



Asia-Pacific
Economic Cooperation

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Agenda Item: 2

Recent trends of Applying e-Learning to Educational Organizations and Business Organizations

Purpose: Information

Submitted by: Japan



**APEC Symposium on Open Source
and Open Course for E-Learning
Ha Noi, Viet Nam
4 - 6 December 2006**

Abstract

Prof. Toshiya Ando

In the beginning, we introduce the e-learning types in both broad and narrow sense, referring to distance learning in educational organizations and organizational learning in business organizations. Recent status of e-learning application in Japan will be shown. In educational organizations, the usage is still in trial stage and the objective is mainly focused on substitute for face-to-face teaching. In business organizations, the rate of e-learning in use is increasing but some difficulties such as shortage of contents are encountered. Also, basic skills of business organizations are targeted and applications to the knowledge for business competency are still in trial stage.

To overcome this situation, there are a couple of approaches such as pursuit of open source and open course, educational reform type approach and gradual accumulation of good practices approach. In educational organizations on face-to-face teaching base, their 'reason for existing' will be lost if their face-to-face teaching classes are replaced by e-learning and/or distance learning. Therefore, big changes might not be realized unless the reform type or top-down governmental strategy should be put in practice.

In business Organizations, there are no such obstacles. Rather, they must be changed, otherwise they cannot survive in this rapid changing business environment. In business organizations, e-learning in a broad sense should be applied to not only basic skills but also advanced knowledge for business competency. The concept of Learning Organization by Prof. Senge is essential to business people. From the viewpoint of e-learning, a conceptual model of integrated evolutionary learning is presented.

The practical experiences of e-learning in JAIST will be presented. Lecture archive system is mainly used for reviewing face-to-face lectures. Live lecture delivery is used for working students in remote campuses or for the union of national universities in Hokuriku-district. Self-learning type is also used for consortium between technical university. Recently, we have challenging trials of international dual university between JAIST and Asian countries. We are expecting a big advancement in these trials.

Recent trends of applying e-learning to educational organizations and business organizations

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4th Dec. 2006

Topics of today's speech

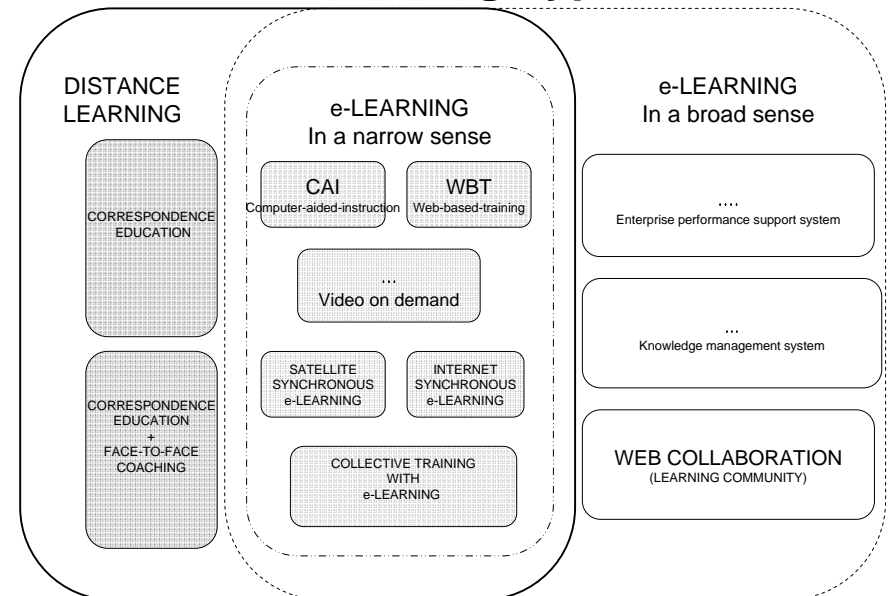
- ✓ Part 1. Current status of e-learning application and difficulties encountered
- ✓ Part 2. Applying e-learning to enhance the business competency
- ✓ Part 3. The practical experiences of e-learning in JAIST and challenges

Topics of today's speech

Part 1. Current status of e-learning application and difficulties encountered

- ✓ E-learning types
- ✓ Higher education use-case in Japan
- ✓ Business organization use-case in Japan
- ✓ To overcome difficulties encountered

e-Learning Types



Distance Learning

Distance learning or education with long history is still being offered for people who find hard to enjoy face-to-face education.

The tools used in distance learning are changing with technology advancements from learning by correspondence to learning by electronic communication and multimedia learning materials.

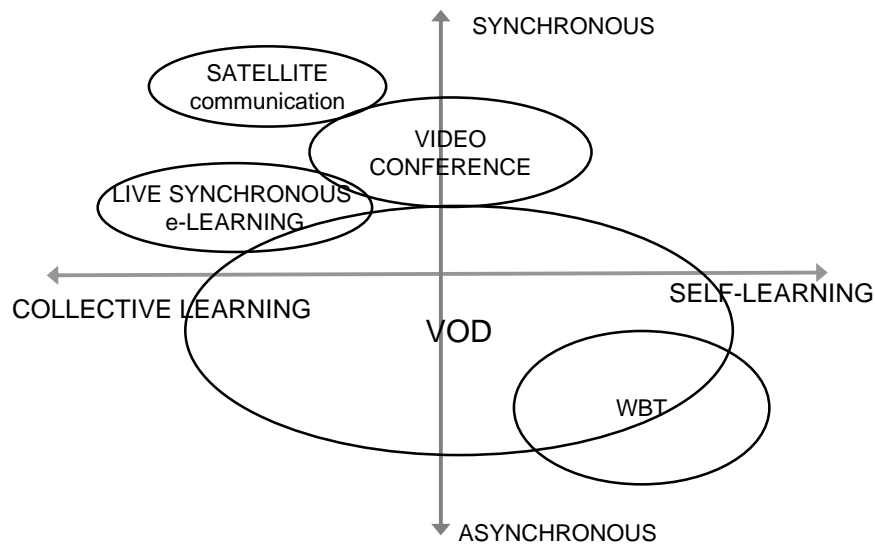
Distance learning is still important while the number of the people who need life-long-education are increasing.

e-learning in a narrow sense(1)

From the perspective of information and communication technology, several types in a narrow sense are divided into two groups: synchronous and asynchronous.

	e-learning types in a narrow sense	characteristics
synchronous e-learning	Live digital contents delivery Video conference	Simultaneous learning at different places
asynchronous e-learning	WBT (web based training) VOD (video on demand) CAI (computer assisted instruction)	Learning at learners' pace

e-learning in a narrow sense(2)

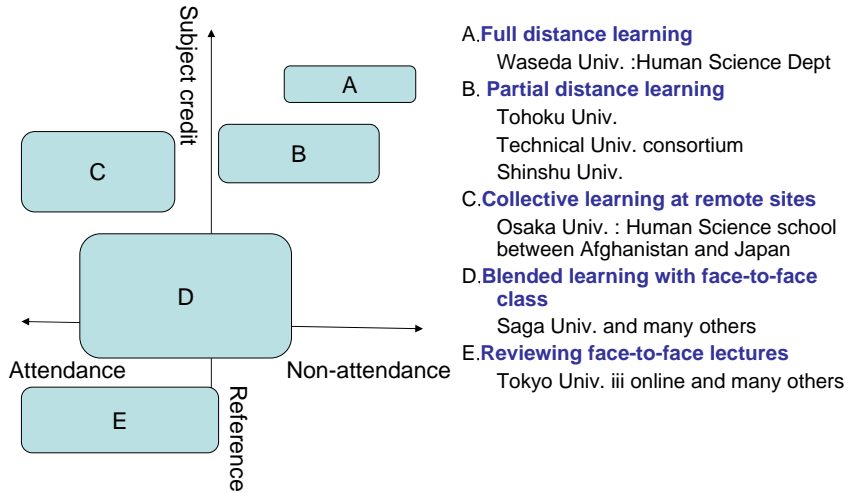


E-learning in a broad sense

Information technology and network environment enlarge the opportunities.

- Educational consortia on the global base
- Distance-learning based degree programs
- Usage of e-learning to provide complementary learning materials
- Continual learning to enhance the competency of employees in business organization
 - ✓ EPSS (enterprise performance support system)
 - ✓ KMS (knowledge management system)
 - ✓ Community Collaboration

Higher Education use-case in JAPAN



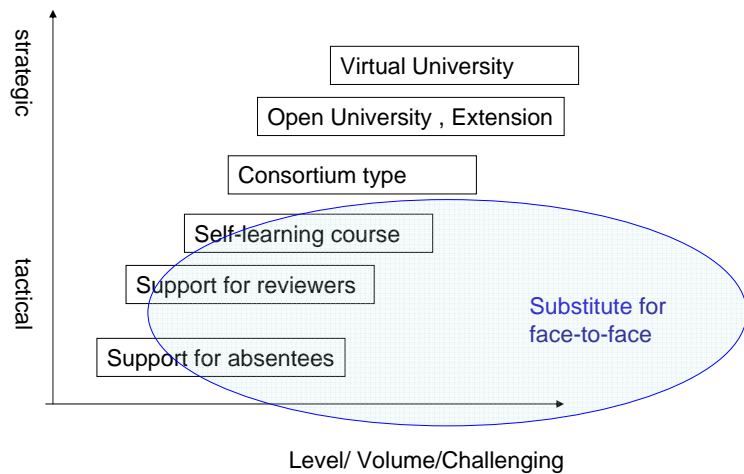
E-learning white paper 2005

Still in trial stage

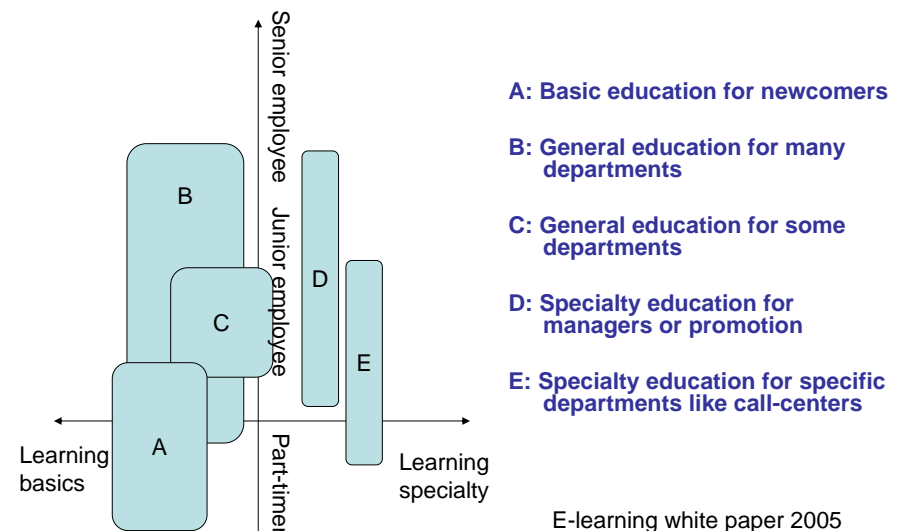
- Experience of e-learning in some departments
- Some subjects entirely by e-learning..
- Some subjects by remote learning....
- No budgets
- Copyright issues
- Negative response of teachers
- Not more attractive than face-to-face teaching

NIME Research Report 13-2006

Substitute for face-to-face class



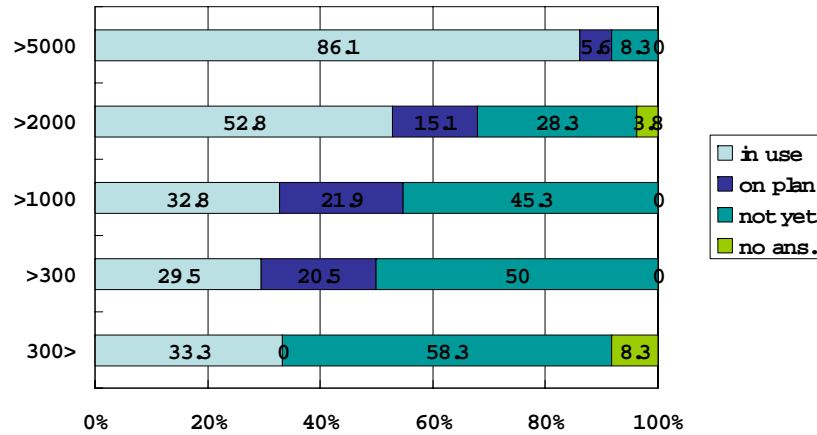
Business organization use-case in JAPAN



E-learning white paper 2005

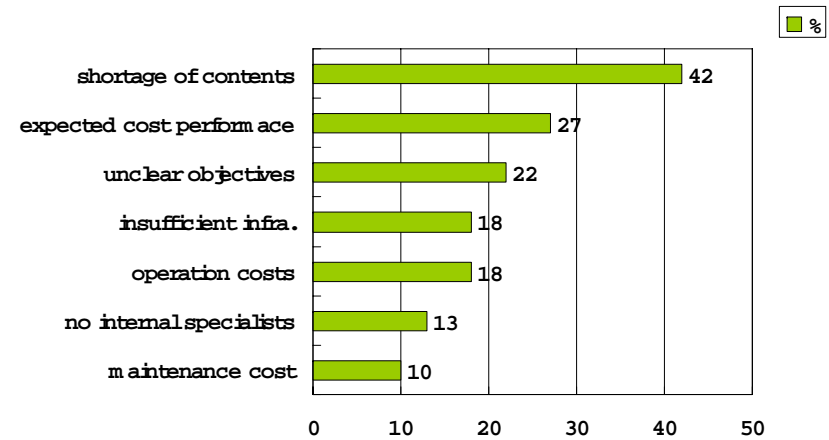
E-learning in use

Number of employees



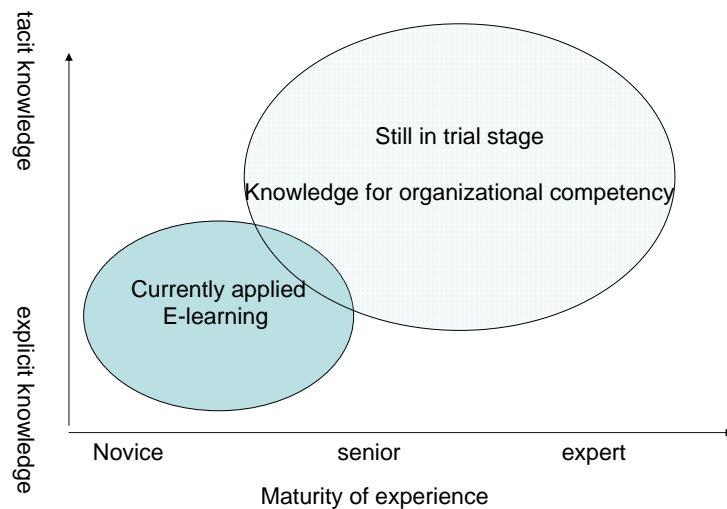
E-learning white paper 2006

Difficulties encountered



E-learning white paper 2006

Searching for competency



To overcome difficulties(1)

Most of educational organizations seem to be still in the stage of trial usage.

Various e-learning types are experimented under the assumption that the educational regime of dominant face-to-face teaching should and will still exist.

Then, the objective of such trials is the evaluation of how effective new e-learning methods are, and how easily or laboriously each teachers and learners handle them as substitutes for face-to-face learning.

Their reason for existing will be lost if their face-to-face teaching classes are replaced by e-learning and/or distance learning.

To overcome difficulties(2)

Several approaches are now on going.

- Open courses and open source
- Reforms of educational systems
 - ✓ These big challenges might not be realized unless the clear strategic reform policy or top-down governmental strategy should be put into practice.
 - ✓ Accumulation of good practices with clear objective might be effective.
- Continual learning in business organizations
 - ✓ The objectives are very clear since they must be changed, otherwise they cannot survive in this rapidly changing business environment.
 - ✓ Fusion of knowledge management and e-learning is important for much wider usage.

Topics of today's speech

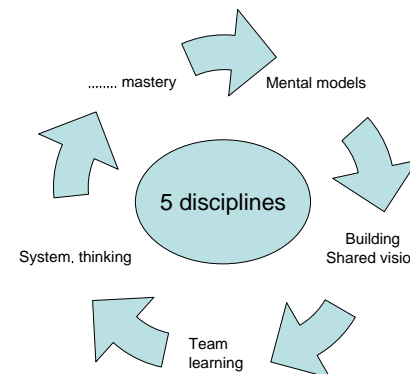
- ✓ Part 1. Current status of e-learning application and difficulties encountered
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Topics of today's speech

Part 2. Applying e-learning to enhance the business competency

- ✓The concept of Learning Organization
- ✓Competency management in business
- ✓A conceptual model of integrated evolutionary learning

The concept of Learning Organization by Prof. Senge (MIT)



Organizations where people continually expand their capacity...people are continually learning to see the whole together.

1990:'The Fifth Discipline' The Art & Practice of The Learning Organization

1994:'The Fifth Discipline Fieldbook'

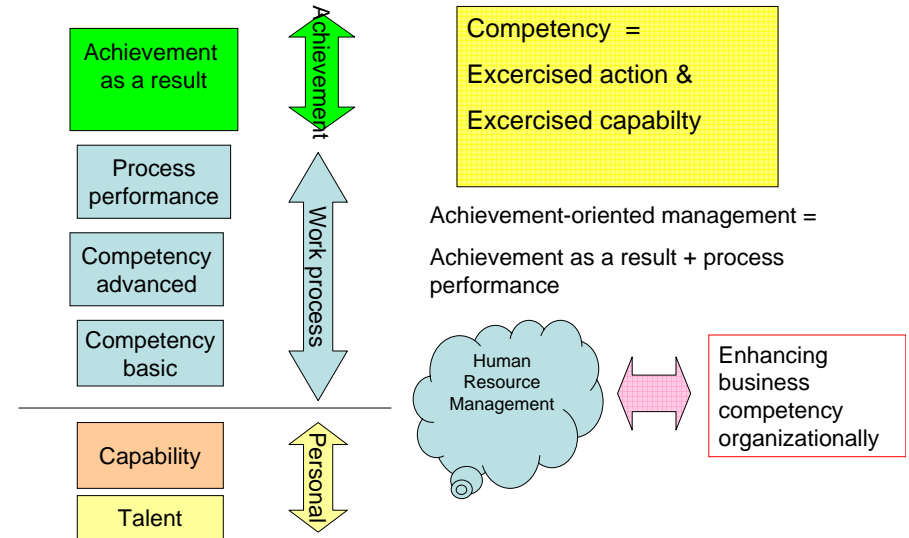
1999:'The Dance of Change'

The 5th discipline = systems thinking

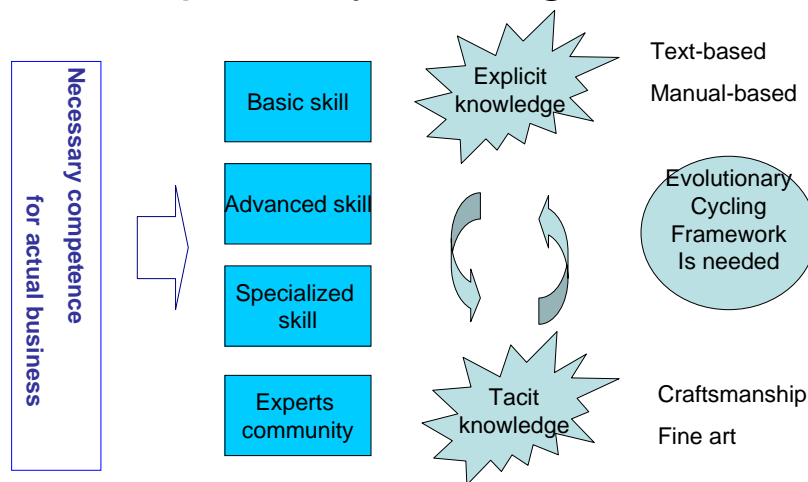
5 disciplines

Systems thinking	Clarifying the whole structure of a system and mutual relationships between entangled components
Personal mastery	Clarifying and deepening our personal vision, focusing energies, developing patience, and seeing reality objectively
Mental models	Turning the mirror inward, learning to unearth pictures of the whole world, bring them to the surface and hold them to scrutiny
shared vision	Translating vision into shared vision, guidelines and guiding practices.
Team learning	Starting with dialogue, thinking together, and discovering insights as a team

Achievement vs. Competency

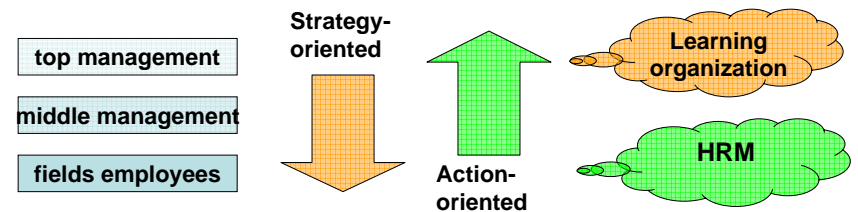


Competency management



Human Resource Management (HRM)

supports 'Learning Organization'



Today, organizational learning is one of the top issues of business and CLO or CKO are often appointed.

Although organizational principles and strategy are important as a necessary condition, action-oriented approach should be implemented.

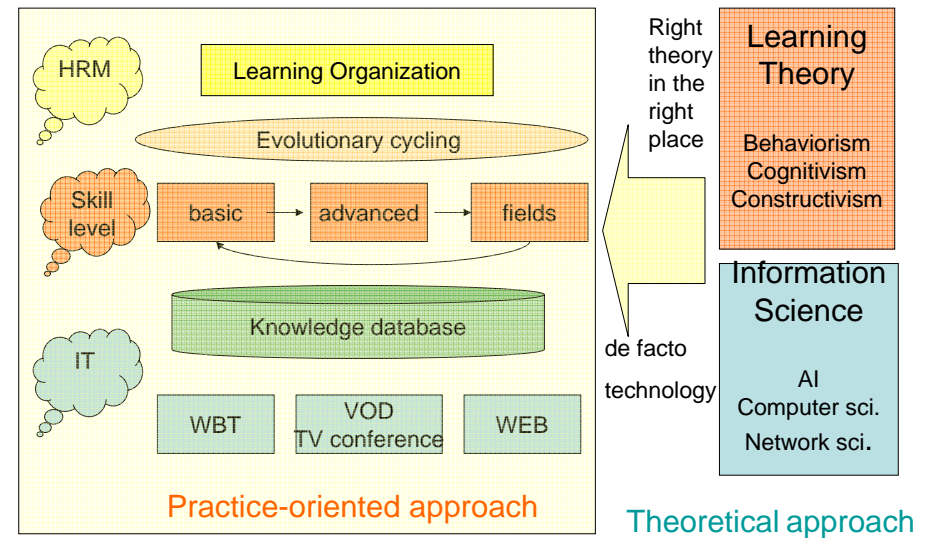
Continual learning plan must be built in the HRM so that all levels of people could practice learning instead of succumbing the pressure of currently facing works.

Conceptual model of Integrated Evolutionary Learning

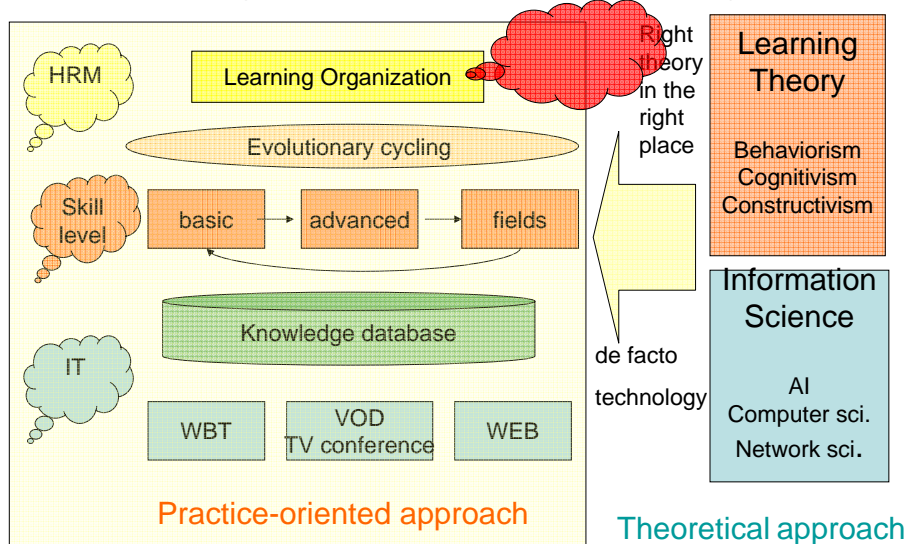
Based on 'Learning Organization' and e-learning technology, a following conceptual model can be proposed.

- ✓ A practice-oriented approach is adopted.
- ✓ A simple interpretation of learning theory is adopted, suitably for the needs of business applications.
- ✓ de facto standards and a stable information technology is assumed.

A conceptual model of integrated evolutionary learning



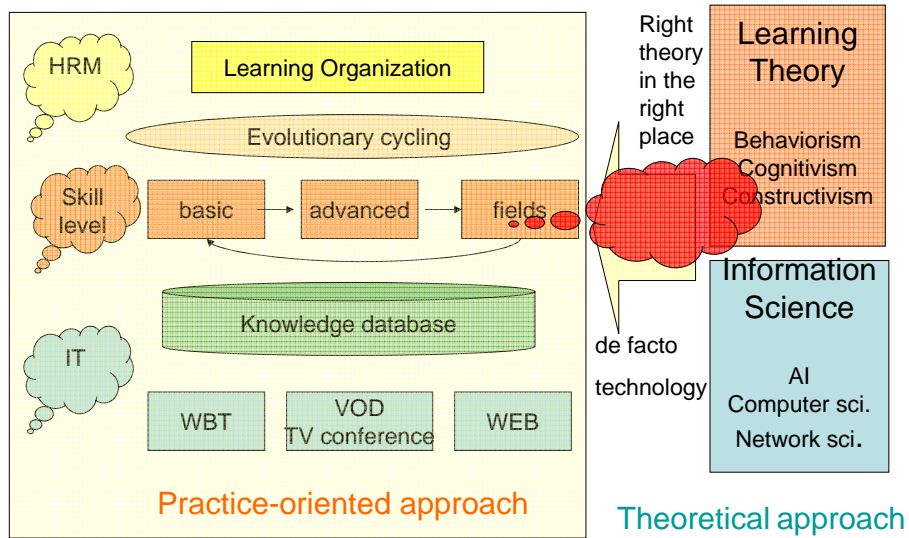
A conceptual model of integrated evolutionary learning



Establishment of Learning strategy

- In corporate management, business performance is a first priority.
- Education should enhance the competency of organization employees at all levels.
- Field-managers often prioritize the currently faced business activities.
- To be continually learning, a business organization must decide a strong commitment to learning at the corporate vision & strategy level, and at the same time all employees must dedicate enough time for the actual learning activities.

A conceptual model of integrated evolutionary learning



What should be learned?

The skills and technologies for actual business competence are complex, since competent business scene shows entangled facts, relations and their dynamic variations.

- **There are many classifications of the form of knowledge.**
 - ✓ Well-structured / structured / ill-structured (Jonassen, 1991)
 - ✓ Novice / advanced-beginner / competence / proficiency / expert (Dreyfus, 1986)
- **Three levels of skills or knowledge are characterized in this model.**

i.e. Basic / Advanced / Fields

Basic level of knowledge

Knowledge of this level can be acquired by Standard textbooks or multimedia materials

- ✓ Self-learning method using internet etc
- ✓ People can learn necessary skills anytime and anywhere
- ✓ The progress of study can be managed automatically by the use of information technology

Applied and advanced levels of knowledge(1)

A person at proficiency and expert levels has developed professional abilities and judgment based on experience.

For ill-structured problems, hard to find formalized ways to learn such skills

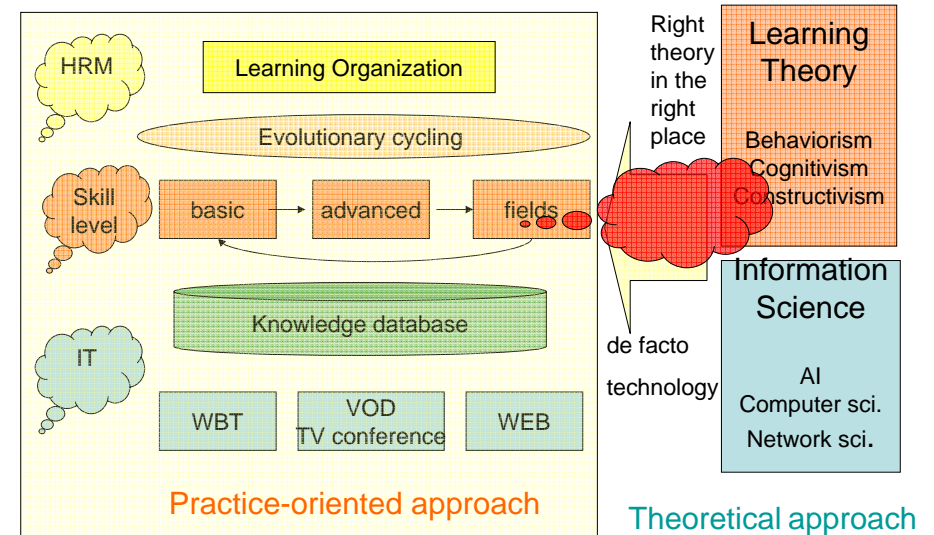
To tackle this issue, we must arrange opportunities and environments where talented people with own expertise in a business organization explain to others their know-how, give hints or good examples.

Applied and advanced levels of knowledge(2)

We can arrange such an environment in a face-to-face manner, but can as well utilize e-learning tools such as video-on-demand to enlarge the number of learners.

Dialogue-based education is effective and arouses strong motivation to learners, since knowledge at this level is acquired characteristically through human interaction

A conceptual model of integrated evolutionary learning



Learning by doing(1)

The skills of competence for actual work in the field of a business organization are generally difficult to be acquired from formalized & prescribed learning materials.

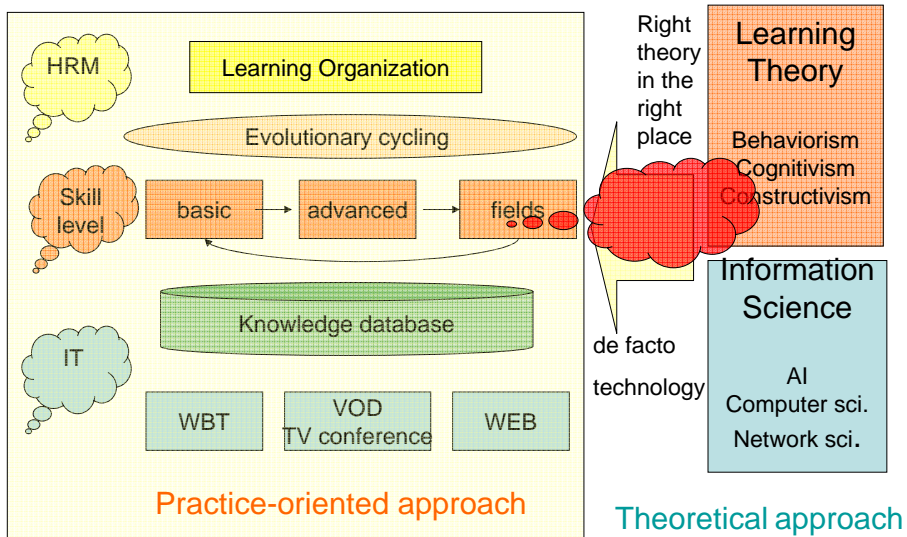
Each single situation happens in a sense once for all and is different from any other seemingly similar cases.

Learning by doing(2)

To overcome this difficulty, we need a learning environment in a real working field where people can learn by actually doing, share information and knowledge with their team members, and be coached by experts or proficient members.

Diverse advanced Web collaboration technology tools might be adapted for this purpose.

A conceptual model of integrated evolutionary learning



Evolutionary cycling between skill levels

Some skills in ill-structured knowledge level will gradually become common skills to team members.

Then, such skills might be gradually structured and will be learned again by new members.

Conversely, some skills in structured knowledge level might be rediscovered to be ill-structured when facing a new situation.

This kind of cycling should be activated and maintained by team members using accumulated databases

Evolutionary cycling to expand and deepen experiences

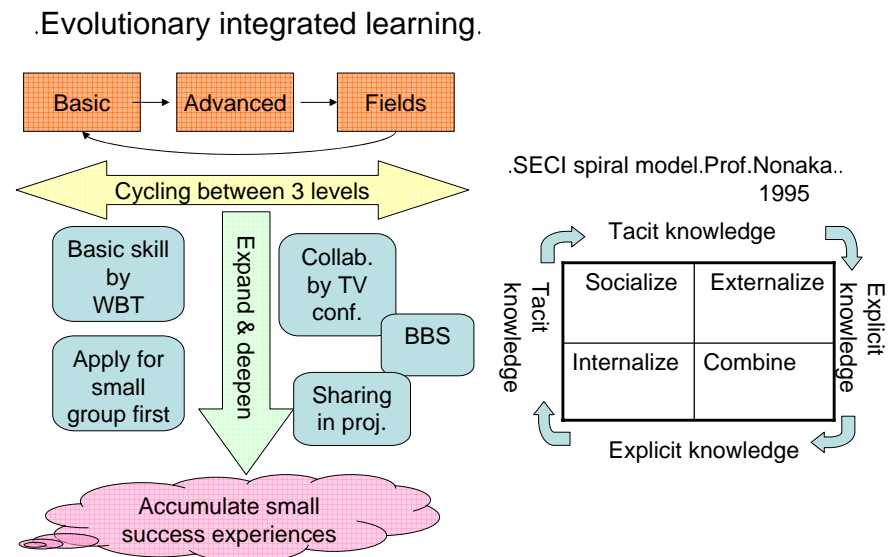
Think large but accumulate small experiences and good practices

In actual business fields, we cannot take an idealistic view only.

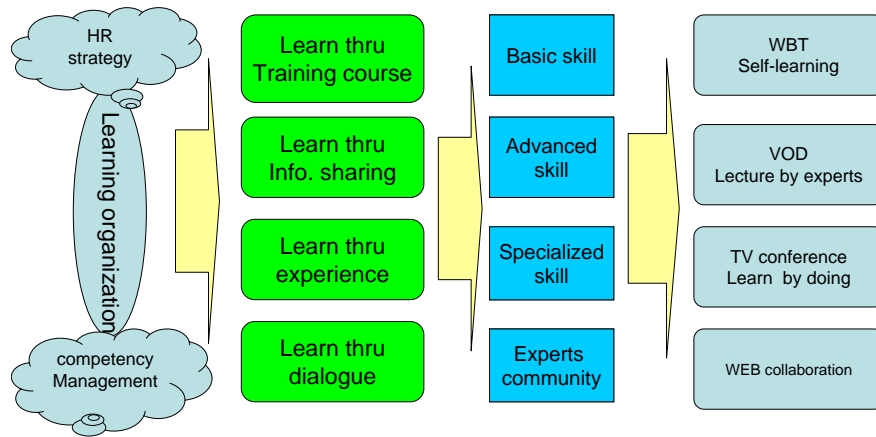
Rather, we encounter the situation where we need to compromise.

Without loss of essence, we better start by lowering barriers.

Evolutionary cycling



Reformation to 'learning organization'



Topics of today's speech

- ✓ Part 1. Current status of e-learning application and difficulties encountered
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Topics of today's speech

Part 3. The practical experiences of e-learning in JAIST and challenges

- ✓ The objectives to apply e-learning
- ✓ The use-cases currently experienced
- ✓ Challenges from now on

The objectives to apply e-learning

Support for full-time students

- ✓ Reviewing face-to-face lectures at students' pace
- ✓ Delivery of research laboratory outlines
- ✓ Delivery of seminars and joint lectures with institutions in Tokyo

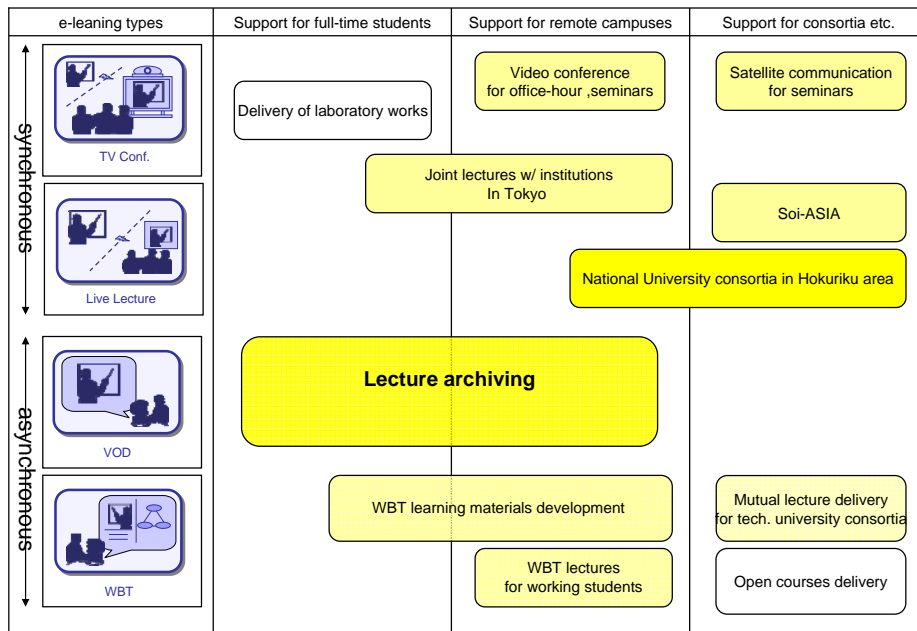
Support for remote campuses

- ✓ Reviewing face-to-face lectures at students' pace
- ✓ WBT (self-learning) lectures for introductory subjects
- ✓ Office-hour with teachers
- ✓ Delivery of joint lectures with institutions in Tokyo

Support for consortia etc.

- ✓ Nation-wide seminars by NIME (National Institute of Multimedia Education)
- ✓ National university consortia in Hokuriku area
- ✓ SOI-ASIA (School of internet – ASIA)

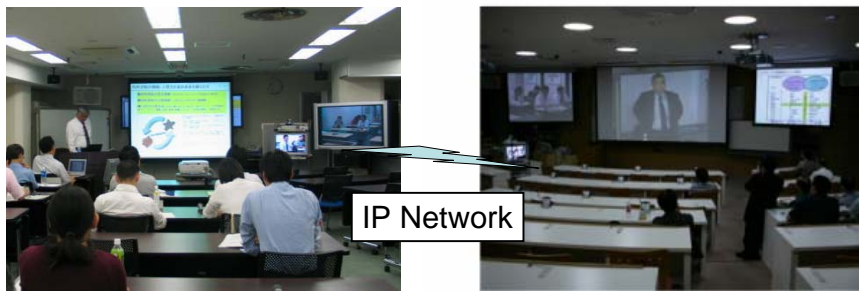
Use-case currently experienced in JAIST



Some examples

- ✓ Live Lecture System
between remote campuses
- ✓ Lecture Archiving System
for reviewing
- ✓ WBT lectures
for working students
- ✓ SOI-ASIA
for international consortia

Live Lecture System



The Knowledge Society (Prof. Kondo) 2005.8

- From Tokyo Campus to Ishikawa Campus
 - Lecturer's Image, PC Screen Image & Students' Image in Tokyo
- From Ishikawa Campus to Tokyo Campus
 - Student's Image in Ishikawa

Lecture Archiving System



Automata and Formal Languages (Prof. Uehara) 2006.4

- 4 Lecture Rooms @ School of Information Science, JAIST
- Lecturer's Image & PC Screen Image
- 1,000 Lectures of 60 Courses are archived

WBT Lectures



Automata and Formal Languages (Prof. Uehara) 2006.4

- Recording Studio @ DLC
- Lecturer's Image, PC Screen Image & Lecture Index
- 140 Lectures of 10 Courses are distributed

SOI-ASIA Project



Object Oriented Software Development (Prof. Ochimizu) 2006

- Recording Studio @ DLC
- From JAIST to SOI-ASIA Student Sites via Keio Univ.
- Over 100 Students from 7 Universities in Asia

Challenge for Joint graduate training program

'International Dual Graduate Study'

Study in Overseas Universities

- *Basic education for graduate degree
- *Intensive introduction lecture by JAIST
- *Distance learning for prerequisites by JAIST

transfer

Study in JAIST in Japan

- *Mastering advanced science & technology
- *Collaborative research with academic and industrial sectors
- *Mastering practical & applied technology through internship

Dual degrees

Talented persons with skills and internationality

VNU and JAIST material science

under the support of Vietnamese government program starting in Apr. 2007

Joint graduate training program between five Vietnamese institutions and JAIST

information technology & knowledge science
Memorandum of understanding in Oct. 2006

Challenge & expand

Since the objective of applying e-learning is clear, a big advancement will be expected

Thank you !

Research center for Distance Learning

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