

## **CHAPTER II. LITERATURE REVIEW**

In order to establish the framework of this research, this chapter is to collect, analyze, and discuss literatures which are related to WBT and trainee satisfaction. And the following sections are presented by according to the sequence of discussion of WBT, discussion of trainee satisfaction, results of important researches, and factors affect satisfaction on WBT/E-learning.

### **Discussion of WBT**

In order to understand the field of WBT more clearly, some books which introduced definitions of WBT are read necessarily. Besides, WBT is a trend to train employees nowadays. But, “Why does it rise?” and “What are backgrounds to push its development?” These are also issues to be explored. And, owing to variety of training programs, choosing an appropriate method to deliver WBT is very important. Thus, types of WBT are necessary to be introduced.

#### Definition of WBT

WBT is always mixed with e-learning. The extent of e-learning is much larger than WBT. It is an instruction delivered on a computer by way of CD-ROM, Internet, or intranet (Clark & Mayer, 2003). However, web-based learning is taking internet as a tool and environment. Although the basic concept of web-based learning and WBT is the same, there is still a little difference between them. In generally, training has more specific objectives to expect employees to improve performance of jobs at present (Yu & Li, 2003). And learning means the communication and absorption of knowledge which is a more general term. We can say that the usage of learning supports the objectives of training. WBT is to let employees use intranet or internet to engage in distance learning. The enterprise puts training instructions on the server and

employees can design their learning plans based on their needs to choose the curriculums (Yu & Li, 2003). This is so-called WBT.

Why WBT can become the trend of training? That's because it has its own advantages. And these advantages are over the traditional classroom training (Horton, 2000):

*1. WBT can save several kinds of costs:* travel expenses of trainees and instructors.

Besides, the costs for classroom, chairs, desks, tables, whiteboards, and other suppliers such as laboratories are reduced or eliminated.

*2. WBT can provide more data to learners:* Learners can link to more database or libraries to get more information or books.

*3. WBT lets trainees reflect before responding:* When discussions are conducted by e-mail or discussion group, they can take their time answering questions. They can have longer time to think before respond.

Although there are much strength to attract employees and organizations, WBT also has some disadvantages such as:

*1. Trainees fear losing human contact.*

*2. Technical requirements are difficult to meet:* Some trainees may can't display courses in their browser or log in through the maze of the corporate intranet firewall.

*3. Too many disruptions:* The place to learn is not only limited to classroom. Sometimes, many learners find that it's difficult to learn at home or office. Because there are too many interruptions such as children or other jobs.

When more and more organizations begin adopting WBT, these weakness or obstacles of it need to be overcome and noticed.

#### Backgrounds for development of WBT

Although there are not all of companies adopt WBT as a training method, more

and more enterprises take it into consideration and have the willing to try it. Backgrounds that push rise of WBT are introduced as following:

### *1. Development of information technology*

As the advancement of technology, the method to train employees has been changed. Before Internet's age coming, the instructor used radio, recorder, video, television, newspaper, and books to train employees. At that time, it was very difficult to integrate these media and information. But now, all of these are not dreams any more. The barrier between different kinds of media has been eliminated. Each kind of information and media is not an individual system as before. Internet lets the relationship between information become much closer and connects all kinds of media. On the web, it can deliver information through web-cam, image & voice broadcasting, and synchronous & asynchronous communication. And owing to this advantage, it increases convenience of delivering information and removes the obstacle from space and time. All of these strengths make some changes to traditional classroom training. In order to make trainees more convenient to achieve the goal of learning, some parts of curriculums are replaced by web-based training gradually. As Internet becomes the indivisible part in our daily life in future, although WBT can't displace the function of classroom training completely, it will be the trend of training ineluctably.

### *2. Impacts of globalization*

Owing to the impact of globalization, the competition between enterprises becomes more and more intensely. So, the rapid update of information becomes more important. And, how to let all of employees have the latest information and knowledge in a period of the shortest time also becomes a key issue. Globalization is unavoidable development of human culture, and with such a phenomenon, it

deepens the cooperation and competition between international enterprises and local companies. Frequently, many things are the latest information in this moment, but at next second, it may become unavailable. Before the end of 20<sup>th</sup> century, new knowledge increased five to seven times each year, and half of skills which existed in the present would be obsolete (Yu & Li, 2003). So, treasuring time to let employees receive the latest information becomes the necessary condition of each company. And under this trend, the characteristic of eliminating space and time's barrier makes Internet become the best tool to transmit messages and knowledge to employees. The competition of globalization forces each employee need to own the latest skill, information, and knowledge. However, if all of companies offer these to staffs by adopting traditional classroom training, it would take a much longer period of time and slow down the speed of knowledge's transmission. So, it is necessarily and workably to practice WBT in enterprises.

### *3.Succession of knowledge within an enterprise*

Knowledge management is very important to a company. No matter it is a skill or experience, they all need to be transmitted within employees mutually. By this way, it can retain enterprise's strengthens and employees' competitiveness. Knowledge management is managing the limited resources of knowledge effectively, then, the next step is to use knowledge efficiently (Yu & Li, 2003). However, the way to manage knowledge is various. Oral teaching is one of the methods to preserve and receive knowledge. But, it is not the best way to engage in knowledge management. Because it's easy to generate some distorts and misunderstandings when time goes by. Besides, if a company uses words to record knowledge and experiences, after a long period of time, all the words and documents would become vague and old. So, in such a developed age of information technology, the system of Internet becomes another ideal choice. No

matter employees are at home or in other places, companies can let them absorb and review all kinds of knowledge and skills which are from the past to the present at any time. And, employees can learn all these things continually and update information at any moment. The scope of WBT is very wide. On one hand, it can arrange all of the curriculums to transmit knowledge which is from employees who worked in the past and skills which the job needs in the present to every member of the company. On another hand, it can let employees choose what kind of knowledge that they want to learn by the alternative of curriculums. By this way, WBT can increase the efficiency of learning and even avoid the problem of knowledge's overload. It is not only let the internal knowledge can be succeeded continually, but also let employees have more chances to fulfill their desire of learning.

### Types of WBT

When taking about WBT, it can't be ignored to introduce the four types of its delivery systems which are Web/computer-based training (W/CBT), Web/electronic performance support system (W/EPSS), Web/virtual asynchronous classroom (W/VAC), and Web/virtual synchronous classroom (W/VSC). The definitions of each type are as following (Driscoll, 1999; Wiley & Sons, 2002):

#### *1.W/CBT*

It is similar to CBT programs. In W/CBT, trainees engaged in self-paced programs that use multimedia. These programs are mostly used to achieve structured learning goals which related to transferring knowledge, building comprehension, and practicing the application of skills (Wiley & Sons, 2002).

#### *2.W/EPSS*

Using a W/EPSS, the trainee doesn't access the system until the skills or knowledge is required, and he or she decides how much information or training is

necessary to learn. Trainees can access instruction just in time and avoid what they don't need. The difference between W/CBT and W/EPSS is that the learners of W/CBT are asked to complete all of lessons and modules to have skills or knowledge for later use. But, in W/EPSS, trainees can choose the part they want to review or scan the steps to refresh their memories (Wiley & Sons, 2002).

### *3.W/VAC*

This kind of WBT permits trainees and instructors to engage in collaborative learning activities without being online at the same time. By this way, tools that they often used are e-mail, online forums, bulletin boards...etc. (Driscall, 1999).

### *4.W/VSC*

W/VSC asks trainees and instructors to online at the same time to participate in discussions, brainstorming, role plays...etc. Besides, some conferences on webs are also used to engage in this kind of WBT (Driscall, 1999).

The four types are used to deliver the WBT program. Different programs are suitable to different delivery systems. No matter which way will be implemented, taking objectives and contents of training programs into consideration is helpful to decide an appropriate WBT delivery system.

Backgrounds for development of WBT are owing to development of information technology, impacts of globalization, and succession of knowledge within an enterprise. The information technology of Internet makes people's life become more and more convenient. And according to the flexibility of web and easily access to link whole world's resources, it becomes a trend of training for companies. Besides, in order to react to the rapid change of knowledge in every second, using web to train all of employees for letting them obtain information immediately is the fastest and

most efficient way.

Although WBT becomes more and more popular, many people mix WBT with e-learning. Web-based learning is taking Internet as a tool and environment. Companies design or put training programs on the server or use the intranet to let their employees engage in WBT. And, there are four types of WBT delivery systems: W/CBT, W/EPSS, W/VAC, and W/VSC. Each type meets for different training programs. It depends on the content and objectives of training curriculums.

### **Discussion of Trainee Satisfaction**

There are not many studies or books to introduce what trainee satisfaction is or what dimensions included in it. But, it doesn't mean that the concept of trainee satisfaction is unimportant. In this section, the definition and significance of trainee satisfaction will be introduced in the following parts. Besides, some results of related researches are also listed to understand what factors affect trainee or learner satisfaction of WBT/E-learning.

#### Definition of trainee satisfaction

Trainee satisfaction is one of major criteria to evaluate outcomes of learning a program or curriculum. Researchers focus on different factors of trainee/learner satisfaction based on different purposes or research environments of studies. Some researchers regard learning satisfaction as trainees' reaction of feeling or perception to learning activities (Wang, 2001).

The most popular and influential model to evaluate a training program is Kirkpatrick's evaluation framework. Kirkpatrick divided criteria into four levels which are reaction, learning, job behavior, and results. The first one level (reaction) is what we called trainee satisfaction. The important question for this level is "Did the trainees like the program and feel it useful?" This makes a definition for satisfaction.

If trainees have positive reaction to this program, it will be easier to encourage them to attend training program in future (Desimone et al., 2002). It also means that if trainees can be satisfied with the training program, it will be helpful to motivate them receive trainings. If any dissatisfaction exists or trainees think they didn't learn anything, they may be reluctant to use skills or knowledge they obtained from this training program. But this reaction level of evaluation can't indicate whether the program met the objective of training beyond ensuring participant satisfaction (Desimone et al., 2002).

The way to evaluate satisfaction is mostly engaged by satisfaction questionnaires and it includes several aspects of training such as content, learners, objectives, methodologies...etc. However, Tello, Moscoso, Garc'ia and Chaves (2006) mentioned that there is a lack of validated satisfaction scales directly related to empirical definitions of dimensions included in theoretical models of evaluation in training programs.

#### Significance of trainee satisfaction

Why trainee satisfaction is so important? The first one reason is that trainees are the ultimate users of training program. And they are also the most important targets of training programs. If designers or organizations don't know what causes satisfaction or dissatisfaction, how can they improve training programs to encourage more trainees to attend and how can they gain more benefits to companies from training activities? Most of time, organizations hope their employees can receive good quality on learning. If trainees think that the quality of learning on web is not very well, the willing to attend training programs will be decreased. Then, as the previous part mentioned, the reluctant of using skills or knowledge they received will happen. The benefits of companies will be affected at this moment. Besides, quality of learning is related to satisfaction. When learners have higher satisfaction, they ultimately have



more positive perception of quality of online courses (Rodriguez, Ooms, Montanez, & Yan, 2005). This is why trainee satisfaction has its own significance.

### Related researches

There are many researches which focus on methods or process of evaluating training. Some parts of them are related to trainee satisfaction. This is what this part will introduce.

#### *1. Measuring Management Training: Two New Instruments ( Sheila & Derek, 1992)*

This research focuses on different kinds of management training. The researcher's purpose is to evaluate this training. Management trainings in this study were divided into the introductory program and the modular program. Introductory one is to those who are new to the management position and modular one is to those who have experiences or academic ability to their continued development. Parts of evaluations were divided into trainees' satisfaction, behavioral change, and knowledge acquisition. This research thought that there should be three parts of trainees' satisfaction evaluation which are content, methods, and outcomes. Results of this study found that the five-point satisfaction scale has the advantages of brevity, wide relevance and demonstrated reliability to measure trainee satisfaction of management training.

#### *2. Evaluating Workforce Development: Perspective, Process, and Lessons Learned ( Margaret, Christine, Carl, & Molly, 2003)*

This research thought that the reason that many groups or companies focused on training evaluation is because trainee satisfaction is of great concern to trainers and trainees. Implementation of skills and influences on organizational performance were what managers interested. When companies engage in evaluation, less of them focus on how much trainees received and how they use skills. If companies want to evaluate trainees, they have to longitudinal tracking of individual trainees not only focusing on

improving organizational performance and trainee satisfaction.

## **Results of Previous Researches**

There are many researches which related to satisfaction. Some of them focused on employees' training and others aimed at students' learning via web. No matter who is their research subject, the similar point between them is that most of these studies focused on adult learning. And we know that the targets of web-based training are also adults. So, in this section, the researcher will introduce several studies of these to see what factors have influences on satisfaction of learning or training through web. Besides, influential factors of WBT/E-learning will be generalized from these former studies at the end of this chapter. Results of some related studies are introduced as following.

### *1.Satisfaction with Sales Manager Training- Design and Implementation Issues (Alan, Rajiv, & Rolph, 2001)*

This research focused on sales manager training. It examined the relationship between trainee satisfaction and the format, site, instructor, instructional method, and content of the program. The author used questionnaire to engage in this study. Samples were 600managers who comes from random sampling and they ever received sales manager training. By the results, it found that the format of training was related to trainee satisfaction. When using the on-the-job coaching, trainee satisfaction from supervisors or peers was higher than using written training materials. Training site is also associated with trainee satisfaction. When the training was held in their companies, the trainee satisfaction was higher than which took place in other companies or training centers. As for training instructor, when the instructor who was a sales personnel, the satisfaction was also much higher. Besides, instructional method and content of the training program are related to trainee satisfaction. When using

in-basket exercise, video, and group discussion, managers had higher satisfaction. By these findings, the study gave us a guideline to determine how to design, where to take place, who to be the trainer, and how to teach when develop a training program especially in sales manager training.

### *2. Making Trainees Want to Learn (Thomas, 1988)*

This study used case study to let readers understand that how to make trainees have more willing to learn and keep their attention. The company that the author focused on was not a training company. This company involved in a big group of salesmen who engaged in production demonstration in shopping mall. From this company's experiences, this research found that if a company hopes to make trainees want to learn, giving trainee satisfaction was also necessary to include in the strategy. And the way to give trainee satisfaction is to give them extrinsic rewards such as promotion or commission and intrinsic rewards such as praise. If trainees can gain these, they will have more satisfaction on training. This was what the author found from this company.

### *3. The Effects of Personal Factors to the Satisfaction Level of Web-Based Training in Business Environment (Zeng, 2001)*

Samples of the research were three companies which are included in different industries- manufacture, high technology industry, and multimedia company. There were 250 questionnaires sent to these companies and 168 of which were used to analyze as the result of this study. In this article, it mentioned of the result that different character of jobs is significant to satisfaction on WBT. This means that when the job is more related to design or device, the employee would have higher satisfaction. The author also analyzed several variables and found that study of self-direction, motion, and attitude toward computer are positive correlation with satisfaction on web-based training. Besides, this study was as the same as other

researches which discussed about demographical variables. It indicated that when someone's educational level is at the highest or lowest point, his or her satisfaction of WBT would be close to higher side.

#### *4.A Study of the Learning Behavior, Satisfaction and Performance on Internet Learning (Wang, 2001)*

In this study, the researcher mentioned that satisfaction of learning is one of major items to measure the effectiveness of learning. Not only the personal factors of students but also teachers, curriculums, and environment of studying may have influences on satisfaction of learning. The result of this study from samples who were 264 students took Taiwan University's course (Management) in the first semester in 1999. And from this research, it mentioned that learning style, motions, and performance are related to satisfaction on internet learning. Besides, the result also found that the major reasons to push them study via internet are that they can choose any place to study, be flexible in studying by following their own plans, and learning in their leisure time. It also found that gender has no significant relationship with satisfaction of learning.

#### *5.A Study of Key Influential Factors on Satisfaction of E-learning (Lin, 2003)*

In this article, the researcher wanted to find out the key factors which would have influences on satisfaction of e-learning. Besides, the author generalized these factors into five aspects which are characteristics of students, teachers, instructions, technology, and design of system. The outcome of this study came from samples who were 238 students in National Kaohsiung Normal University and the total number of significant questionnaires was 97. Firstly, from results of this study, we can know that if learners think that the system of e-learning can improve their efficiency on learning, there would be a significant improvement on satisfaction. Secondly, this research found that the advantage of e-learning is its flexibility on space, time, and location.

This also affects learners' satisfaction. Besides, interactions between students, students-instructions, and students-teachers also have influences on satisfactions. When the level of interaction is higher, the satisfaction will also become much higher. And, the researcher also found that when learners have more confidences on their ability to use internet, their satisfaction will be increased. The variety of methods to evaluate how learners studied is also included in the key influential factors.

*6. Effects of Different Types of Interaction on Learning Achievement, Satisfaction and Participation in Web-Based Instruction ( Jung, Choi, Lim & Leem, 2002)*

This study focused on three types of interaction which are content-centered academic interaction, collaborative interaction, and social interaction. It also introduced what these types of asynchronous interaction are which let us have a brief understanding about that. From the authors' introduction, we know that content-centered interaction occurs between learners and instruction or learners and online resources. As for collaborate interaction, it is between learners. And social interaction is between learners and instructors. In this research, the participations were also students. After using questionnaires to assess students' satisfaction, the result pointed out that the learners' satisfaction is more related to the amount of active interaction with learners than with instructors. Besides, the outcome showed that the collaborative group has the high level of satisfaction with their learning process.

*7. Evaluation of Student Satisfaction: Determining the Impact of a Web-Based Environment by Controlling for Student Characteristics (Thurmond, Wambach, Connors, & Frey, 2002)*

The four authors used Alexander Astin's Input-Environment Outcome assessment model to evaluate the effects of controlling for students inputs when quantifying the relationship between environmental variables and student satisfaction. In the part of input variables, five items- perception of computer skills, knowledge of electronic

communications technology, number of Web courses taken, age, and distance from main campus were included. As for the part of environmental variables, six items were selected- felt instructor comments were timely, acknowledged a variety of ways to assess learning, spent more time studying for this course, participated in discussions, worked in teams/groups, and knows the instructor. And, the outcome variable was students' satisfaction.

After using multiple regressions to analyze data, authors found that knowing students characteristics can't help predict a student's satisfaction. Besides, receiving timely comments, having variety ways to assess learning, and working in teams/groups were statistical significant in predicting students' satisfaction. But, there was a negative relationship between working in teams/groups and the satisfaction. It showed that students who were more likely to work in teams/groups were less likely to be satisfied. Because that the face-to-face interaction was gone in the web-based course. Students needed to use some other electronics medium to communicate with other members. That' the reason why cause such a situation.

*8. Factors Affecting Student Performance and Satisfaction: Online Versus Traditional Course Delivery (McFarland & Hamilton, 2005)*

In this research, authors wanted to find out answers of some questions. And questions of those which related to satisfaction and online classes were "What factors contribute to satisfaction of online classes?" and "If making experiences of online and traditional classes as the same, can the lower level of satisfaction that existed in the online classes be overcome?". From the result, they found that there are several factors which have influences on satisfaction of online classes- how busy these students were, the level of prior experiences with web page development and Windows, effectiveness of the discussion board, effectiveness of other students for helping learn the material, the difficulty to learn conceptual material from the

textbook (lecture), and the ability to code web pages using HTML & ColdFusion. Owing to samples of this study were students who took E-business courses, this part skips to discuss about factors which were related to ability of coding web pages and experiences with its development. Because these factors were involved in professional ability to deal with the class of E-business and not all online classes need such kind of ability.

The result mentioned that the instructor can control three of these factors- the discussion board, other students' behaviors, and the material. The instructor can design different topics on the discussion board to increase the convenience for searching information to students. And the speed to reply questions which are posted also has an influence on the satisfaction. Besides, the instructor can choose a particular textbook (material) to inspire students to study and require or reward collaborative learning or teamwork to affect the effectiveness of other students on learning. These behaviors of the instructor can make the satisfaction of students on online learning environment become higher.

*9. Relationships between Students' and Instructional Variables with Satisfaction and Learning from A Web-based Course (Hong, 2002)*

This study discussed not only students' variables but also instructional ones. In the aspect of students' variables, it includes prior computer experience, gender, age, scholastic aptitude, and learning style. And student-instructor interactions, student-student interactions, perception of the course activities, perception of the asynchronous Web-based conferences, and amount of time spent on the course are included in instructional variables. In this research, the targets are 26 students who took the compulsory course of Statistics for Social Sciences and which was delivered via internet for 14 weeks. And questionnaires, faculties, and interviews were used to gain the results. This study found that there is no relationship between gender and

course satisfaction. Besides, students' age, learning styles, scholastic aptitude also have no influence on students' satisfaction of courses. But, the author found that students who have better initial computer skills were more satisfied with the course. It means that when students found that they faced some problems about computers, they felt lost and needed others to help them adapt to learning environment. This makes satisfaction of course decreased.

In the part of instructional variables, the author mentioned that if students were satisfied with student-instructor interactions, they were also more satisfied with the web-based course. And, the dynamics of groups has the same influence. In addition, he found that two factors -the amount of time spent on the course and perception of the asynchronous Web-based conferences were not related to students' relationship. But if students were satisfied with the materials that used in the conference, the students will be satisfied with course satisfaction. In this study, from analyzing the data, it also found that students have a problem in collaborative learning in the web-based course. Some students thought that others are not willing to share their knowledge during the discussion. So, it suggested that web-based learning environment needs to provide more structure and guidance to students for to learn in the online environment.

*10. The Effect of Demographic Variable on Achievement in and Satisfaction with Online Coursework (Barakzai & Fraser, 2005)*

This study focused on demographic variables which were native language, gender, and computer experiences to see the influences on satisfaction of online courses. Samples that authors used to investigate the outcome were 290 students of three universities in California who studied to be advanced practice clinicians. And the instrument was questionnaire. Both qualitative and quantitative questions were adopted. From the result, it mentioned that the native language has no influence on



satisfaction. It was hypothesized that non-native English users will have more difficulty in online courses and some professional words of materials. But, after engaging in survey, it found that the native language doesn't make the satisfaction of online courses be increased or decreased. Besides, although gender would affect the achievement of courses, it has no influence on students' satisfaction on online courses. As for experiences of computer, researchers regarded that if a student who is not familiar with computer and has poor skills of that, he or she may has less satisfaction on online courses. That's because they will spend a lot of time to find out the way to operate it. However, the final finding revealed that none of factors which were related to experiences of computer affect the satisfaction of online courses. From the conclusion of this article, the three factors- native language, gender, and experiences of computers have no influence on satisfaction of online instruction.

### **Factors Affect Satisfaction on WBT/E-learning**

From reviewing various literatures, there is no consistent category of influential factors on WBT or E-learning satisfaction. Many researches focused on discussing different detailed factors instead of on extensive dimensions. But, in "A Study of the Learning Behavior, Satisfaction and Performance on Internet Learning" (Wang, 2001) and "A Study of Key Influential Factors on Satisfaction of E-learning" (Lin, 2004), they generalized factors which have influences on satisfaction of WBT into several categories. The common categories between the two studies are characteristics of students (personal factors), teachers, and instruction (curriculum). Besides, in Wang's study, in 2001, mentioned of online environment of studying. And, in Lin's study in 2004, categories of technology and design of system were also included. Categories of satisfaction will be changed by the difference of each research's topics. And according to these studies, influential factors of satisfaction on WBT will be categorized in to six

categories which are characteristics of trainees, instructors, instruction, technology, design of system, and characteristics of WBT environment in this research. The detailed influential factors under each category will be introduced in the following paragraphs.

### *1.Characteristics of trainees*

The common items of trainees or learners' characteristics from many studies are gender, age, and experiences of computers. From results of many researches, gender and age have no influence on learning satisfaction (Barakzai & Fraser, 2005; Hong, 2002; Thurmond et al., 2002; Wang, 2001).

As for experiences of computers, there are still many divergent opinions. Some researchers found that experiences and skills of computers are positive related to learning satisfaction (Hong, 2002; Lin, 2003; Zeng, 2001). But some researches mentioned that this factor have no influence on satisfaction of learning (Barakzai & Fraser, 2005).

There are some other factors of trainees' (learners') characteristics such as the frequency for using internet, experiences of participating discussion board, the times for go to the website are related to learning satisfaction (Wang, 2001). And, different character of jobs is also significant to satisfaction on web-based training. Besides, when someone's educational level is at the highest or lowest point, his or her satisfaction of web-based training would be close to higher side (Zeng, 2001). For some researches, how many online courses that learners take was also included (Thurmond et al., 2002). In the rest of other items, it includes scholastic aptitude and learning style. But, studies pointed out that they have no influence on students' satisfaction of courses (Hong, 2002). Besides, Barakzai and Fraser in ever mentioned that the native language has no influence on satisfaction in 2005.

## *2. Instructors*

Interactions between students and instructors have influences on satisfactions. When the level of interaction is higher, the satisfaction will also become much higher (Hong, 2002; Lin, 2004). And, Jung, Choi, Lim, and Leem (2002) pointed out that the learners' satisfaction is more related to the amount of active interaction with learners than with instructors. Besides, receiving timely comments from instructors is statistical significant in predicting students' satisfaction (Thurmond et al., 2002). And the speed to reply questions which are posted also has an influence on the satisfaction (McFarland & Hamilton, 2005).

In addition to the two main items, the instructor in terms of his devotion to the course and the teaching style of instructor are also considered as factors related to learner's satisfaction on online learning (Faul et al., 2004).

## *3. Instruction*

Several researches found that difficulty to learn conceptual material from lectures is related to learning satisfaction via web (McFarland & Hamilton, 2005). If students were satisfied with the materials that used in the web conference, the students will be satisfied with courses (Hong, 2002). And, interactions between students and instructions also have influences on satisfactions (Lin, 2003). There are many types of interaction can affect learning satisfaction. Collaborative interaction is also an influential factor. The outcome showed that the collaborative group has the high level of satisfaction with their learning process (Jung et al., 2002). However, some studies showed that there is a negative relationship between working in teams/groups and satisfaction. It revealed that students who were more likely to work in teams/groups in classes, they were less likely to be satisfied (Hong, 2002; Thurmond et al., 2002).

## *4. Technology*

The quality of technological tools is included. Because, learners not only use

computers but also web-cam or some other tools to engage the online course. So, the quality of these technological tools is very important. Besides, the most important tool for WBT is Internet. The speed to link internet is a factor has influence on learners' satisfaction. When the speed is too slow, it would make learners' satisfaction be decreased (Lin, 2003).

#### *5.Design of system*

The variety of methods to evaluate how learners studied is also included in the key influential factors of leaning satisfaction (Lin, 2003; Thurmond et al., 2002). Besides, the discussion board which included in system or not is also an influential factor. Effectiveness of the discussion board is related to learners' satisfaction (McFarland & Hamilton, 2005). And, learners are more satisfied with online learning because they could access the online web-links to important sites (Faul et al., 2004).

#### *6.Characteristics of online environment*

Advantages of online environment which are learners can choose any place to study, flexible to study by following their own plans, and learn in their leisure time are also related to learners' satisfaction (Lin, 2003; Wang, 2001).

The categories of factors which affect training/learning satisfaction on WBT/E-learning are categorized into six categories. In order to make it more clearly, the following table is also a summary of the above paragraphs.

Table 2.1 *Summary of influential factors on WBT/E-learning satisfaction*

<b>Categories of Factors</b>	<b>Factors</b>	<b>Researchers</b>
1. Characteristics of trainees	1.1 Experiences of computers	Barakzai and Fraser, 2005; Hong, 2002; Lin, 2004; Zeng, 2001
	1.2 The frequency for using internet	Wang, 2001
	1.3 Experiences of participating discussion board	Wang, 2001
	1.4 Different character of jobs	Zeng, 2001
	1.5 Educational or salary's level	Zeng, 2001
	1.6 How many online courses that learners take	Thurmond et al., 2002
2. Instructors	2.1 Interactions between students and instructors	Hong, 2002; Lin, 2003
	2.2 Receiving timely comments from instructors	Thurmond et al., 2002
	2.3 The speed to reply questions which are posted	McFarland and Hamilton, 2005
	2.4 The instructor in terms of his devotion to the course	Faul, Frey, and Barber, 2004
	2.5 The teaching style of instructor	Faul, Frey, and Barber, 2004
3. Instructions	3.1 Difficulty to learn conceptual material from lectures	McFarland and Hamilton, 2005 ; Hong, 2002
	3.2 Interactions between students and instruction	Lin, 2004
	3.3 Collaborative interaction of activities in class	Hong, 2002; Jung et al., 2002; Thurmond et al., 2002;
4. Technology	4.1 The quality of technological tools	Lin, 2004
	4.2 The speed to link internet	Lin, 2004

Table2.1 (Continued) *Summary of influential factors on WBT/E-learning satisfaction*

<b>Categories of Factors</b>	<b>Factors</b>	<b>Researchers</b>
5. Design of system	5.1 The variety of methods to evaluate how learners studied	Lin, 2004; Thurmond et al., 2002
	5.2 The discussion board which included in system or not	McFarland and Hamilton, 2005
	5.3 Access the online web-links to important sites	Faul, Frey, and Barber, 2004
6. Characteristics of online environment	6.1 Choose any place to study	Lin, 2004; Wang, 2001
	6.2 Flexible to study by following their own plans	Lin, 2004; Wang, 2001
	6.3 Learn in their leisure time	Lin, 2004; Wang, 2001