

CHAPTER 2

LITERATURE REVIEW

This chapter provides an overview on the back ground of the study by interpreting keywords and contexts crucial to the understanding of the study. Despite the fact that efforts have been made to establish related literature, findings of this literature review can not be considered exhaustive.

2.1 Introduction

With the introduction of the World Wide Web (www or web) since the middle of the nineties in 20th Century, it has been pragmatic that students are increasingly enthralled by the diversity of web based applications. The swift improvement of computer and network technologies has fascinated educational researchers to study the strategies and the effects of applying information technology in learning activities. It has been recommended that efficient training and maturity is one of the seven practices of successful organizations (Pfeffer, 1998). One of the supreme profits of web-based learning activities is to tolerate students to take part in learning as active and self-directed participants (Tsai, 2001). The articles reviewed in this chapter, considers how action and reflection can help students to review and improve the ways in which they work.

2.2 Reflective Learning

In the emerging knowledge society a firm understanding of the interplay between the management of knowledge and reflective learning is of strategic importance in order to create and the maintain effective learning processes in student-centered learning situations. Today more than ever there is a significant movement

away from teacher-centered instruction to student-centered instruction. Accordingly, learners must switch from being embracer to being host of learning. Reflective learning has become an idea. (Naeve and Sicilia, 2006)

Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective.

According to Smith (2001) reflection does not come naturally or even easily to most people. To afford an alternative to such approaches, he utilizes action learning together with some aids to structuring and assisting the reflective learning process.

2.3 Action Learning

A young man called Reg Revans had been working with a high-powered group at the University of Cambridge, Back in the 1930s, when complicated research problems showed up (Coghlan and Coghlan, 2007). Then it was noticed that they are sitting down together asking lots of questions from each other. No person was regarded as more imperative than any other and contributions were made by all of them, even when they were not specialized in that particular field. In this way effective solutions were teased out to their own and others problems. This technique demonstrated so successful that a handbook on how to run a coal mine was written by him. In this way, action learning was instinctive. For Revans, the core of action learning lies in the ability to ask the right questions at the right time and take effective action (Coghlan and Coghlan, 2007).

Action learning represents an approach based on companion in adversity learning from and with each other through perceptive questioning, fresh experience and reflective insight. It should be noted that if enough regular try is done and succession is obtained regularly enough, sooner or later how to proficiently apply the system on every occasion happening, will be learned. But in the complex world of problem solving, experiencing by own will not necessarily lead to learning. Noting will be found about solving the next problem purely from the act of solving the present problem. For learning to have effect more work must be done rather than just incident deciphering the problem efficiently. Replication is essential on that experience with the intention of recognizing precisely what has been learned, internalize the instruction which you can learn from it, and practically invent action plans, so that efficient action can be taken in the future in new and different situations (Pedler *et al.*, 2005). A definition of action learning which places of interest in the value of the methodology is provided by Skippington, (2002a):

“Action learning is a systematic process through which individuals learn by doing. Through the process, people increase their self-awareness and develop new knowledge, attitudes and behaviors as well as skills for making changes and redefining their roles and responsibilities within new or changing workplace contexts. (p.25)”

Action learning is part of a group of ‘context specific’ teaching/learning methods that have mature on the subject of other educational and expansion approaches (Mabey & Thomson, 2000; Horne & Steadman, 2001). A number of prospects are presented to teachers in higher education, as follows (Pedler *et al.*, 2005):

- Action learning is a context-sensitive approach that can link generalized or theory based teaching with the actual business problems faced by participants on higher education programmes.
- Understood as an ethos, the pluralisation of action learning into many forms makes it a highly malleable approach, which is widely applicable to many educational relationships and situations.

Action learning approaches include constructs for individual learning and group exploration. In the same way, even as the action learning procedure occupied the applicants in learning in action, the action research methodology afforded a comparable importance on the production of actionable knowledge. There are several reported reflection papers which appearances hypothesizes and inferences and which were tested in meetings of both managers and academics so that there was incessant disclosure of the events crosswise the project and their elucidation to public reflection and analysis which then directed to further action. The way the researcher learning network was handled and synchronized across precincts and restrictions, by means of a variety of constitution and directive/nondirective procedures guaranteed constancy across the incidence, form and process of reports, reflection papers and researcher meetings (Coghlan *et al.*, 2004).

The Action Learning process is a recurring one, giving each member the chance to present a problem and comment on others:

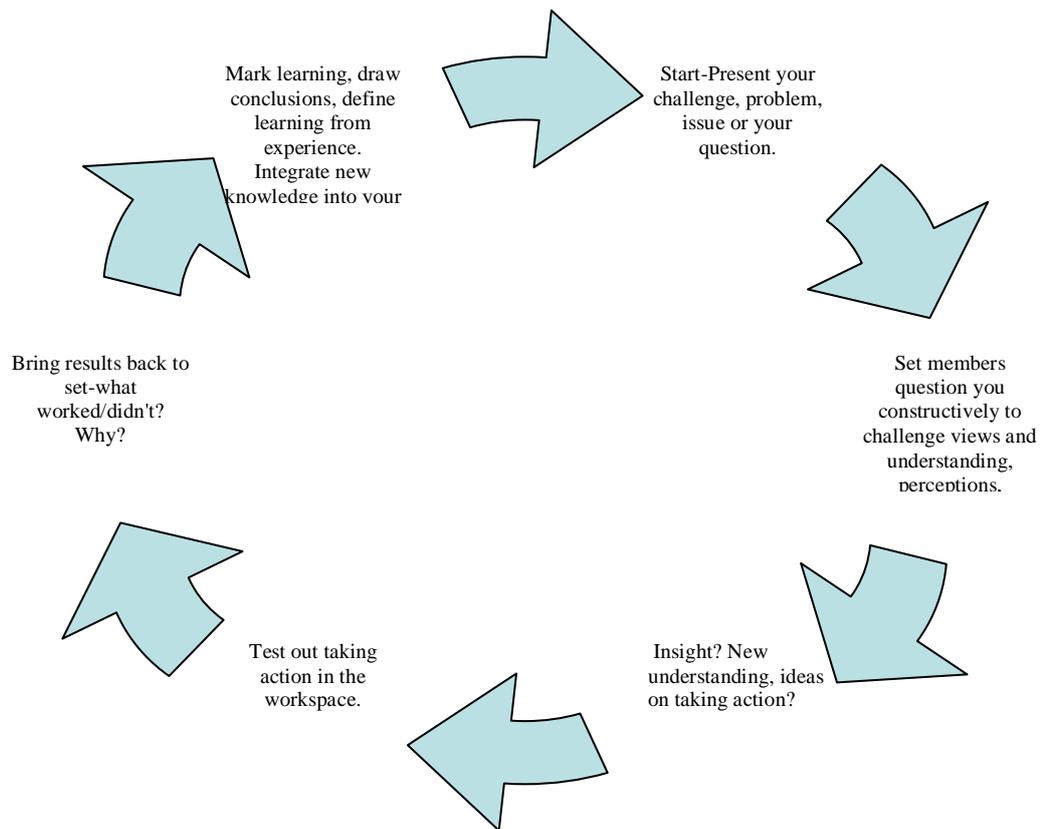


Figure 2.1
Action Learning Process

[www.odi.org.uk/Rapid/Tools/Toolkits/KM/Action_learning.html]

Action learning is a staff development technique to learn from current activities, and involves the use of the cycle of:

- experiencing
- reviewing
- concluding
- planning.

Henry *et al.*, (2001) found that, during collaborative action-based reflection, action learning can release contributors from reutilized and ordinary ways of thinking about themselves and their compass and ability to act in and on their world.

Action learning can be potentially self-transcendent and institutionally transforming. Marsick and O'Neill (1999) delineate three subcategories of action learning: scientific, experiential and critical reflection. Wilmott (1997) censures conventional action learning for tending to individualize and psychologizes the diagnosis of problems in a way that disregards their embeddedness in the structural media of power relations and suggests that:

Critical action learning explores how the comparatively abstract ideas of critical theory can be mobilized and applied in the process of understanding and changing interpersonal and institutional practices. By combining a pedagogy that focuses upon management as a lived experience with theory that debunks conventional wisdom, managers can be enabled to develop 'habits of critical thinking . . . that prepare them for responsible citizenship and personally and socially rewarding lives and careers'. (p. 173).

2.4 Learning Portfolio

E-learning system has become more and more admired with the dynamic development of the Internet. How to present modified course consistent with individual learning characteristics and competence are an imperative issues.

The log files traced through student learning approximately include system communication, homework, quizzes, online conversations with classmates, history of access learning materials, academic achievements, etc. Still niceties, such as the extent of student answers to questions or the succession of student responses to questions, are log files of the learning progress of students. This information of learning activities,

known as learning portfolio, can assist the teachers to understand the reason why a learner achieves high or low grade and improving mutually learning materials and pedagogies.

Various studies have been performed to understand students' learning status (Wang *et al.*, 2004; Hwang, 2003; Milman, 2005; Bhattacharya, 2001; Barrett, 2001). A number of such studies are dutiful to notice students' current knowledge and to identify the weak areas and help them composition lost ground and improve their learning achievement (Hwang, 2003; Bhattacharya, 2001). Some researchers believe that online learning commotion facilitates improve learning achievement and also the influence of students' learning manners on learning achievement can be indomitable by analyzing students' various learning log files (Hwang, 2003).

Fully revision on captivating the time of learning activities as typical, the asynchronous learning behaviors and possessions of teaching material have been carried on to provide referential factor for prospectus adjustment (Hwang *et al.*, 2002). Besides analyzes on the authority of numerous learning activities (including homework, examination, etc.) in the lead of learning behavior, talks about the characteristics of teaching materials, and corrects curriculum suitably compliant with the learning time supply. Hwang (2002) analyzed the association between asynchronous learning strategies and learning achievement and classification of four asynchronous learning models was also done with the learning achievement described according to students' online learning time distribution.

Some researchers (Becerra-Fernandez & Aha, 1999; Liu *et al.*, 2002) used past case experience to improve learning, they all call attention to that reusing case after

categorization and assortment would help the learning process in the future. As a result, the same knowledge for reference can be used, if it is required to solve the same kind of problem. Hence, using the Case-Based Reasoning (CBR) tool to recommend peers' cases to students for reference has been recommended (Liu *et al.*, 2002).

Several researchers have planned that a new learner will achieve similar learning concert on the same conditions that the learning guidance takes out from previous similar learners (Sim *et al.*, 2005; Papanikolaoua *et al.*, 2002; Tsiriga and Virvou, 2002).

Myller *et al.*, (2002) attuned prospectus plans by using data mining to analyze students' learning logs. Wang *et al.* (2004) applied data mining approaches to haul out learning features from learning portfolio. Then adaptively create personalized activity trees with related sequencing rules for learners. This approach includes 4 phases:

- User Model Definition Phase: defining the learner profile based upon pedagogical theory.
- Learning Pattern Extraction Phase: applying sequential pattern mining technique to extract the maximal frequent learning patterns from the learning sequence, transform original learning sequence into a bit vector, and then use distance based clustering approach to group learners with good learning performance into several clusters.
- Decision Tree Construction Phase: using two third of the learner profiles with corresponding cluster labels as training data to create a decision tree, and the remaining are the testing data.

- Activity Tree Generation Phase: use of each created cluster including several learning patterns as sequencing rules to generate personalized activity tree with associated sequencing rules of Sequencing and Navigation.

In adaptive learning environment, Shang *et al.*, (2001) proposed an intelligent environment for active learning to sustain the student-centered, self-paced, and highly interactive learning approach. The learning environment can use the related learning profile of student, e.g., learning style and background knowledge, to select, organize, and present the customized learning materials for students. Hwang *et al.* (2007), proposed a web-search learning environment with a narrative meta-index approach, which is able to help out the teachers in analyzing student learning behaviors of using search engines and appraising the problem-solving ability of each student.

Jong *et al.* (2007) planned a system which provides an interface for teachers to associate and scrutinize students' online learning activities. In this system students' suitable guidance and support can be afforded by teachers. The e-portfolio presented by Milman (2007) and Barret (2001) makes use of a variety of electronic media in addition to links to exterior sources.

While e-portfolios are created in the course of a similar process to print based portfolios, e-portfolios have a number of advantages over print based portfolios including the ability to store, organize and reorder contents quickly and easily; provide opportunities to integrate student course work; their ability to form the basis for collaboration; the potential for development of information management, self organization, planning, and presentation skills (Barrett, 2001; Bhattacharya, 2001; Heinrich *et al.*, 2007).

The idea of digital or e-portfolio goes beyond text and still images only (Attwell, 2007). One can slot in multimedia to express knowledge and skills. The dominion of e-portfolio is extending as new tools and technologies are developed. Consequently, e-portfolio development is not only about collection of artifacts as verification of learning and reflection on the process and invention of learning but it is also about the interactions of learning. In this “networking age” no learning can be labeled as independent and individual. Knowledge is distributed among people and artifacts (Barrett, 2001). Most of the present day e-portfolio platforms afford the opportunity for addition of peer review, feedback and discussion. Therefore, e-portfolios have the potential to become lifelong learning tools.

However e-portfolios are not without their challenges (Milman, 2005 & de Freitas and Jameson, 2006). A number of challenging issues include: the time demanding nature of development; difficulties in mastering the use of the software; and issues of privacy. Perhaps more importantly (Zubizarreta, 2004 & Sharma and Mishra, 2006) emphasize that without a central focus on reflection, e-portfolios are in danger of becoming simply a collection of information rather than a mechanism for the development of consequential knowledge. In order to find out whether such a process has occurred criteria for the estimation of reflection within the e-portfolio context are needed (Moon, 2004 & Tynjälä and Lonka, 2001).

2.5 Reflective Journals

Journaling is accepted and widely used in humanity-based subjects according to George (2001). Reflection endows the chance to learn from previous cases and take advantage from the experience achieved via the reflection. Journaling is less developed

in scientific authorities. Learning journals are often located in action research learning strategies so that the learning journal forms a part of the iterative action research learning loop (Cherry, 1999).

MacCallum and Hickey (1997) were possibly one of the first to talk on the use of the reflective journal to develop communication in science. Noblitt and Pochis (1997) demonstrated that journaling is a valuable method of appealing students with deep learning of a subject.

Fairholme *et al.*, (2001) encouraged reflective thinking in project teams. High participation rates, students improving during the semester were realized and ways to measure success of the journal were hunted. Mount Mercy College (MMC) (2000) has defined a classification of journal types as following:

- Personal Journal - diaries of thoughts, activities, emotional responses, records of daily life,
- Response Journal - response to a piece of literature; an event, series of events or experiences,
- Learning Logs - informal summaries of what has been learned; sometimes detailed accounts with knowledge and opinions specified,
- Dialogue Journal - space for two persons (two students, student and teacher, etc) comments about assignment, event, etc in response to one another,
- Double Entry Journal - space for the initial comments with adjacent space to comment again after reflection or a specified future time,
- Reading Journal - a place to summarize and respond to readings done for classes, personal and academic interest, paper or assignment preparation,

- Writer's Journal - a compendium of observations, thoughts, insights etc recorded over time in preparation for a project.

MMC classify some of the learning outcomes they observed in their students, including an improvement in the following categories:

- Describing situations, events, relationships,
- increasing
- Self awareness and the ability to analyze ones own feelings,
- Identifying and "verbalizing" one's existing and newly acquired knowledge,
- Synthesizing and integrating information more succinctly,
- Assessing, and making judgments, evaluating events in one's life and educational activities,
- Developing new, additional or alternative perspectives on relationships, interactions and events,
- Personalizing the educational experience (lab, clinical experience, practicum, discussion group) and knowing better what is being learned,
- Fostering the establishment of linkages between theory, research, observations and experiences,
- Communicating what is being learned and to assess the value of particular experiences,
- Appreciating own learning, growth and self awareness.

Reflections upon lecture material are a mixture of the response journal and learning log. It is recommended that students write reflections on the body of knowledge for each lecture, counting new substance knowledge. Besides, making

relations with the topic to what they already know, from this or other courses and composing a significant estimate of the knowledge, where the body of knowledge has consequence, in conjunction of making decisions about its value are suggested, as well (George, 2001). Such reflection forces the student to go ahead of simple facts and expressions or examples within the lecture, and engage them with material in a more significant manner.

2.6 Weblogs

How students can be made more active, responsible and self-directed is one of the most frequent questions of teachers who espouse independent study in their class. At present weblog is a practical advance to overcoming the complication mentioned above.

Weblog has been generally accepted used in e-learning during the recent years. It not only offers the private web idea, but also makes the command post function possible for learners to afford the prospect of making discussion together (Lin *et al.*, 2006). As Paquet's (2002) description, a blog possesses the following characteristics: Personal editorship, Hyperlinked post structure, frequent updates, displayed in reverse chronological order, free, public access to the content, and archival.

Currently numerous studies have focused on the use of social network systems such as blogs and Wikis in educational settings (Divitini *et al.*, 2005; Huck, 2007; Huffaker, 2005; Lin *et al.*, 2006; Maag, 2005).

This rapid growth reflects attempts to avoid the limitation of centralized authorship and enhance needs for immediate communication on knowledge-building community, as it allows substitute forms of learning, such as self-reflection, student-

student and student-tutor different to the predictable ways (Divitini *et al.*, 2005; Karger & Quan 2005).

Lan *et al.*, (2008) commence a Web-based Instructional Design & e-Learning KM Environment (WIDE-KM) (<http://elearning.ice.ntnu.edu.tw>) developed by eL-Lab of National Taiwan Normal University. It is a blog-based portfolio for teacher to systematize their teaching materials, reflect their professional development, to collect the feedbacks from their students or other audiences, and to interactive with their students both in class and after school.

Blogs can merge introverted and community relations in the learning process (Richardson, 2006). Williams & Jacobs (2004) argued that students have long learned as much from each other as they have from a trainer or a textbook. Oravec (2002) experiment that the blog has many dimensions that is appropriate to students' 'unique voices', authorizing them, and cheering them to become more significantly investigative in their thinking. In 2006, Dailey reflect on that the biggest benefit of blogs has more to do with something we always have too little of in the classroom—time.

Computer-Mediated Communication (CMC) is defined as any communicative transaction which occurs through the use of two or more networked computers. Limitations are tabulated in Table 2.1

Table 2.1
Limitation of CMC systems overcome by Weblog (Kim, 2008)

CMC limitation	Description	Overcome with Weblogs	Description
Management of communication	Coordination may be uneasy to set up since students have to agree on how frequently to communicate.	RSS delivery	RRS automatically delivers a list of updated information to log users. Users are able to check the list of information at their convenience.
Lurking	Lack of posting is often observed and online activity becomes diminished.	Personal blog	Blog is available for anyone for free. Each student work on their own blog to communicate with other peer students. A sense of ownership of a task increases the likelihood of successful online communication. In addition it helps student reduce anxiety.
Ownership	Current CMC systems do not provide a sense of ownership.		
Anxiety	Students feel uncomfortable with participating in online communication.		
Instructor centered system	Current system is based on teacher-centered, dissemination-based, constructing learning environment. The primary use of wiki is to keep teams' work information in one hub place and up to date.	Decentralized system	Bloggers have control over the structure of individual blog entries, which contributes to more comfortable circumstance where students are able to be encouraged to make reflection.
No archives	Email does not support archiving data so certain users have difficulty to catching up. Email users have to view long threads of discussion that is poorly organized.	Archive	Blogs enable users to achieve their entries and visitor's comments in chronological order or category-based order. RSS contributes to a "pull" rather than "push" technology, which make users feel less intrusive.

Given the concept of STS theory, Kim (2008) looked at the blog phenomenon by considering the interactions between blogging tools (a technical subsystem), blog users (a personnel subsystem), factors external to blogosphere (an external environment) and a blog (work system) (Figure. 2.2). More distinctively, the investigation was performed in terms of:

- Interactivity,
- An open system,
- Non-technical Internet users.

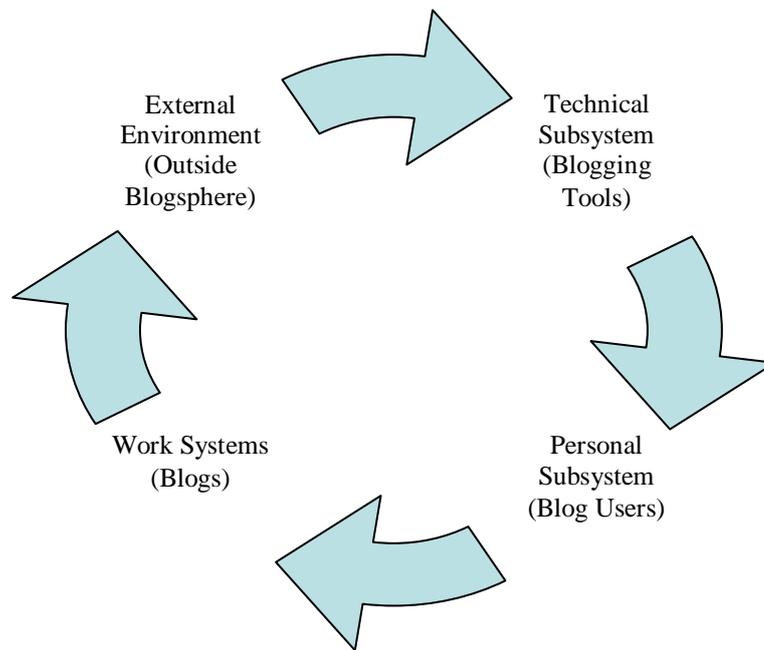


Figure 2.2
Mutually interdependent components of socio-technical systems regarding the phenomenon of blog.

Instructional blogging suggested additional prospects to employ students and extend the virtual classroom. Blogging can balance community building in hybrid and distance courses and can structure personal places in virtual spaces. Instructional blogging functions as a knowledge-centered instructional tool. Blogging expresses the importance of social and peer relations as foci of the learning community. It also exploits the three instructional techniques described by Clark and Mayer (2007). These authors sponsor supporting student knowledge achievement through:

- receptive techniques, which involve building instructional modules that open avenues to a great deal of information while limiting application and experimentation;
- directive techniques, which emphasizes on frequent responses from learners with immediate feedback from the instructor;

- Guided discovery techniques, which place the instructor in the role of the expert leading students toward identifying appropriate conceptual processes and solving real-life challenges.

Because of their municipal nature, blogs can be used as an instruction learning tool to supply students with identical access to imperative information, to increase students' considerate of specific issues, and to express students to discover supplementary textile (Siemens, 2005) Blogs provide themselves exceedingly well to the reaction intensification inherent in directive learning for the reason that the comments form attached to each entry permit instructors to attach content and added prompts.

Blogs can also be used to give confidence guided sighting and knowledge creation. This use of the guided discovery technique also persuades collaboration because students work together to construct knowledge. Using cognitive scaffolding, an essential ideology of constructivism, students return to the learning space, build upon preceding knowledge, think about what they have learned, and pierce deeper for more information (Richards, 2001).

Blogs appear to be used as a collaborative or reflective space to support students' reflection on resources and content (Williams & Jacobs, 2004; Dron, 2003). Farmer & Bartlett-Bragg (2005) preserve that the absorption of blogs allows for the combination of content, communication and participation, breaking down the traditional separation of these components, which is obligatory by a traditional learning management system. Bartlett-Bragg (2003) intended a five stage integration of a blog into a learning environment:

- Establishment,
- Introspection,
- Reflective monologues,
- Reflective dialogue,
- Knowledge artifact.

2.7 Concept Mapping

Using only traditional lecture-based learning is not sufficient for the students of the new generation. This type of teaching can be unsuccessful. It frequently makes more passive students in the learning process. By establishing web-based teaching systems students are capable to generate more constructive learning scenarios. The students possibly will be more active and more able to raise their own mental models of the learning objects, rather than doing only untainted knowledge attainment (Biggs, 1999).

Concept mapping is another type of learning tool facilitates. In this method learners visually review, capture, or develop knowledge. A visualization tool can connect both learners and tutors in an active learning process when they create spatial semantic displays of the knowledge, concepts, and skills that the learner possesses and attains (Saad & Zaghlolul, 2002).

Graphic organizers consequently, persuade and assist students to spot and signify relationships between different pieces of content and also between new and existing knowledge. The significance of helping students to having an important effect links between different pieces of content, and to relate new knowledge to existing knowledge is of innermost importance to learning, as highlighted by Ausubel (1963).

Graphic organizers are particularly supportive to students who are mainly visual learners of average or below average talented. As the process of making meaning to arrange and characterize the information can help these students store the content in their long-term memory in an organized and meaningful approach (Mohamed Amin, 2004).

Table 2.2
Some graphic organizers and their instructional purposes

Instructional Purpose	Example of Graphic Organizer
Brainstorm: generate and organize ideas/concepts	Concept Map
Sequencing: arrange ideas/concepts in a sequential manner	Continuum Scale, Flow Chart
Compare and contrast: show the similarities and difference between 2 or more concepts	Compare and Contrast Matrix or Map, Venn Diagram
Analysis: show the relationship between the parts of whole and how each part contribute to the whole	Fishbone Map, Spider Map, Tree Map

Ontology composes a pattern of the concepts in a domain and the relations among them (Albert & Lukas, 1999). Currently, there is a vast attention in ontology and their application for semantic web and e-Learning. Concept maps make an ordinary way of expressing available and presenting domain ontology. It is characterized by a set of concepts and a set of relationships (or relations) between them.

The primary idea of concept maps is based on the Ausubel's (1963) cognitive psychology (i.e., meaningful learning). It means that a learner whose learning goes on by the adaptation of new concepts (propositions) into existing conceptual (propositional) frameworks. Chen *et al.*, (2008) describe the concept map to play a critical role not only enhancing the importance of reflection and innovation for learners, but also linking the four stages (Knowledge management, instructional, learning and

technological tier) of system framework effortlessly. In terms of learners, they make use of the concept maps to study knowledge besides smoothing the progress of thinking, illuminating misconception, and estimation of learning effort (Chen *et al.*, 2008). Moreover, feedback can also be gained from the creator concept maps made by learners to improve their training.

Concept mapping supplies the platform's users like domain expert, author, instructor, learner and system developer, with a conciliator which can link new concept into existing conceptual framework, and a focus which can help common communication (Chen *et al.*, 2008)

CMap is one of the concept mapping tools. Users can share concept maps through the Internet using CMap's synchronous communication component according to Hamilton, (2001). IHMC researchers also combine CMap with case-based interpretation to carry knowledge access, reuse, and capture (Canas *et al.*, 1999). Gaines & Shaw (1995) proposed that concept maps be regarded as basic components of any hypermedia system, complementing text and images with formal and semi-formal active diagrams. The interconnection among a range of knowledge fundamentals, defined by many educators, can be used for data mining principles and for generating better structuring of the knowledge repository as a whole (Kristensen *et al.*, 2007).

2.8 Multimedia

Multimedia can allow information and ideas to be in touch in more naturalistic, meaningful and instinctive ways than has previously been possible with just text characters. Multimedia further supports modern forms of demonstration of knowledge, skill and practice.

Steeple, (2000) reported on the uses made by cooperating with practitioners of stored voice messages, called 'voice annotations'. The annotations have been used learning technology experts to generate and share reflections on group processes. The group was filmed taking part in discussions from which critical events have been selected and presented back to the group members as digital video clips. Voice annotations have been used by the contributors to propose reflections upon the clips and these interpreted clips are now being shared online among this community.

McDrury & Alterio, (2002) proposed that formalized storytelling is an effective way for students to reflect. Génereux and Thompson, (2008) noted 3 objectives for the digital storytelling activity:

- To reflect upon the personal significance of what they had learned in their courses,
- To express their thoughts and feelings in a nontraditional manner,
- To share their thoughts and experiences with their peers by showing them the movie.

Cyber anthropology is a theory and a new field of study designed at the analysis of both psychophysiology and psychophysics, semantic and semiotics of humans invented worlds viewed as multifaceted interactive systems (Libin & Libin, 2003). In brief, Cyber anthropology is identified as a study on how humans contract with the artificial worlds they have formed. There are three major domains which Cyberanthropology currently focuses on:

- The human dimension of computer generated reality including VR, Internet, WWW, and multisensory electronic games, and mobile connectivity;
- Embodied artificial intelligence and synthetic sensory systems in the form of robots and avatars;
- Symbolic representations of art and other creative activities mediated by human imagination (Thwaites, 2006).

Ogan *et al.*, (2008) studied on how to sustain students in an online environment in obtaining cultural knowledge and intercultural skill by viewing clips from featured films of the target culture. To test the effectiveness of a set of attention-focusing techniques (pause-predict-ponder), ICCAT was created. ICCAT is a simple trainer that improves an existing classroom model for the expansion of intercultural competence. It was established that the adding up the pause-predict-ponder seemed to guide students in gaining cultural knowledge and extensively increased students' ability to reason from an intercultural perspective.

2.9 Conclusion

Different methods for reflective learning such as learning portfolio, reflective journals, weblogs, concept mapping, Multimedia were fully reviewed in this chapter. The reports in other literatures available demonstrate the usefulness of these techniques. These led to the idea of designing a web, based on these techniques to improve the learning skills. The methodology on this issue has been fully discussed in the next chapter. Table 2.3 shows the advantages and disadvantages of reflective learning methods

Table 2.3
Advantages and disadvantages of reflective learning methods

Reflective Learning Method	Strength	Weakness
Portfolio	Assists teachers to understand students learning progress. Ability to store and organize content quickly and easily. Potential for development of information management.	Time demanding nature of development. Difficulties in mastering of its use and issues of privacy.
Reflective Journal	Endows the chance to learn from previous cases. Deep learning of subject Self awareness	Not easy accessible
Weblog	Students become more active, responsible and self directed	Requires internet access
Concept Mapping	Visually review, capture and develop knowledge	More useful for visual learners
Multimedia	Allow information and ideas to be in touch more. Naturalistic meaningful and instinctive.	Production is hard and access to it needs special software and tool