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Enhancing Interactivity in Web-based Instruction in Accordance with Institute of Technology Students' Satisfaction Reaction toward E-Learning

Abstract

The purpose of this study was to understand in deep about the faced hardness, level of acceptance, and satisfaction reaction for those students at Institute of Technology who were completed WBI courses and focus for the improvement of interactivity instruction in the future for WBI courses.   The population for the study was all Institute of Technology students.   The instrument used to collect data was designed by a group of students who took "Internet" class of researcher. The total response numbers for this study which was posted on GAIS searching engine (http://gais.cs.ccu.edu.tw/) are 64, in them had 89% people understood distance learning, and only 11% people did not recognize distance learning.   Surveyed students used WBI is around 42%.   Concerning with the resources of WBI, the results shown that 74% students did not think the resources are plenty.   There is no significant distinguish between effect of WBI (54%) and traditional instruction (46%).   Students understood course contents was achieved high to 69%, and proposed more questions under WBI than traditional classes.   The highest percentage for students who disliked the WBI is "learned nothing" (40%).   Level of satisfaction is not so significant, since the no opinion response is 64%. The results shown that spent hours on Internet weekly more than 15 hours is 59%, however, most students only spent 0 - 2 hours on WBI website.   In the future, except to discern students' purpose on learning by using WBI, teachers also need to very careful to examine the addressed contents, interactivity, and quick responses from students toward WBI.

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Introduction and theoretical frameworks

The quest for interactivity has become a necessary goal in the "design and provision" of distance education programs (Oliver & Mcloughlin, 1996).   Advanced technology can be used to enhance communication and overcome the isolation of distance (Flottemesch, 2000). Oliver and McCloughlin (1996) further mentioned that in the context of distance education, "any learning material or learning environment is usually said to be interactive."   Berge (1999) provides a broader description of interaction in a distance setting: "Interacting is two-way communication among two or more people within a learning context, with the purposes either task/instructional completion or social relationship-building, that includes a means for teacher and learner to receive feedback and for adaptation to occur based upon information and activities with which the participants are engaged."

A valuable point from which to view issues related to distance education is to recognize the parts from which it is composed (Murphy and Terry, 1995).   Gamble and Gamble (1989) proposed a model for any type of communication containing 4 different parts (see Figure 1):

(a)   Sender - or source of information, the sender can be a person, group of people, or an entire institution.

(b)   Message - the information need to be communicated.

(c)   Channel – or method by which the message is communicated.

(d)   Receiver – the person, persons, or institution to which the message is targeted.

However, there should have a crucial component of "feedback" to represent the interaction between senders and receivers. These five components are important in evaluating the potential success of E-learning web education efforts for relative educational programs. Overall, distance education research has focused primarily on the two former factors with more limited evaluation of the latter two.

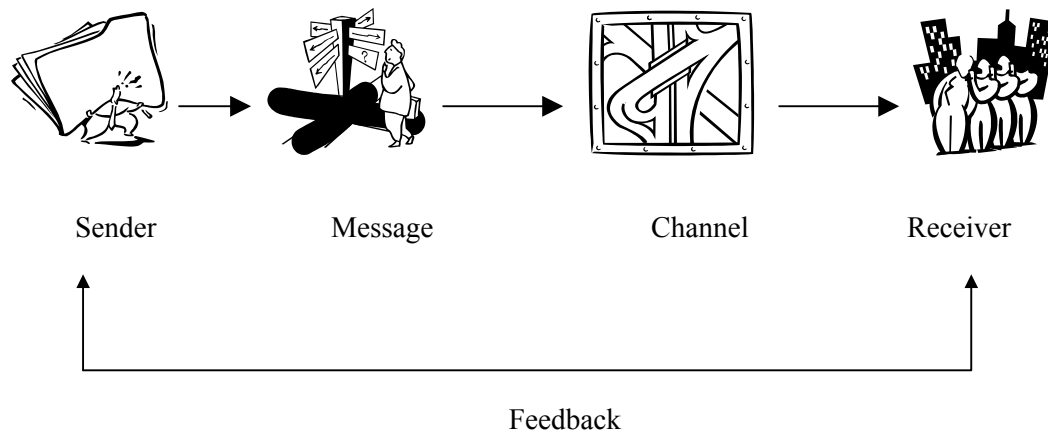| Sender | Message | Channel | Receiver |

Feedback

Figure 1. Modified Gamble and Gamble (1990) model

Web-based training (WBT) is here to stay. Many companies that once viewed WBT as a fad are now quick to offer online training programs due to the savings, flexibility, and interactivity that these courses often provide (Powell, 2000). For whatever reason, the use of WBT is steadily increasing. The popularity of WBT is growing at such a high rate that about 500 products are now on the market for online learning (Torode, 1999). According to McGee (1999), "technology-based training, including web-based solutions, will represent half of all training by the year 2002, up from 25% [in 1998]." According to the Gartner Group, by 2003, 40% of e-learning activities will be directed at customers (Fister, 2000).

Training can be delivered using a complexity of media, such as the traditional classroom and computer-based training.   Choosing Internet technologies to deliver training should occur only after careful consideration of a number of factors.   These factors include what is taught, who is taught, where the teaching takes place, when the teaching takes place, and how the teaching is supported (Powell, 2000).   Table 1 was summarized Powell's comments about the factors to consider when deciding whether to used WBT.

Table 1. Factors to consider when deciding whether to used Web-based training

Who is Taught	What is Taught	Where the Teaching Takes Place	When the Teaching Takes Place	How the Teaching is Supported
Culture of the organization	Domain of learning	Technical infrastructure	Just-in-time	Administration
Size of the organization	Stability of content		Anytime	Technical support
Learner characteristics	Importance of content consistency		Frequency	Corporate support
Number of Learners	Content complexity			Instructor support
Geographic	Media			Development

dispersion of learners	complexity			support
Number of training sites	Requirement for special equipment			
Consequence of time off the job	Format of current materials			
Preferences of learners	Confidentiality			

Development of interactive Web-based instruction (WBI) has been widely discussed and

applied in instructional design (Berge, 1999; Gilbert & Moore, 1998, Khan, 1997; Sherry &

Wilson, 1997; Starr, 1997; Liaw & Huang, 2000).   Instructional design for educational

purposes is the systematic design of teaching and learning environments.   This design may

include different methods and media, such as programmed instruction, direct instruction,

self-instructional textbooks, computer-based training, and interactive multimedia.   Within

the context of K-12 or higher education, instructional designers are usually asked to

implement WBI with a high quality of interactivity (Liaw & Huang, 2000).   Gilbert and

Moore (1998) once asked in regarding interactivity: "Do we have a clear idea that we are

using these new features because they will allow us to use truly interactive and adaptive

techniques that will enhance student learning?" (p.29)

Purposes and Objectives

The purpose of this study was to understand in deep about the faced hardness, level of

acceptance, and satisfaction reaction for those students at Institute of Technology who were

completed WBI courses and focus for the improvement of interactivity instruction in the

future for WBI courses.   The objectives, stated as questions, were:

1.   What are some basic attitudes (understanding, usage, perception of resources,

     perception of effectiveness, proposed action, etc.) of surveyed Institute of

     Technology students toward WBI?

2.   Are there difference in many aspects between WBI and traditional

     instructions?

3.   What are some reasons for students did not like WBI?

4.   What is the level of acceptance for students after WBI?

5.   Are there really increase students' learning interests (satisfaction) from WBI?

Methods and Procedures

The population for the study was all Institute of Technology students.   The instrument

used to collect data was designed by a group of students who took "Internet" class of

researcher.   After careful explanation about the "Internet Questionnaire" issue in the

beginning of the class, this group will go on to collect information from literature, design the

questionnaire, and upload the internet questionnaire which was designed by MS FrontPage

2000 to the free service academic web site GAIS searching engine (http://gais.cs.ccu.edu.tw/)

for a month period (from march 1, 2002 to April 4, 2002) survey, and then report the final

results at the end of the class.   Besides that, they also make recommendations for future

study.   The total response surveyed students are 64, since researcher told them do not

proceed to use E-mail to promote, because this research is trying to get initial idea about the

response rate from voluntarily action.   Data were analyzed using SPSS 10.0 on PC.

Descriptive Statistics were calculated for each variable.   Responses and Percentages were

used to summarize agreement or disagreement with items about basic attitudes toward WBI,

comparisons between WBI and traditional instruction, reasons not like WBI, level of likeness,

level of acceptance, and level of satisfaction toward WBI.

Results

The total response numbers for this study which was posted on GAIS searching engine

(http://gais.cs.ccu.edu.tw/) are 64, in them had 89% people understood distance learning, and

only 11% people did not recognize distance learning.   Surveyed students used WBI is around

42%.   Concerning with the resources of WBI, the results shown that 74% did not think the

resources are plenty.   There is no significant distinguish between effect of WBI (54%) and

traditional instruction (46%), however, effect from WBI looks like tiny better than traditional

instruction.   Students understood course contents was achieved high to 69%, and proposed

more questions under WBI than traditional classes, the agreed to not agreed percentage are

59% to 41%, respectively (Table 1).

Table 1. Basic Attitudes of Surveyed Students toward WBI, and Comparisons Between WBI

and Traditional Instructions

Items	Response	Percentage
Understanding distance learning	Yes	89%
	No	11%
Used WBI instructions	Yes	42%
	No	58%
Resources of WBI are very plenty	Yes	26%
	No	74%
Effect of WBI is better than traditional instruction	Yes	54%
	No	46%
Understanding course contents taught on WBI	Yes	69%
	No	31%
Proposed more questions under WBI than traditional classes	Yes	59%
	No	41%

Table 2 summarized the reasons for those students who were disliked WBI.   The

highest percentage is "learned nothing" (40%), and followed by "too troublesome" (20%),

"others" (20%), "too boring" (13%), "no facility for learning at home" (7%), and no taste for

new stuff (0%).

Table 2.   The Reasons For Students Who Were Disliked WBI

Items	Response	Percentage
Reasons for dislike WBI	Too troublesome	20%
	Too boring	13%
	Learned nothing	40%
	No taste for new stuff	0%
	No facility for learning at home	7%
	Others	20%

Concerning with the level of likeness toward WBI, the results shown no significant

positive answer to that, because about 42% students gave "no" response, and 52% students

did not care about the difference, and only 6% gave definite "yes" answer to support the

notion that WBI is more favorable than traditional instruction.

Table 3. Level Of Likeness Of Students Between WBI And Traditional Instruction

Like WBI more than traditional instruction	Yes	6%
	No	42%
	Did not care	52%

In Table 4, surveyed students had expressed "no opinion" (64%) answer about the

satisfaction after WBI, and comparison between satisfaction and not satisfaction site are 19%

to 17%, respectively.   The majority of the students held "mediocre" attitude.

Table 4. Level Of Satisfaction Of Students After WBI

Satisfaction after WBI	Strongly Satisfaction	6%
	Satisfaction	13%
	No opinion	64%
	Not satisfaction	15%
	Strongly not satisfaction	2%

First part of the Table 5 listed students spent hours on Internet within a week.   We can

clearly observe the most hour interval is "more than 20 hours" (40%), then followed by "0 – 5

hours" (16%), "5 – 10 hours" (16%), "15 - 20 hours" (13%), and "10 – 15 hours" (9%).   On

the second part, we can vividly observe that students spent most hour range on relative WBI

website is "0 – 2 hours" (73%).

Table 5. Students Spent Hours On Internet, And Their Activity Concerning With WBI Website

Spent hours on Internet in a week	0 – 5 hours	16%
	5 - 10 hours	16%
	10 – 15 hours	9%
	15 – 20 hours	13%
	More than 20 hours	46%

Spent hours on WBI website in a week	0 – 2 hours	73%
	2 – 4 hours	9%
	4 – 6 hours	9%
	More than 6 hours	9%

Conclusions and Recommendations

Conclusions

From the results, 89% of 64 surveyed students who can recognize what is the distance

learning? but only 42% of them used WBI.   We can separate as two groups to further

conclude the study:

1.   Used WBI students

Twenty-seven out of 64 students (42%) had experience with distance learning, that

explained the situation about the extension of distance education still needs to put

more effort on it, and 74% students felt resources of WBI is less than traditional

instruction, and that information still needs to go on further examination.   Around

45% students considered the learning effect of WBI was better than traditional

instruction, and this result can explain in the situation of traditional instruction, the

way of address by the instructor is more uniform, it is hard to make students to pay

attention on it in the long run, students will have a lot of doubts on their mind if they

lost their concentration.   If the contents put on the Internet, students can preview and

review any time according to their own paces, even they can download the contents

for study benefit, under this situation, they not only had the benefit of not facing the

drawbacks in traditional class, but also had the benefit of flexibility on learning.   The

result shown 69% students understood course contents taught on WBI.   Another

finding is a major improvement for Asian student, there is about 59% students are

brave to proposed more questions to teachers than traditional classes, because most of

students are very quiet in the traditional classes, though had a lot of questions in mind,

but they don't have guts to spit out the questions that they really want to know.

Although most of students (64%) gave a "mediocre" answer toward satisfaction after

WBI, but the result still give the positive sign in the future, because the score is more

than average number 3.

2.   Students did not have experience to use WBI

There are 37 students did not use distance learning.   Around 40% students

expressed learned nothing from WBI, and followed by too troublesome, too boring,

etc.   As further investigation, we can see those people did not have experience on

WBI, so they will express "learned nothing" attitude toward WBI, if someone can

spent time to explain the advantages of WBI, or the way to use WBI, maybe they

can change their negative attitude into positive site.

The results shown that spent hours on Internet weekly more than 15 hours is 59%,

however, most students only spent 0 - 2 hours on WBI website.

As a whole, most students think three major reasons caused them dislike traditional instruction: (a) they could not fully understand what are they listened on class, (b) not easy to concentrate, and (c) easy to take a nap.   Students think the advantages for traditional class is get more quick response from teacher, and high interaction than WBI.   The advantages of WBI can be classified as repeatedly learning to improve acquisition, learning by their own paces, and flexibility on time.

Recommendations

In according to above conclusions, we also can make two sites of recommendations, one site for the teachers, and the other site for the students.

1.   The most major reason for teachers did not used the WBI maybe they think it was too troublesome, because teachers need to spend extra hours on the preparation of teaching materials.   Not only because about the preparation, bust something also concerning with the execution, such as upload or sometimes download the materials into Internet or own computers, and sometimes teachers will spent some extra money about the preparation of teaching materials for their assistants.   On the other hand, funding and administrative supports from school also played very major reasons for teachers to go on WBI.

2.   As students, the WBI is worthy when they really want to learn something.

Especially WBI in Taiwan still plays an computer-aid instruction role, as an instructor, we need to very careful to examine the addressed contents, interactivity, and quick responses from students, because in any form of teaching and learning environment, teachers hold the key, and lead the students into the door to get the right thing that they need.   Maybe in the future, the trend will be focused on the united WBI and traditional instruction.

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