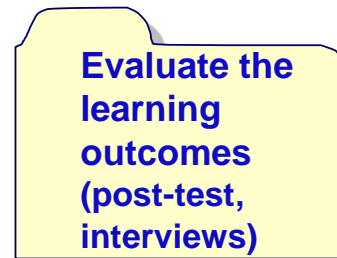
- Zotero allows students to easily collect, manage, and save bibliographic information about the items they retrieve from websites. Google Alerts is a content change detection and notification service, offered by the search engine company,
- Google Drive serves as a storage that allows students to store documents online.
- Prezi is a cloud-based presentation software and storytelling tool for presenting ideas on a virtual canvas.
- Evernote is a cross-platform, freemium app designed for note-taking, organizing, and archiving.
- Google Docs, Google Sheets, and Google Slides are a word processor, a spreadsheet, and a presentation program respectively.



## Steps in a Learning Study



Different teaching cycles



Another cycle of the study

# Research Methodology

- Experimental design
  - Control vs Experimental Group
- Pre and post test for each group
  - Solomon 4 groups
    - Eliminate the effect of pre test
- One way ANOVA to test significance of the intervention



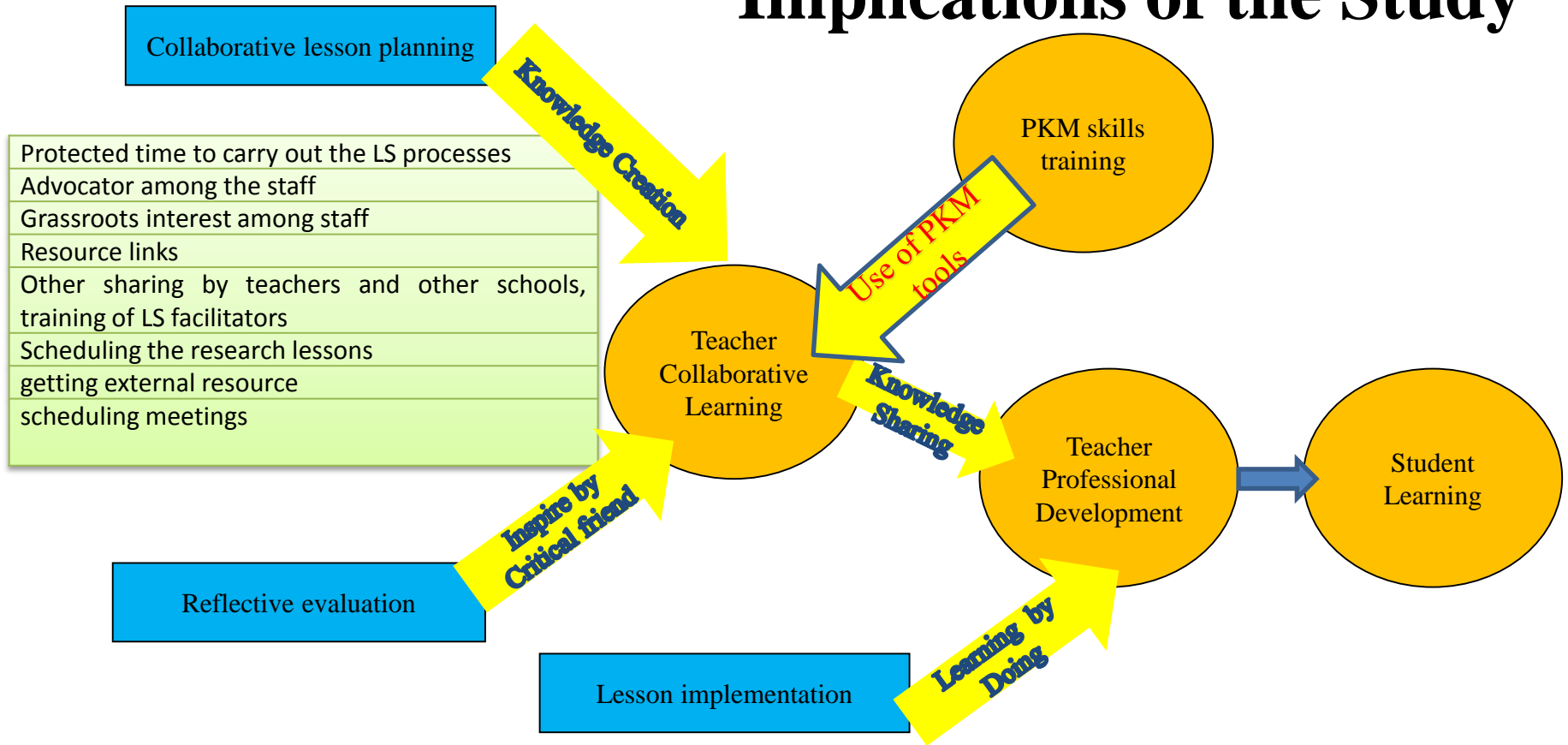
# Findings for Solomon 4 groups design

Retrieving skill					Organizing skill				
		Pre-test Mean	Post-test Mean	$\Delta$ score			Pre-test Mean	Post-test Mean	$\Delta$ score
Experimental Group	G1	4.28	4.6	0.32	Experimental Group	G1	4.3	4.64	0.34
	G2	--	4.3	--		G2	--	4.44	--
Effect of pre-test on experimental group			0.3		Effect of pre-test on experimental group			0.20	
Control Group	G3	3.8	4.07	0.27	Control Group	G3	3.95	4.15	0.2
	G4	--	3.8	--		G4	--	3.73	--
Effect of pre-test on control group			0.13		Effect of pre-test on control group			0.42	
Net intervention effect				0.05	Net intervention effect				0.11
Analyzing skill					Collaborative skill				
		Pre-test Mean	Post-test Mean	$\Delta$ score			Pre-test Mean	Post-test Mean	$\Delta$ score
Experimental Group	G1	4.32	4.72	0.4	Experimental Group	G 1	4.7	4.47	-2.3
	G2	--	4.47	--		G2	--	4.78	--
Effect of pre-test on experimental group			0.25		Effect of pre-test on experimental group			-0.31	
Control Group	G3	3.8	4.1	0.3	Control Group	G3	3.97	4.13	0.16
	G4	--	3.5	--		G4	--	3.8	--
Effect of pre-test on control group			0.6		Effect of pre-test on control group			0.33	
Net intervention effect				0.1	Net intervention effect				-0.07

# *Implications: Toward a PKM Curriculum*

- Alignment between the course design and the use of elearning tools
  - With collaborative group work (collaborative skills)
  - With action research tasks (retrieving, organizing and analyzing skills)
- Virtual collaboration = real collaboration?
  - Group work: collaboration tools + face to face
- PKM is a multiple competency that contribute to pre-service teachers' learning.
- Teacher educators should consider to inject PKM elements into the pre-service teacher training programme for enhance their learning.

# Implications of the Study



For effectively applied Lesson and Learning Study for teacher development, school leaders should seek external resources, incorporate with structured time and workload reduction into the school plan, cultivate a collaborative culture and ensure that lesson observation and post lesson conferencing are successfully conducted.