

Public and private partnerships for intense e-Business training

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Abstract: This paper describes an innovative approach to life-long learning as implemented in a large Industrial Cooperation Project between the USA and the Republic of China (ROC). This project was sponsored under the current Industrial Automation and e-Business Development plan by the Industrial Automation and e-Business Steering Committee for the ROC, and helps enable and accelerate Taiwan's transition into a hub for managing a global extended enterprise. In accordance with internal e-Business objectives, the Taiwanese government charged the Boeing Company with building an e-Business laboratory, as well as with organising five workshops for training executives and technologists. George Mason University was asked to be the technical lead for the laboratory and for workshop development. The details of this unique approach to executive-level technology transfer are presented in this paper.

Key words: e-Business, training, life-long learning

1. INTRODUCTION

1.1 Learning as technology transfer

Industrial co-operation agreements exist between the US and many countries. These agreements provide for counter-trade offsets that are usually resolved through the transfer of very specific technologies; for example, hardware, facilities, equipment, etc. In this project, the transfer of e-Business technologies and intensive, hands-on, executive-level workshops resolved a counter-trade obligation between the US and Taiwan. This use of executive-level training as technology transfer, jointly delivered by public and private organisations, is a unique aspect of the project. Given the success

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of the project, we argue that this approach to life-long learning should be expanded for implementation as a part of other international technology transfer projects.

Because of the unique situation of Taiwan and the role it plays in the world economy, the government has an aggressive e-Business programme that is guided by the Industrial Automation and e-Business Steering Committee. The strategies of the programme are:

1. Private sector companies will lead the development of automation and B2B e-Commerce. The government's role will be to foster the creation of a useful network environment and actively work towards establishing the necessary legal and communications infrastructure.
2. The IT industry will serve as an implementation benchmark for automation and B2B e-Commerce in other industries. Practical implementation of the completed plan will provide an opportunity to uncover and resolve problems within the supply chain.
3. The government will work in co-operation with major local and international firms in providing technical support, personnel training and incentive measures to encourage the participation of small- and medium-sized enterprises in the plan.
4. The government will establish a mechanism for on-line procurement and information dissemination in order to lead the way for other industries.

Our Industrial Co-operation Project was designed to align with these objectives. The project provides state-of-the art training and a laboratory that includes local IT industry participants. We identified the following benefits that were directly or indirectly associated with executive-level workshops. Participants were instructed on how to:

- Build partnerships and establish business relationships with international e-Business solution providers.
- Develop EAI solutions that are compatible with ERP solutions, including those that are designed and developed in Taiwan.
- Obtain a comprehensive understanding of electronic catalogue and content management.
- Obtain a B2B demonstration capability, allowing local service providers to understand how their offerings integrate with other B2B environments.
- Develop a comprehensive understanding of current supply chain and advanced planning and scheduling systems, allowing Taiwan service providers to extend their product offerings and consulting capabilities.
- Establish the capability for obtaining unbiased assessments of international technologies, including strategies for localising or developing similar B2B technologies for the Taiwan market.
- Develop a better understanding of Taiwan's competitive positioning in the B2B marketplace.

- Establish a direct link to the USA for identifying appropriate technologies to transfer quickly to Taiwan service providers.
- Develop a capability to participate in the international aerospace market via US experience in leading the development in such exchanges.
- Develop a capability for developing a Taiwan aerospace exchange that will allow Taiwan suppliers to participate in global exchanges.
- Obtain direct training and consultation on B2B applications that are directly related to the aerospace and other industries.
- Establish an unbiased source for demonstrating B2B technologies, including how these technologies interact with local technologies.

1.2 The specific learning approach

Our approach to life-long learning is different from the traditional approach to educational delivery. Our approach is a complete learning cycle (Figure 1) that expands on the traditional approach for creating meaningful learning environments in the applied disciplines (including technical management, engineering, and public policy). Our approach is guided by Kolb's (1984) learning cycle (using also variations of figures from a presentation on the same subject by Professor Jens Riis of the University of Allborg, in Riis (2001).

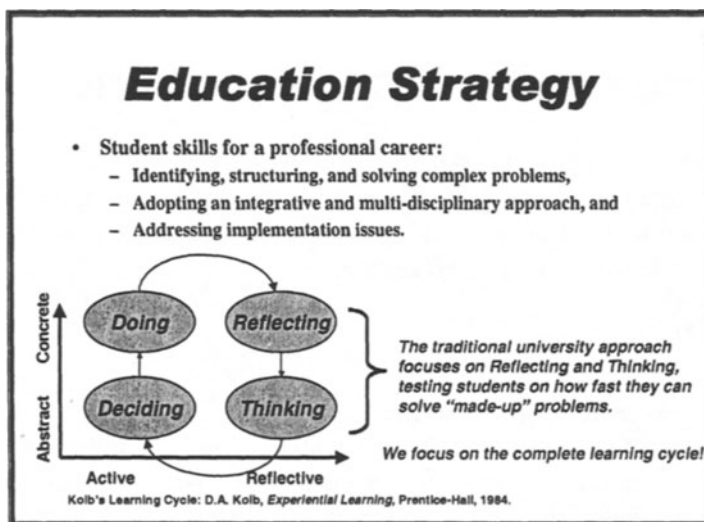


Figure 1. Experience-based educational strategy

While there is nothing wrong with the traditional emphasis on 'Reflecting' and 'Thinking', we think this approach is a sub-optimal strategy

for *lifetime* learning. Executives and professionals need to complete the cycle, focusing on solving the problem by 'Doing' and 'Deciding'. Why is this so important? Consider Figure 2. The project team, and the workshop participants were assembled with these concepts as our guide.

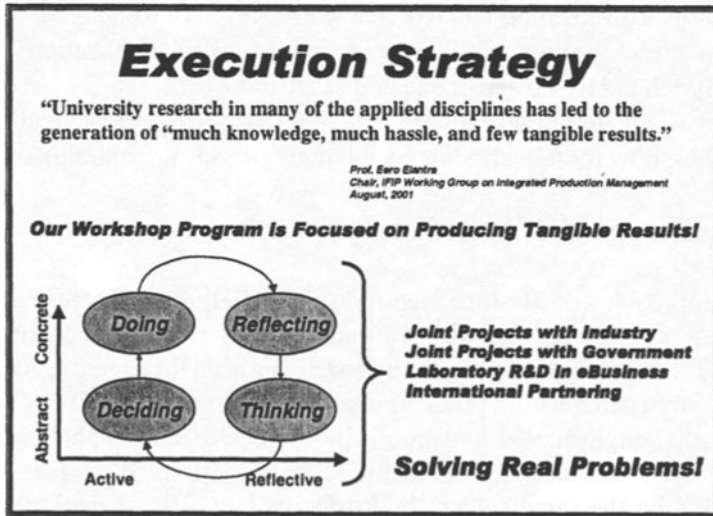


Figure 2. Workshop execution strategy

2. WORKSHOP DESIGN AND EXECUTION

A two-phased approach was used for workshop design and execution. The first phase focused on defining the appropriate topics and audience. The second phase focused on developing the training programme, identifying the presenters, and executing the workshops.

2.1 Phase 1

The two principal purposes of Phase I were to:

- Assess the Taiwanese e-Business situation of select organisations and e-Business service providers that would help characterise the present e-Business conditions as well as help define future requirements.
- Develop an action plan for Phase 2.

2.1.1 Objectives

In order to assess the state of e-Business in the aerospace industry in Taiwan, Boeing surveyed 11 service providers and focused their questions mainly on their individual positions on e-Business. Prior to defining an agenda to be used in the training workshops, the team wanted to better understand core technology needs within the industry, and how any underlying rules and processes played a part in those needs within each environment. Using this information, the team would then identify: a) critical technology areas for which e-Business implementation would be beneficial; and b) opportunities for establishing or increasing e-Business capabilities.

2.1.2 Methodology

The survey of the 11 companies would include two components: a questionnaire and a face-to-face meeting with each organisation. The questionnaire was developed and distributed in advance of the individual meetings in the hope that it would act as a catalyst for discussion. The survey asked participants to provide only information that they considered pertinent to their particular organisation, and not to respond to questions that were not considered applicable.

The Taiwanese organisations surveyed were: Aerospace Industrial Development, Aircraft Certification Institute, Civil Aviation Administration, Data System Corporation, Fast Technologies, Inc., Industrial Technology Research Institute, Information Service Industry Association of the Republic of China, Institute for Information Industry, Spirox Systems Integration Corporation, Taiwan Electric Commerce Consortium and Wellan System Co., Ltd.

Upon completion of the meetings, the Boeing team delivered its Phase 1 survey findings to approximately 40 service provider representatives, who were invited to participate in a separate workshop. A representative of the Industrial Development Bureau (IDB) chaired the workshop and a representative of the Committee for Aviation and Space Industry Development (CASID) also attended.

2.1.3 Results

Outcomes of the Phase I survey and subsequent workshop included:

1. Definition of the five topics to be addressed during the project's training initiative workshops.

2. Decision to include a case study in each workshop that would provide 'lessons learned' on how technologies had been implemented in actual organisational settings.
3. Finalisation of Phase II activities – service provider training programme and demonstration laboratory for e-Business technologies.

2.2 Phase II

To achieve a true industrial co-operation using the results of Phase I, a team was formed bringing together professionals from across a wide spectrum of organisations: academia and industry, private sector companies and public sector entities, small agencies, as well as the largest aerospace company in the world. Each partner contributed experience and expertise that would significantly contribute to either of two objectives of this phase of the project:

- The technology transfer.
- The training initiatives set forth in Phase I.

2.2.1 Objectives

The project's sponsor, *The Boeing Company*, provided overall project management. The objective was to successfully deliver these five workshops and to see their results at many levels: government, industry, and in small businesses. Boeing provided technologists and functional experts from various locations within the company to participate in the training workshop series. Although Boeing's Military Aircraft and Missile Systems, Rotocraft Sector was the primary sponsor, presenters came from across various Boeing company sectors to provide workshop attendees with a range of on-going technology-related project details and results. The presence of actual technologists lends support to the exceptionality of this method of knowledge transfer and learning.

2.2.2 Methodology

George Mason University played the lead organisational role in the workshops, as well as serving as the technical and architectural lead for the laboratory component of the project. The GMU team, whose focus is enterprise engineering and implementation, was comprised of people whose background offered both the technical expertise as well as the managerial skills to co-ordinate all communication and interface between potential and confirmed speakers, and the rest of the project team.

2.3 Participants

2.3.1 Presentations and presenters

Upon approval of the aforementioned five topics during Phase I, presentations were solicited from industry leaders in each technology area. A Boeing presence at every workshop allowed audience members to learn about how a large organisation is implementing these technologies in various sectors of the company. The programmes were widely accepted as “the most successful and highest quality concentrated training events to ever be delivered to executives in Taiwan”.

2.3.2 Audience

CSD, the in-country co-ordinating partner, handpicked a group of individuals and companies to participate in each workshop. Preference was given to local companies that were providing technology solutions to Taiwanese suppliers and had expressed an interest in partnering with international companies or implementing international technology solutions.

Significant networking opportunities were built into the training schedule so that attendees could interact with speakers, and so that partnering or other business opportunities could be discussed. By facilitating direct communication between the two, SMEs were better able to consider what is appropriate in their own working environment, rather than being handed down a decision from some other organisation (i.e. a government agency) that may be unlikely to know or understand the mechanisms already in place.

3. CONCLUSIONS

This paper has presented an approach to providing executive-level training through technology transfer. The approach is unique, as knowledge transfer is considered technology transfer, and is funded through international industrial co-operation arrangements. In this case, the ROC government contracted with the Boeing Company to provide an innovative approach to international technology transfer. Boeing employees participated as lecturers in each of the workshops, and they were supplemented by presentations from the leading providers of e-Business solutions from the USA. The workshops were considered a tremendous success, and Boeing plans to replicate the technology programme in other countries.

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BIOGRAPHIES

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