

【附錄 11】 The Application of Knowledge Management to the Universities' Technologic General Education in Taiwan

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Abstract: Knowledge management (KM) was according to the knowledge-based economy in last years of the 20th century and prevailed in the 21st century. Owing to the informational advancement, it was especially important that we picked the knowledge from the information and let it become our wisdom. The talented men with pluralistic and specious knowledge assets were cultivated through the technologic general education to implement the vitalization and application of knowledge in the university, and to promote the power of national competition and to match the needs of social enterprises. The purpose of this paper is to explore the occupied position of KM on the technologic general education, to clarify the transfer process of knowledge acquisition, storage and utilization, and to connect the knowledge network with the technologic general education. The systematization and usefulness of knowledge should have a foothold in the technologic general education of university, and the students learned the knowledge from technologic general or liberal curriculum and a place where they could use their knowledge through the method of KM. The authors utilized the documentary analysis to understand the meaning and application of KM, the category of knowledge and the process of transfer. Meanwhile, the technologic general education can be fulfilled to draw assistance from the knack of KM, listing some instances. Moreover, the authors created the READ (Research, Evaluate, Appreciate, and Decide) model to construct a KM model integrated to universities' technologic general education in Taiwan. Finally, the conclusion and the INNOVATION suggestions were proposed to knowledge workers as well as intellectual and the general education faculty in universities.

Key-Words: Application, Knowledge management(KM), Technology tool General education Transfer process, documentary analysis

1 Introduction

Knowledge management (KM) was an important strategy in business/ school management and competition in the 21st century. This article attempted from the network technology to search the relevance between KM and technologic general education. The report of Organization for Economic Co-operation and Development(OECD) claimed that knowledge was the power of economic development in 1996. Knowledge-base economy became an administrative policy of all developed countries. The Taiwan government convoked conference to adapt this tendency in 2000, fulfill the developmental goal of knowledge-based economy, and industries, schools, and research faculty carried out the effectiveness of knowledge as the Executive Yuan checked and pushed for KM in 2001. Then the industries respected perceptibly its status, and the schools utilized gradually the KM on instruction. The technological and vocational education pursued

excellence and delicacy in recent years, and nourished students of ability to manage the knowledge and became the knowledge workers to display their potentiality. The knowledge worker created the attachable value of knowledge more than the capital, laborer, land and machine. Therefore, KM could not only cause the enterprise to grow, but to promote the educational development.

The individual and school organization possessed much knowledge which represented the property and wealth in the 21st century, and had the competitive advantage. The innovative colleges or departments of KM were established in the 2003 school year to meet the needs of students, producing the effectiveness of knowledge which the college students generated, especially the application of new KM and circulation for the demand of knowledge worker. The higher technological and professional education in Taiwan had been over- expanded, the demand of the KM increased day by day, and the production, storage, application and share of

knowledge would have an investigative field. The authors created the READ (Research, Evaluate, Appreciate, Decide) model to construct a KM connected with the universities' technologic general education. The students pursued the limited knowledge of a narrow specialized domain and lacked the technologic general knowledge to broaden thoughts. Hence, we must promote the value of spiritual life and the pattern of the macroscopic field of vision. This article focused on the applicable field of knowledge, and transformed the material, information to the practical knowledge and individual wisdom through network technology. We threw out a minnow to catch a whale through correlated data analysis and teaching experience, and the process of entire KM including innovation, storage, utilization, sharing, and exchange. The framework of this paper was shown in Figure 1.

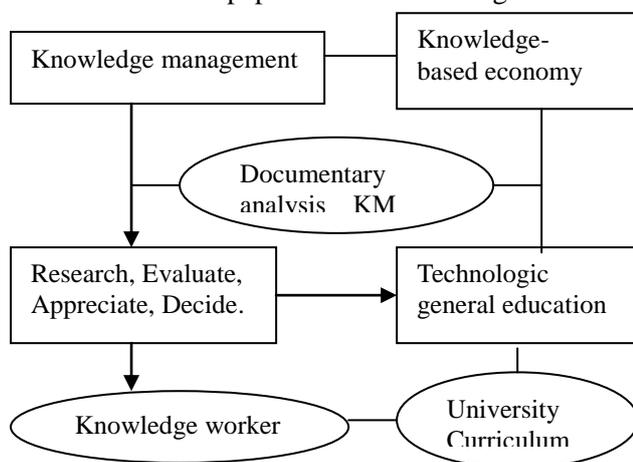


Figure 1 KM and general education framework

2 Documentary Analysis

2.1 Knowledge-based economy and KM

Knowledge was an interesting concept that had attracted the attention of philosophers for thousands of years, and researchers investigated knowledge in a more applicable way with the chief aim of bringing knowledge to life in machines. The epistemology of philosophy explored specially the source, nature, and boundary of knowledge. "Knowledge is power" was a famous saying, and technologic tools, such as Artificial Intelligence, and Expert Systems, provided some rigorous degree to study knowledge, and used knowledge to solve problems. Knowledge-base economy emerged from the 1990s and expanded into a big application in the 21st century. The report of OECD[31] emphasized that the knowledge-base economy would change soon the global economic development, and knowledge became the critical influence of which

the productivity was enhanced and economy grew in 1996. Every country transformed obviously the production, employment and investment into the knowledge-intensified industry. Knowledge-based economy was an unceasingly innovated information, promoted the attachable value of the product, and utilized the modern information technology[40], which was the main economic value and focused on the global perspective. International competition shifted from the visible resources, such as capital, labor force, and material to knowledge.

Technique, skill, and labor which we relied on before, were inferior to the knowledge by now. In an era of knowledge-based economy, Taiwan government achieved the knowledge economical goal through the applicable plan, and the knowledge promoted unceasingly good productivity and also became the key factor of continual economic development [37]. Comparing percentage data of Taiwan knowledge-intensified industries over the years, we could find that the rate had increased by 31.6% (1996) to 34.3%(1999) and 36.1%(2001), and neared 37%(1998) as European Union[11] and expanded their extent. Owing to the Internet development, KM became the mainstream of future superior management in the knowledge age, while knowledge-intensified industry would become the mainstream industry. The percentage of knowledge workers occupying the employment population had also increased quickly by 27.5%(2000) to 28.1%(2001), and the knowledge workers who had profession and high-tech ability grew up stably. Following the coming of the knowledge age, KM was a useful tool to facilitate knowledge application in college education.

2.2 D.I.K.W Quartet and knowledge transfer

From related studies analyses, the process of KM transformed tacit knowledge to explicit knowledge, and the enterprise and university could develop educational partnership and application. We explored the KM from the organizational learning perspective and manpower source management.

For demystifying KM, it was known as the D(Data), I (Information), K(Knowledge), and W (Wisdom) Quartet [14]. Data was discrete content and did not make much sense by itself. Information was processed and collated data. Knowledge was highly contextualized information enriched with individual interpretations and expertise. Wisdom was how one could manage knowledge and at best it could be shared. KM system included selection, creation and storage of knowledge[25]. Among the distribution of indicators weights system, the

creation of knowledge ranked the highest at a rate of 41.3%, followed by the storage of knowledge indicator at a rate of 30.9%, whereas selection of knowledge indicator ranks the last occupying 27.8% of the KM system indicators weights.

KM process will be synchronized to software development process in the information software industry; the more linkage between software quality management and development, the more helpful it was for KM of software industry [18]. The process of knowledge and skills were important for effective management of technology [27]. The amount of knowledge capital was the critical element of business/school competitive strengths. Knowledge transfer had to happen exactly when technologic general education was required and from the most appropriate sources, to the right destination through the most variable mechanism. Technology played an extremely important enabling role in knowledge transfer. Knowledge would transfer through technologic hyperlearning [2], and the relationship among cooperative, potential absorptive capacity and external knowledge shifted from the literature in knowledge-based and capability view [5]. The cooperative relationship has a significant positive impact on marketing knowledge acquisition, and potential absorptive capacity. Potential absorptive capacity is a critical mediating variable between the cooperative relationship and the external knowledge transfer. We identified the important status of the amount of knowledge and the ability to transform this knowledge into business /school.

2.3 knowledge sharing, diffusion, innovation

Technologies could add tremendous value to KM functions like search, information[14]. The level of community knowledge sharing activity may be a proper proxy for the state of health of a virtual community [21]. The knowledge diffusion, such as improvements in clinical trial knowledge and beliefs were assessed, and video modeling is a powerful tool for increasing clinical trial knowledge [10], and a case-based reasoning knowledge acquisition method and tool were presented and applied to acquire domain knowledge for constructing a case library [23]. Hence, the knowledge-based management system in organizations/ schools was widespread and diffusible through the highly technology.

The knowledge of technological innovation process carried out by different disciplines [30], and provided a point of view on the relationship between learning and KM in corporate training. This relationship forms the framework for the

development of an effective learning management system [9]. We allowed the integration of training with company processes and should assist in reaching corporate university goals. The innovative knowledge-based examples were related to learning organizations [32], and KM on line constructed sharenet within organization. Now the industry export amount of information technology occupied over 50% of the total export price in Taiwan, while the employed population of college educational background occupied over 25% of the total employed population. Hence, the universities thought highly of KM in the Internet age, and students interested continually in network learning and went forward to the Internet bravely without looking back. The effect of perceptions of the employment game focused on the cooperative knowledge behavior in high-tech firms[35]. Students Internet learning went with innovative ability. knowledge, innovation and globalization, in order to apply knowledge in technologic general education. KM in eBusienns and customer relationship had a creative management [33].The successful product development required effective strategies for reducing risk [7], and used innovative knowledge tools to balance the benefits and risks.

Innovative knowledge, products, and services were found within the technologic environment[17]. It indicated that a higher knowledge of interpersonal relations had a better general health self-assessment and higher medical knowledge[8],and improved general quality of education [29]. The KM systems, such as databases, Internet architectures, artificial intelligence, and support techniques could innovate tacit and explicit knowledge by KM techniques.

2.4 KM and Technologic general education

The universities practicing technological general education should take some integrated examples, such as to classify technological knowledge for mechanical engineering designers [1], and analyze the technology-knowledge networks, especially the aspects relating to management control [12]. We would consider the development of certain general principles for control in order to achieve greater efficiency in the management of knowledge. KM was the integrated processes concerning creation, communication, and application of knowledge. If you were an intellectual and wanted a successful career, you would know how to do the best acquisition, storage, and application of KM.

KM emphasized more practical cases than theoretical explanations [14]. Our desires could not become a reality formerly, and came true through

network technology. Knowledge had the utmost significance to the youngsters in universities who had the best potential to assimilate and use it. Hence, we integrated the network technology and knowledge sharing into a learning organization. The students could engage in career planning, sharing practice and experience, transforming their new knowledge learning into reality, and expanding their specialty through a connection with technologic general education and e-learning virtual reality.

The position of KM in technologic general education was obvious, as in higher education [28], in appropriate instructional design [36], exploring e-learning as models for professional development [42], career development being a chief information officer for digital dividend destiny[16], making good choices of medical informatics [3]. Hence, the future professional career will account for about 60% ? of the knowledge workers, showing the significant status of KM to education. For example, the department of KM at Aletheia University in Taiwan cultivated the knowledge talents of creative personality trait, critical thinking, and integrated information management capacity to technologic general education. The universities innovated KM unceasingly, enforced a cooperation with industries, and let the students hold technological literacy through humanistic general instruction.

3 Apply KM to Technologic General Education

The universities could learn a lesson about the operative successful model of KM experience from the business/ organization. Expert systems of knowledge-based systems, were bringing new thinking to how we view knowledge[38], and explored the correlations among school , KM and the transformational leadership of senior/vocational high school principals[24]. In advanced technology, R&D, education[19], and culture reflected the trend towards increasing KM [6]. Concepts such as learning ability, creativity, and sustained flexibility gain greater importance as guiding principles for the conduct of individuals, institutions, nations, and regions. Research projects [39]showed how to set up a knowledge transfer experiment in itself, encouraging knowledge sharing between the students, between the universities and between the companies involved.

New models of knowledge transfer partnerships, such as expertise in the UK's universities, colleges, and research organizations would be of value in developing products, services, and processes[4]. Therefore, we developed the technologic general

education to let students understand the framework of KM, to know well the strategy of knowledge acquisition, storage, design of knowledge network, executing knowledge network. Meanwhile, we applied the technologic tool to innovate knowledge, to promote a connection between the meaningful knowledge and solution strategy. In other words, we created the READ (Research, Evaluate, Appreciate, and Decide) model of KM on the technologic general education. In order to acquire the useful knowledge, we must research unceasingly the information; to store the meaningful knowledge, evaluate appropriately e-learning; to share the reliable knowledge; to appreciate pleurably online knowledge; to apply the effective knowledge, and to decide precisely the direction by wisdom. Figure 2 showed that KM model played a critical role on technologic general education, cultivated the intellectuals with technological literacy through general education programs and instruction, and connected technologic tool with knowledge constructing KM model.

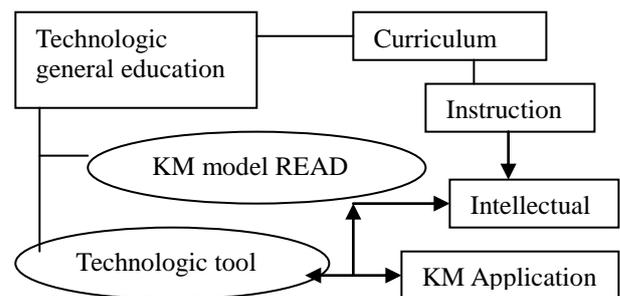


Figure 2 KM model on technologic general education

4 Conclusions and Implications

KM was not only helping with business/organization growth, but also playing a critical role on the technologic general education of universities through explanation and examples mentioned above. The classical KM to solve problem as a cooperative framework, especially to share and apply knowledge. The general education developed the curriculum software and searched for information through the management method of Internet technologic tool, and transformed effective data, information and knowledge into individual wisdom. This splendid scenery was foreseeable; nevertheless, KM was not wonderful drug. Facing the changeful environment to avoid the myth of KM, every man must transform data, information into productive knowledge and wisdom to enhance the highly value of product.

In order to promote the high value of knowledge product, we established the technologic

general/ liberal education model. Based on KM model of technologic products[26], innovative knowledge was rooted and grounded in general education in the economy-based knowledge age, and we wanted not only technological skill, but also matched this technique with humanistic literacy. Current technology lacked the characters of humanistic literacy, logical thinking, and merciful and caring anybody, so the general/ liberal education in universities which integrated technology with humanism were a current trend. In the foreseeable future, general education should reform [20] and draw assistance from KM and elaborate instruction imparted knowledge, and paid equal attention to theory and practice. The students were provided with theoretical and practical experiences among profound information technology and KM, and possessed humanistic culture and caring community sentiment. We shall research, evaluate, appreciate, and decide the expansive data and information transferring to knowledge and wisdom assets, and expect to cultivate industriously and diligently create the application area of KM, and look forward to blossoming and bearing fruit. Moreover, we expected to establish an applicable model of KM on technologic general education to enhance teaching quality.

5 Suggestions

Teachers should apply the KM strategies to their instruction, and understand the importance of KM to develop its advantages[41]. Teachers and students developed together the programs of general or liberal knowledge, such as general psychology, career planning, and adopted the creative instruction to enhance students' technological literacy. Finally, The authors draw up an INNOVATION strategy about applying KM on the technologic general education related issues or further researches practicability as what shown below. There are ten suggestions, and the initiative letter of the first word at every suggestion compose an INNOVATION strategy.

Information technology must integrate knowledge and skills into technologic general education in universities, then to reveal its important meaning and academic value.

Nature of technological literacy will accord with the process of KM to research unceasingly information, evaluate appropriately e-learning, appreciate pleasurable online knowledge, and decide precisely the direction by wisdom.

Nourish students in applying KM ability in universities. This will need to cooperate with

industries to develop the curriculum blueprint of KM implementation[34] in general education.

Opportunity of discipline will acquire the right skills in dynamic changing economies and let the students become a multiple foresighted, skillful, prearranged, independent learners for future career.

Verification of KM executes on the technologic general education, and compile a questionnaire or scale to test college students, and deal with validity and reliability through standardized technology tool.

Application of KM in public administration or private organization plays an important role in the field of technologic general/ liberal education. Therefore, to connect the technological knowledge with general teaching is continually in progress.

Trust to technologic tool and our trust is that the general/ liberal education will be positive and popular development in universities.

Intellectual of the current e-age demands sense of mission in knowing how to handle the Internet information and avoid misusing technologic tool and resulting in Internet addiction or crime.

Originality will stimulate students to further efforts on the technologic general education to go with creative instruction in universities.

Necessity of constructing instruments can evaluate the status of KM in universities. According to the literature review and Delphi Technique, KM assessment of senior-high school could contain explicit knowledge, tacit knowledge, knowledge management process, information technology, etc[22], so assessing universities KM could be further studied in Taiwan.

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