

# Knowledge management and open distance learning

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# Knowledge Management and Open Distance Learning

Ping Chow, Teoh

School of Science and Technology, Wawasan Open University,

54, Jalan Sultan Ahmad Shah, 10050 Penang, Malaysia

[pcteoh@wou.edu.my](mailto:pcteoh@wou.edu.my)

Sub theme: Multi-mode education within open and distance learning institutions

**Abstract:** Knowledge Management (KM) was the buzzwords of the industry in the late 20th century. With the rapid development of world-wide-web and the internet technology, the industry placed high hope on KM to help us transform productivity and the way we learn. Unfortunately, KM seemed to fall short of the expectations. Businesses have gradually leaving KM and look for other solutions. Instead of dismissing the contributions and efforts of KM practitioners, KM has actually evolved into many different modes and infiltrated into our economy and education processes. One of the examples can be seen in education, in the form of Open Distance Learning (ODL). While ODL in education was developed separately from the KM in the industry, they are very similar in nature. Knowledge framework naturally existed in any of the learning and sharing processes. This paper intends to discuss the inter-relationship between ODL and KM, how processes in KM implementation are actually being applied in ODL.

The first part of the paper discusses the nature and perceptions of knowledge. Then it provides the comparison between the ODL process and KM framework. Knowledge Spiral suggested by Nonaka and Takeuchi (1995) is used as the general accepted KM framework in this comparison. Through the comparison, the paper further suggests how technology changes have lead to the enhancement of KM processes and how ODL can be operated. In addition, the paper suggests that emerging technologies, such as mobile applications, sensory technology and wearable devices will further increase the effectiveness of KM and ODL. Through innovation in technology and processes, the ability to identify and use the most appropriate knowledge at the right place and time becomes the key for mutual success.

**Keywords:** Knowledge Management, Open Distance Learning, Knowledge Spiral, Learning Technology.

## 1.0 Introduction

Globalisation was forced onto business organisations and created tremendous challenges and competitions. The so call “knowledge age” which emerges after the “industrial revolution” has been widely discussed and speculated. In the late 20<sup>th</sup> century, Knowledge Management (KM) has become the buzzword in business world. According to Drucker (1993), knowledge is the only meaningful resource today, as compared to traditional resources such as labour, capital and land. Nanoka (2000) argued that the success of the Japanese companies is due to the fact that these companies constantly seeking new knowledge to bring about continuous innovation.

Nevertheless, in the 21<sup>st</sup> century, knowledge management was thought to have fallen in its popularity. It was perceived to have failed to fulfill the high expectation of the business communities (Malhotra, 2002). Figure 1 shows the number of searches for the term “Knowledge Management” has been gradually reduced in the last ten years.

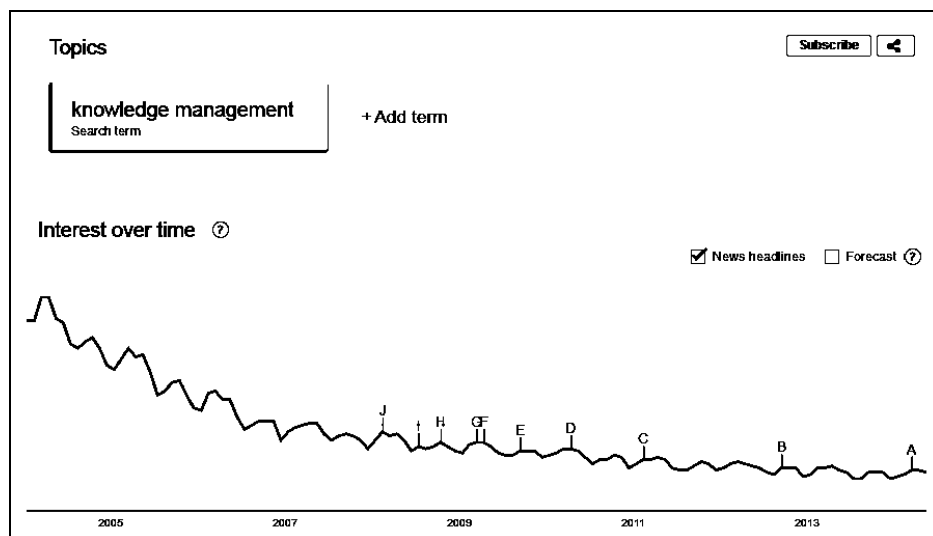


Figure 1 Google Trends for “Knowledge Management” (Google, 2014)

However, if we observe what the trend of Internet usage, the explosion of social media, and adoption of mobile applications, knowledge sharing has intensified instead of reduced. Hence, KM is very much alive even though people has decided to use many others terms to describe KM activities.

Today, KM existed in many forms. Social media, mobile applications, clouds and mobile devices all play significant roles in the KM activities. KM is also formalised into

systematic learning processes in education. One of them is the Open Distance Learning (ODL). ODL existed before the term KM was coined. The original form of ODL was carried out using mail correspondence. It has evolved into the modern form of ODL due to the emergence of the Internet and the information technologies.

## **1.2 Motivation**

This paper was created out of the interest to reveal that KM process is alive and applied in ODL. Based on this fact, ODL processes are mapped in accordance to a well-known KM approach.

## **2.0 Aim and Objectives**

The aim of this paper is to study how KM practices are implemented through ODL, specifically in course development and delivery processes in Wawasan Open University (WOU). The KM practices in this context are referred to a model introduced by Nanoka and Takeuchi (1995). The objectives include:

- To relate KM practices to course development and course presentation processes
- To introduce the concept of “value” to the ODL process
- To suggest technology intervention to the current KM and ODL processes

## **3.0 Literature Review**

Knowledge is not a tangible object that one can grasp easily. The fluidity nature of knowledge makes it very illusive, and certain form of visualisation is needed to describe how knowledge processes have taken place. This section presented some of the common perspectives in the study of KM.

### **3.1 Hierarchy of Knowledge**

According to Wallace (2007), there is a hierarchy that represents the relationships among data, information, knowledge, and wisdom in information science (Figure 2).

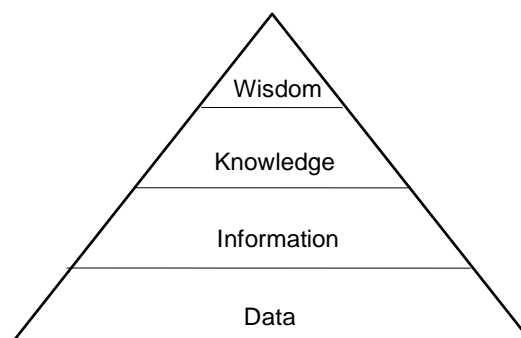


Figure 2 Hierarchy of Knowledge

“Data” is considered as the lowest form in the hierarchy. It consists of symbols, signs, numbers, characters and figures. Data does not provide the meaning. It needs to be combined to form meaningful “information”. Information is constructed from data with purpose, and forms the basis for “knowledge”. Knowledge is information, which is given the contexts to relate to the real world. Hence, the knowledge constitutes the most useful part of the hierarchy, i.e. the “know how” that enables users to act. On top of knowledge, there is another level known as “wisdom”. Wisdom represents even higher level of intelligence, which is abstract in nature. Zeleny (2005) described it as “know why”. The focus of this paper is on the first three levels, i.e. to observe how data and information can be transformed into useable knowledge.

### **3.2 Types of Knowledge**

“Tacit knowledge” and “explicit knowledge” were concepts introduced by Polanyi (1966). Explicit knowledge is a type of knowledge that we can codify and capture on paper, files, and database that we can share with each other. On the other hand, tacit knowledge is part of knowledge that is embedded and hidden in individuals, which is hard to be articulated.

The ratio by rules of thumb for explicit knowledge to tacit knowledge is about 20:80. Explicit knowledge is more useful to users as it can be shared and reused. It is possible to convert tacit knowledge to explicit knowledge through modern information technologies. However, the tacit knowledge is so illusive that even the knowledge owners may not aware of what they know. Hence the conversion remains a big challenge.

### **3.3 SECI Model**

The KM model suggested by Nonaka and Takeuchi (1995) can be represented by the continuous information flow that involves the four KM quadrants. The four quadrants are “Q1: socialization”, “Q2: externalisation”, “Q3: combination”, and “Q4: internalization”. Hence the KM model is also known as the SECI Model (Figure 3).

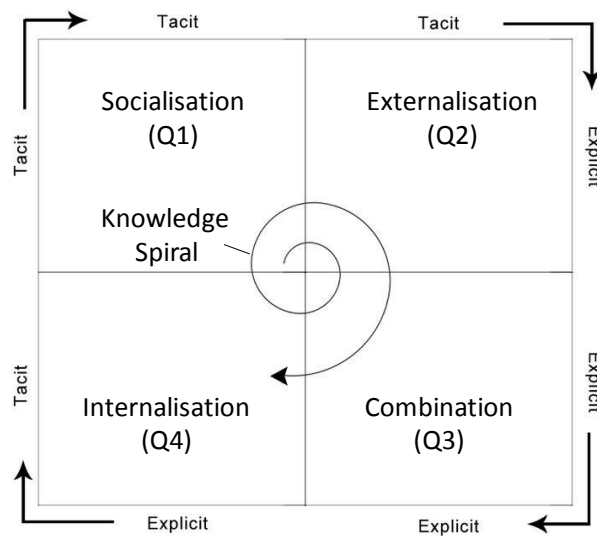


Figure 3 Nanoka and Taguchi, SECI model

The four quadrants (Q1 to Q4) can be described as follows:

**Q1: Tacit to Tacit (Socialisation)** - This quadrant represents social interactive activities by the members to exchange tacit knowledge. Tacit knowledge is shared through face-to-face conversations, for example, meetings, brainstorming, apprenticeship or informal discussions.

**Q2: Tacit to Explicit (Externalisation)** – The conversion of tacit to explicit knowledge is done through externalisation, i.e. publishing or articulating knowledge. This process enables knowledge to be captured and shared without the presence of the owners. Externalisation can be carried out in the form written documents, illustrations and physical products or other creative media.

**Q3: Explicit to Explicit (Combination)** – The creation of explicit knowledge can also be carried out by combining other available explicit knowledge. For example, a literature review combines information from different publications to support a new research. Combination of old products will enable the creation of a new prototype.

**Q4: Explicit to Tacit (Internalisation)** – When an individual or a group learns from the available explicit knowledge, and turn it into his or her own, internalisation is taking place. In other words, it is the process of applying the explicit knowledge gained. It also includes enrichment that adds more values to the original tacit knowledge. For example, a creative musician may combine his or her personal inspiration with the song he learned from the recorded music sources.

## 4.0 Discussion

This section intends to show the close resemblance between the SECI model and the ODL operating processes. In fact, ODL process is considered as a type of SECI process.

### 4.1 SECI Model in ODL

The overall course development process is as shown in Figure 4.

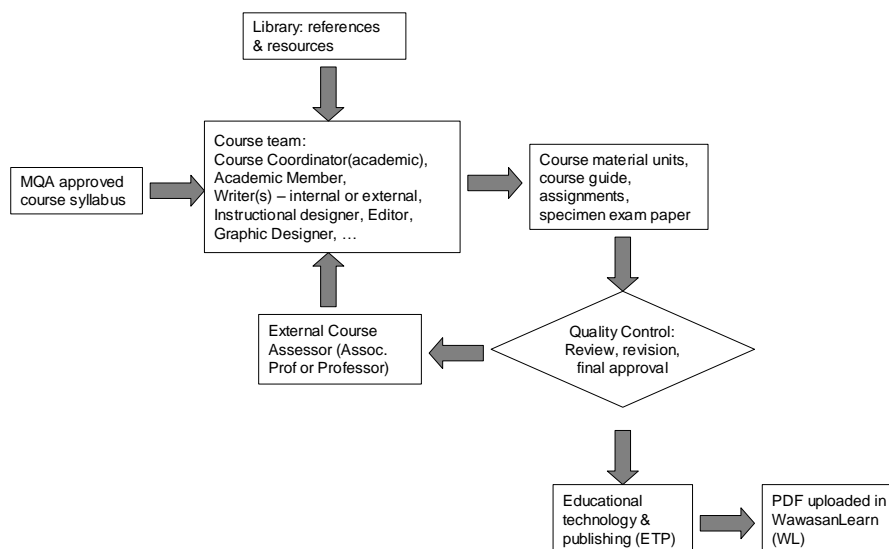


Figure 4 WOU Course Development Process

In ODL, a course is initiated from the course blue print. The course team needs to gather the opinions of from the Malaysian Qualifications Agency (MQA), stakeholders, external experts, and education specialists to create a blue print. Hence, the course will go through discussions (Socialisation, Q1), writing (Externalisation, Q2), researching and citing (Combination, Q3). In process, the coordinator and the course team will go through learning (Internalisation, Q4), and return to the discussion process with peers, academic members for improvement. This may be repeated in a few iterations.

The blue print will be assigned to a course writer. The course writer will bring along his or her knowledge and share with the coordinator (Q1). Then, the writer will go through the writing process (Q2), finding and extracting from references (Q3), learning (Q4), discussing with coordinators (Q1), and repeat the cycle.

In addition to course coordinator, we have the External Course Assessor (ECA) who will evaluate every unit that the course writer has completed. There may be discussions with the writer and coordinator (Q1). The ECA will produce reports to the writer and

coordinator (Q2). In this case, the knowledge from the ECA will be channeled to the coordinator and the writer. The writer can then continue with the writing (Q3) iteratively until the units satisfy the ECA's requirements.

Course team meetings (Q1) will also be carried out to gather the inputs from other members in the course team for continuous improvement. The same process will be repeated until the course modules are completed. At the end of this process, the course will increase in explicit knowledge content. At the same time, the coordinator, ECA and course writer will accumulate their tacit knowledge as well.

When the course is offered to the students, they can go through the course material given to them and internalised the knowledge (Q4). Through the monthly tutorials, the students will be able to discuss with the tutors and fellow students (Q1). The additional tacit knowledge will be gained through the tutorial classes. Then, the students need to work on Tutor Marked Assignment (TMA) by externalise what they have learned (Q2). They may also include their own experience into the assignments (Q2). The student may also combine additional information in books or the internet (Q3), and learn from them (Q4). This is followed by discussions with the tutors, peers, or coordinator (Q1). The process will then be repeated. The cycle will be intensified when the dateline is near, until the assignment is submitted (Q2). The most important result at the end of the process is that the students gain tacit knowledge that they can apply into the daily work, and perhaps transfer the knowledge to other new recipients.

It worth to point out that ODL method has an advantage in bringing latest, up-to-date tacit knowledge to the students as compared to the traditional learning method. This is because in ODL, external knowledge is constantly being updated through the tutors, who are mostly experts and practitioners of related fields. They are the sources of live knowledge, which otherwise, the students could only depend on the static course materials.

#### **4.2 Technologies in SECI Model**

With the advancement of technology, the SECI process has been accelerated. Internet and mobile devices enable continuous communication even when the users are on the move. This will ensure the SECI process to be executed at all time. For example in socialisation (Q1), the face-to-face interaction can be carried out even when the members of a group are not at the same place. Members with different language ability can also interact through language translation software.



In the old day, human rely on pictures and texts to convey the explicit knowledge. Today, there are many sensory technologies including camera, microphone, and application software that help users to increase their capabilities to convert tacit knowledge to explicit knowledge (Q2). For example, voice recognition software, helps to capture narrations into text. Ever improved audio and visual technology helps to ensure the important images and sounds are captured. More and more tacit knowledge in the real world can be recorded as sharable explicit knowledge.

Editing software and hardware technologies ensure that multimedia information, images, video and voice can be easily combined with text documents to form information rich repository of explicit knowledge (Q3). These technologies have become more accessible to everyone. Nowadays, even children are able to take part in the explicit knowledge combination process.

Explicit to tacit knowledge transfer process (Q4) does not rely on the books alone. With the proliferation of internet, computer and mobile devices, sharing of explicit knowledge has become a norm in the modern society. For example, users can learn on the web, mobile apps or eBooks from their computer or mobile devices. It can be done at any place at any time with adequate network coverage and memory storage.

## 5.0 Discussion

Education system today faces a lot of challenges. Many have perceived that the current education system only managed to produce students who are trained at answering examination questions, but are not equipped with real skills at work. This section touches the value creation process that the students can go through to acquire the real working skills.

### 5.1 Knowledge Spiral

In SECI model perspective, the knowledge that does not provide skill improvement stays at the two-dimensional SECI plain. There is a third axis perpendicular to the plain that shows the advancement of knowledge. Hence, Nanoka and Taguchi (1995) also suggested the knowledge spiral as shown in Figure 5.

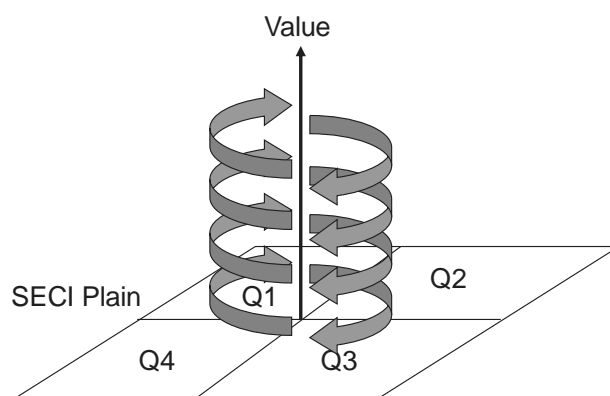


Figure 5 Knowledge Spiral

The result of the knowledge spiral represents the value created by people. It is the 3<sup>rd</sup> axis perpendicular to the plain of the four knowledge quadrants. The “arrow” shows the direction perpendicular to the knowledge plain points towards the increase in values of products and services.

The education objective is achieved through the experience that the students have gone through in planning, designing, and problem solving for value creation. Through this process, learning is no longer hypothetical. The students will gain tacit knowledge through learning experience and provide practical contributions in the projects.

### 5.2 Further Suggestion for SECI Model

The author would like to suggest an addition form of explicit knowledge, i.e. the creations as a result of the knowledge. For example, a physical product (which is designed to

perform a certain function) can be considered as a form of explicit knowledge. Knowledge can be conveyed through the usage of a product, study the design of the product, and derive inspirations from the product.

A “combination” quadrant is usually referred to the writing activities that help to put different articles together to form a new publication. However, in terms of physical objects, an assembled product can be considered as a form in Q3. The product contains the information of usage and design. Hence, as a user uses the product, tacit knowledge is derived from the product through users’ experience (Q4). In the author’s view, learning from real world products may have even greater impact than learning through documents and publications.

ODL has taken advantage of the internet to improve its reach to more students. However, the main course materials are still mostly text based. Conscious efforts to introduce appropriate technologies will help to accelerate the evolution of ODL education. For example, instead of text-based materials, the lecturer can use video, multimedia or even products as learning materials. The students could also submit assignments using the alternative forms when appropriate.

## **6.0 Conclusion**

KM has become an integrated part of the modern world. Even though the term is hardly mentioned, it has evolved into countless processes of our life. ODL is a form of KM process that was enhanced by the advancement of information and communication technology. The KM practices in ODL can be observed through the SECI model. The members practicing KM will benefit from the experience gained in the continuous knowledge cycle.

Technology advancement helps to accelerate knowledge transfer through various forms of explicit knowledge conversion. However, technology and explicit knowledge must not be the main focus of the educators. The most important objective is to accelerate the formation of tacit knowledge in each student to add greater values to the society.

ODL as a form of KM process can help to create learning cycles and translates learning into real world values. As ODL has much bigger reach to larger population than traditional education, the adoption of value creation approach in learning will bring even greater impact to the world.

## **Acknowledgement**

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