การประเมินความรู้และพฤติกรรมของผู้เรียนจากกระบวนการถ่ายโอนความรู้ จากผู้สอนไปยังผู้เรียน

Assessing Learners Perception and Behavior of Learners in Knowledge Transfer from the Instructor to Learners

Korawan Suebsom
Nakhon Si Thammarat Rajabhat University

บทคัดย่อ

บทความวิจัยนี้มีวัตถุประสงค์เพื่อการประเมินความรู้ที่ได้จากการรับรู้และพฤติกรรมของผู้เรียน โดยเน้นให้ผู้เรียนสามารถที่จะเรียนรู้และถ่ายทอดความรู้ออกมาในรูปแบบของเอกสารหรือการกระทำที่เรียกว่า externalize ได้ โดยทั่วไปแล้วในการเรียนการสอนความยากง่ายขององค์ความรู้ และรวมไปถึงการทำความเข้าใจในองค์ความรู้ที่ถ่ายทอดโดยผู้สอนนั้น เป็นอุปสรรคและปัญหาของผู้เรียนในการทำความเข้าใจและถ่ายทอดเนื้อหาที่เรียนออกมาเป็นองค์ความรู้ในรูปแบบของเอกสาร หรือคำพูดที่สามารถสื่อสารหรืออธิบายให้ผู้อื่นเข้าใจได้ นอกจากนี้คุณลักษณะขององค์ความรู้ก็เป็นปัญหาที่สำคัญของการถ่ายโอนความรู้เช่นเดียวกัน เพราะบางครั้งคุณลักษณะขององค์ความรู้จะทำให้ผู้เรียนสับสน หรือเข้าใจคลาดเคลื่อนในเนื้อหาที่เรียน ซึ่งในการทำวิจัยครั้งนี้ ผู้วิจัยได้มุ่งศึกษาคุณลักษณะขององค์ความรู้และความสัมพันธ์ของคุณลักษณะขององค์ความรู้ที่ส่งผลต่อการเรียนรู้และพฤติกรรมของผู้เรียน ในขณะที่มีการเรียนการสอนในห้องเรียน โดยวัตถุประสงค์ของการศึกษาวิจัยครั้งนี้แบ่งเป็นสองประเด็น ประเด็นแรกคือ ศึกษาค่าความสัมพันธ์ของคุณลักษณะขององค์ความรู้ที่คลาดเคลื่อนและซ้ำซ้อน (Knowledge Ambiguity) ที่ส่งผลต่อความยากง่ายและความเข้าใจของผู้เรียน ประเด็นที่สอง คือศึกษาและหาค่าความสัมพันธ์ของคุณลักษณะขององค์ความรู้ที่มีอยู่ของผู้เรียน (Knowledge Disruption) ที่ส่งผลกระทบต่อทัศนคติและพฤติกรรมของผู้เรียนว่านำความรู้ไปประยุกต์ใช้ในทางที่ถูกหรือไม่ การศึกษาวิจัยครั้งนี้ได้พัฒนารูปแบบของโมเดลแบบประเมินความรู้และพฤติกรรมของผู้เรียน และใช้รูปแบบวิธีวิจัยเชิงสำรวจโดยการเก็บข้อมูล จากกลุ่มตัวอย่างซึ่งเป็นนักศึกษาชั้นปีที่ 3 ของมหาวิทยาลัยราชภัฏนครศรีธรรมราช มหาวิทยาลัยทักษิณ และมหาวิทยาลัยราชภัฏสงขลา จำนวน 326 คน โดยสถิติที่ใช้คือ การวิเคราะห์ข้อมูลแบบองค์ประกอบ (Factor Analysis) เพื่อวิเคราะห์แบบสอบถามและสร้างโมเดลแบบประเมินความรู้และพฤติกรรมของผู้เรียน และใช้สถิติเชิงถดถอย (Multiple Regression Statistic) เพื่อวิเคราะห์หาค่าความสัมพันธ์และทำนายข้อมูลตามวัตถุประสงค์

จากการศึกษาวิจัยพบว่า ความยากง่ายและความซ้ำซ้อนขององค์ความรู้ส่งผลกระทบต่อการเรียนรู้และรับรู้ของผู้เรียน โดยมีระดับค่าความแตกต่างอย่างมีนัยสำคัญทางสถิติที่ระดับ .01 และการวิจัยนี้สามารถสรุปได้ว่าคุณลักษณะขององค์ความรู้มีอิทธิพลต่อการเรียนรู้และพฤติกรรมของผู้เรียน

คำสำคัญ : การรับรรู้ การเรียนรู้ พฤติกรรม ทัศนคติ ทักษะ ความซ้ำซ้อนขององค์ความรู้

ABSTRACT

This paper represents of knowledge transfer from perspective of learners perception and behavior of learners. Being the recipients of knowledge, learners are confronted with varying degree of difficulties in terms of understanding the knowledge transfer to them. These problems of knowledge transfer came from the key characteristics of knowledge via knowledge ambiguity and knowledge disruption. The purposes of this study are to investigate that key characteristics of knowledge have whether affected the learners' perception and behavior of learners (attitude and practice).

This study has developed an assessment model which includes sections; demographic data, characteristics of knowledge, learners' perception and behavior of learners. This study used an assessment model to assess the knowledge transfer from the instructor to learners. The study used survey research and collected the data from 326 students who were in the third year level of education and enrolled the computer and Information technology subject at Nakahon Si thammarat Rajabhat University, Songkhla Rajabhat University and Taksin University. The factor analysis was used to test the validity and reliability of the instrument and then constructed an assessment model for assessing knowledge transfer from the learners via the problems of the key characteristics of knowledge, learners' perception and behavior of learners. The hypotheses were translated by using a multiple regression to predict the relationship between knowledge ambiguity and learners perception, and also tested the relationship between knowledge disruption and behavior of learners.

The majority findings of this study found that the knowledge ambiguity had affected the perceiving knowledge of learners and reported the significantly relation between knowledge ambiguity and learners' perception at the level of .01 while the knowledge disruption had affected the behavior of learners and showed the significantly relation between the knowledge disruption and behavior of learners at the level of .01 also. Therefore, this study can summary that the key characteristics of knowledge have affected the learners' perception and behavior of learners. Therefore, the findings from this study would be to the instructor’s benefit for improving the transferring method and also useful for the learners to prepare themselves for the next time.

Keywords: Learners' Perception, Behavior of Learners, Attitude of Learners, Skill of Learners, Knowledge Ambiguity, Knowledge Disruption

Introduction

Knowledge transfer is often used to exchange the knowledge between among individuals, teams, groups or organization. It is also very important because without it, every problem solving approach or operating skill would have to reinvent each time that the knowledge is needed. Indeed, it may not be overstating the case to say that knowledge transfer is fundamental process of civilization and focus of learning, which is critical all advancement.

Education, a major institutional force in the socialization of the individual, is a concern about managing knowledge transfer from the instructor to learners. The instructor is a trained expert in a particular field and uses different resources in order to transfer knowledge to learners. The resources from the link between what the instructor needs to convey and what the learners need to learn. The ability of the instructor to select the appropriate methods to transfer knowledge to learners and assessing learners' performance is one of the most critical responsibilities of knowledge from the instructor to learners. The main reason why assessment of knowledge transfer is important is that assessment provides the important feedback of each stage of the knowledge process. The results of assessment reflect how and what the instructor transfer, how and what learners learn and what happen during the process of knowledge transfer. This study has developed the assessment model and used this model to assess the learners' perception and the behavior of learners.

This study emphasized on the characteristics of knowledge, ie, knowledge ambiguity and knowledge disruption.

Knowledge ambiguity is a key characteristic of knowledge that makes knowledge transfer difficult, since, knowledge is complex. It is difficult to understand the meaning of the word. Also it can make learners doubt the meaning of the word. When the instructor transfer knowledge to learners and learners are not clear of the meaning and objective of the knowledge, it will affect the perception of learners and learner's abilities to transfer knowledge into action. In addition, higher knowledge ambiguity in the process of knowledge transfer means the learners' perception is lower contributing to poor understanding of knowledge.

Knowledge disruption means disturbing or interrupting the normal operation of something (Compact Oxford English dictionary, 2005). Knowledge disruption can be disruptive behavior of learners in using technology and also the learning environment in form of attitude of learners. The disruptive behavior can be related to the attitude and practice of learners. Since, the significance of transferring knowledge to learners is dependent on the different background, different cultures, different learners' perspective, and the context in understanding by learners. The disruptive behavior of learners and the learning environment could affect the transferring of knowledge.

Objective of the Study

The finding of this study is assessing the learners 'perception and behavior of learners in knowledge transfer from the instructor to learners. The following objectives are used to guide the study:

1. To construct a model for assessing learners' perception and behavior of learners

2. To investigate the key characteristics of knowledge have affected the learners' perception and behavior of learners by using an assessment model

Hypotheses

Based on the research questions and the previously studied review of literature the following hypotheses were formulated.

H1: Knowledge ambiguity has affects the learners 'perception

H2 : Knowledge disruption in knowledge transfer affects the attitude of learners

H3: Knowledge disruption in knowledge transfer affects the practice of learners

Based on the problem of knowledge transfer between the instructor and learners that occurred in the classroom, this study used an assessment model to assess the learners 'perception, the attitude of learners and practice of learners from the process of knowledge transfer which related these to the knowledge ambiguity and knowledge disruption. The details of this section will be described in the section of research methodology. The next section describes the review of the literature.

Review of the Literature

This part of the study describes review of the literature based on previous studies in the area of knowledge transfer and also included the independent variables and dependent variables for this study. From this research variables were identified which form the basis of hypotheses formulation.

■ Knowledge Transfer

Knowledge transfer is a part on organizations' life. Knowledge transfer can be defined a a process of transmitting knowledge such as experience, lessons learned from one source to another source. Abilino et al., (2004), noted that knowledge transfer involves communication between individuals. It can be mediated by technology and what translates information. Knowledge transfer implies individuals within one organization advising individuals from another organization on certain problems and procedure. Because individual has a great contribution in organizations, it is necessary to understand how knowledge could be transfer between individuals and to recognize the methods of transfer (Gouza,2006; Darr & Kurtzberg, 2000; Tsai,2005).

Although knowledge transfer is very important in a organization, Jacob and Ebrahimpur (2001) believed that the actual transfer of knowledge within organizations still remains a problematic issue for managers,. Organization should identify where tacit and explicit knowledge reside when designing strategies, in order to ensure that knowledge transfer is created and transferred to the right individuals. Knowledge transfer requires the willingness of groups and individual

to work together. Without sharing it is almost impossible for knowledge to be transferred to another person.

■ Knowledge Transfer Model

The SECI model was developed by Nonaka and Takechi (1995), which comprises four modes; socialization, externalization, combination and internalization.

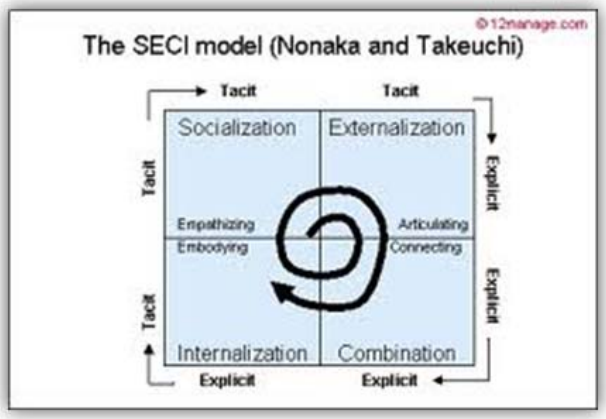

Figure 1: the SECI model (Nonaka & Takechi, 1995)

Figure 1 illustrates the SECI model that was developed by Nonaka and Takechi (1995). There are four modes of the SECI model. The first mode is socialization (tacit-to-tacit) which means the process of converting a tacit knowledge through share experiences. Since, tacit knowledge is difficult to formulize as it is embedded in the human mind. Socialization may occur in the informal social meeting outside the work place, where tacit knowledge such as world views, mental models and mutual trust can be created and shared. The second, externalization (tacit-to-Explicit) which means the process of articulating tacit to explicit knowledge, i.e. expressing language or symbols in a form with can be assessed understood, shared, adapted and reused (Nonaka & Takechi, 1995). The third, combination (explicit-to-explicit) which means the process of converting explicit knowledge into a more complex and systematic set of explicit knowledge. Explicit knowledge is collected from inside and outside the organization and then combined, or edited or processed to form new knowledge. The new knowledge is then disseminated among the members of the organization. The last mode is internalization (explicit-to-tacit). Internalization means the embodying of explicit knowledge into tacit knowledge. Through internalization, explicit knowledge created is shared throughout an organization and converted into tacit knowledge by individuals. Internalization is very closely related to learning by doing. All these process as mentioned above are used with knowledge transfer from sources to recipients.

This study applied the SECI model with the process of knowledge transfer from the instructor to learners. The process can be described as follows. While the instructor transfer knowledge to learners, then learner can shared the knowledge in the classroom via face to face and it called socialization (tacit - to- tacit), after learners perceived the knowledge and express the knowledge into the form of document and database or figure as called externalization (tacit-to-explicit), or learners perceived the knowledge from the instructor in the classroom and then perceived knowledge from outside and then combined, edited or process into form new knowledge and shared with others we call combination (explicit -to-explicit). Sometine, learners can learn and make clear understanding from textbooks or learning by doing, as called internalization (explicit to tacit). Therefore, the SECI model can be applied in the process of knowledge transfer and the study prefer the mode of externalization because after the learners gained the knowledge then they can externalize the knowledge into the form, document and figure. Thus, it is comfortable for assessing the knowledge.

■ **Independent Variables**

This study emphasized on two independent variables that will be described as follows. The first key characteristic of knowledge is knowledge ambiguity (Newell, 2006). This means that the transmitted knowledge from person to person, to groups and the meaning of knowledge will be changed in the process, thus the objective of transmission will be changed as well. Based on the previous studies and the experiences of the authors as teacher, the observation made in the classroom found 3 types of ambiguities existed as follows. Firstly, in the transfer of knowledge, if learners have no common understanding of the subject matter they will be unable to understand the knowledge. It is difficult to perceive the knowledge and difficult to externalize the knowledge. Secondly, the instructor may not be aware of the extent of the learners understanding of knowledge because there was no feedback or reaction from learners as reflection of the understanding of the knowledge transfer. Thirdly, transforming the knowledge into action depends on whether knowledge transfer is full or not. If the learners are unable to receive the full knowledge then, when they have to share knowledge and perform the project with others, they will be doubtful or uncertain of the meaning of the word (Spuzic, 1999).

As a result, knowledge ambiguity can affect learner's perception and the learner's perception will affect the learners' abilities to transform knowledge into action. It is therefore, the responsibility of the instructor to assess the knowledge transfer and solve these problems of knowledge transfer. Figure 3 illustrates an assessment of knowledge ambiguity in the educational system that create based on the review of the literature plus the experience of the author as a teacher.

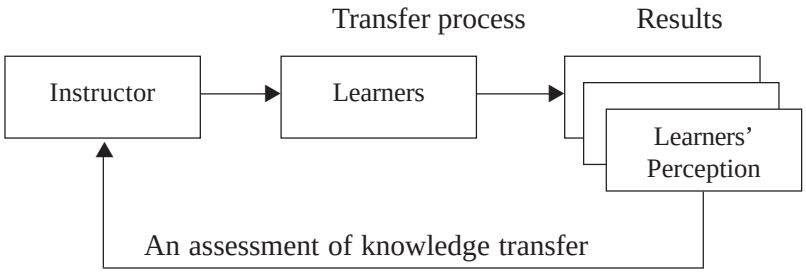

Figure 2: conceptual framework of knowledge ambiguity in educational system

Figure 2 shows the conceptual framework of knowledge ambiguity. There are three parts of this framework and can be described as follows; knowledge transfer occurred when the instructor transfer knowledge to learners and then after the process of knowledge transfer has finished the instructor uses an assessment to assess learners' perception, and the learners' perception will be useful for the instructor to know what knowledge that learners have perceived from the knowledge transfer and after that they can improve the teaching methods.

The second key characteristic of knowledge transfer that can make knowledge transfer problematic is knowledge disruption. Knowledge disruption means disturbing or interrupting the normal operation of something (Compact Oxford English Dictionary, 2005). This study emphasis is on, the disruptive behavior of learners in using technology within the learning environment. The significance of transferring knowledge to learners is dependent on the different backgrounds, different cultures and context in understanding by learners and the learners'perspectve (Mc Combs & Whisler, 1997; David, 2003). In addition, the learning environment is an important factor that affects the transferring of knowledge. The best learning environment is one of high challenge and low stress, and the learning environment should support learners to become independent and active learners. Therefore, the disruptive behavior of learners and the learning environment have to potential to disruption knowledge that can contribute to the problem in the transferring of knowledge. Thus, the instructor should have the ability to assess the attitude and practice of learners whether knowledge is disruptive or not.

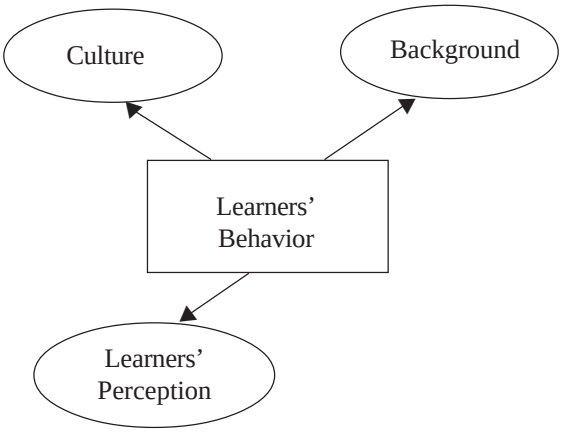

Figure 3 Knowledge Disruptions in Educational System

As show in figure 3, knowledge disruption can be emphasized on the basis of learners coming from different background, different culture and different learners' perspective. Learners may perceive knowledge differently as a recent of knowledge transfer explains initiated by the instructor. The instructor may not know what were learners thinking, what learners feel or what disruptive behavior to interrupt the process of knowledge transfer in the classroom. Therefore, these are responsibilities of the instructor to assess attitude and practice of learners to improve the quality of teaching or the solution of the problems in the classroom. The next section will describe the dependent variables.

■ Dependent Variables

This study emphasized on two dependent variables, ie learners' perception, and behavior via attitude and practice of learners.

Learner's Perception

Most people assume everyone sees the world the same way. This can be expected because people are not able to compare what they see to what some else sees (using language to describe visuals is inherently biased). This wildly accepted assumption, however, inaccurate. There is evidence that each person's perception of the world is different-if only in minor ways (Mosher, 1998). Many researchers have studied the learners' perception. According to Little (1999) the perception can be hearing, vision, smell each involve different neurons of each individual. Mosher (1998) state that perception may not be what you think it is. Perception is not just a collection of inputs from our sensory system. Instead, it is the brain's interpretation of stimuli which is based on an individual's genetics and past experiences. Therefore, perception is actually message constructed using outside inputs, inner-neuron processes

and past, relevant information stored in the brain.

While Gerzin et al., (2003) study the correlation between learning and perception of the students in Dentistry course. The researchers use Likert scale to evaluate the students' perception. The researcher use descriptive statistic compile the student demographic (gender, age and first degree) and students' perception with formative assessment and of usefulness of various learning aids in using percentage. The researchers use Statistical Package for Social Sciences to analyze data, and found that the relationship between learning and students' perception is significance. In addition, Warren et al., (2005) study adult learner perception of affective agents. They state that to improve learners' perception in learning process the instructor have to focuses on three factors. The first is learner perception of the agent that refers to learner's reaction toward the agent's: emotion, facial expression, gaze, image, voice and initial reaction. The second is learner perception of self. This refers to learner nervousness, anxiety, confusion, frustration and confidence while interacting with the agents. Finally, learner-agent social interaction refers to the agent's feedback, overall nature and manner and support and encouragement.

However, this study concentrates on the learners' perception. After they received the knowledge transfer from the instructor, the learners' perception and the feedback from learners can help the instructor to improve the quality of knowledge transfer. Therefore, from the previous studies of review of the literature, this study emphasized on the learners' perception after the perceived knowledge from the process of knowledge transfer from the instructor. The next section will describe the attitude of learners.

Attitude of learner

Attitude means the feeling of each individual person and for this study means the feeling of learners the instructor transfer knowledge to learner. Many researchers have studied the attitude of learners from the process of knowledge transfer. Many researcher interested in attitude of learners. Kaiser et al., (1999) note that knowledge is a precondition of attitude formation. While Kellert and Westervelt (1984) note that level of knowledge is one of several factors affecting attitudes in children. A significant relationship between knowledge and attitudes concerning the environment has been found in several studies (Tikka et al., 2000; Weaver, 2002). According to Cara and Hilton (2005) stated that, increased knowledge of students can lead to environmentally sensitive attitudes which may in turn yield improved decision making regarding an environmental issue-nonnative plants and their control.

Attitude is important in learning management and many researchers have been studied; according to Breeze (2002) who studied the attitude toward learner among Spanish university students and British university students, He found that the learners feel responsible for their own learning, and had motivated by factor other than examinations, for the learners depends on their teacher for guidance feedback and motivation. They need the classroom structure to provide discipline and the social environment to give them opportunities for interaction.

Practice of Learners

The practice of learners means the skills of learner to use the technology for supporting their study. This study emphasized on the disruptive behavior of learners and learning environment as factors that affected practice of learners. According to Gerjets and Hesse (2004) learning environments is often introduced teleological by alluding to instructional environments that are intended to foster the acquisition self-regulated learning. While Lowyck et al., (2005) state that a major problem in learning environment is there seems to be an empirical gap between the expected effect of the environments and their actual power in terms of learning outcome.

Research Methodology

The study used a survey method to collect data, and examined the relationship between the key characteristics of knowledge and the learning outcome from the process of knowledge transfer between the instructor and learners. The steps of the research design will be described in the following section.

■ Developing the Instrument

The instrument was developed based on the knowledge transfer and experience of the in environmental education plus extensive literature search on the subject. The study selected the computer subject, the subject details involved the study of information technology such as innovative technology and the methods to use the technology with projects and new innovations discovered by humans.

Developing the Model for Assessing Learners' Perception and Behavior.

The instrument of this study consists of five parts; personal data, characteristics of knowledge assessment, learners' perception assessment and behavior assessment. This study developed the instrument, which consists of five parts; personal data, the characteristic of knowledge assessment (knowledge ambiguity, knowledge disruption), multiple choices and behavior of learners (attitude and practice of learners).For knowledge ambiguity and knowledge disruption assessment comprise of 30 items. The multiple choices comprised of 34 items, and behavior assessment comprised 30 items. Four experts were choosed from Nakhon Si Thammarat Rajabhat University in Southern Thailand. Two of the experts were from the psychology program, one expert from research method program and the other in the field of knowledge management. The instrument was vetted by the experts after the initial design. It went through a series of refinement based on feedbacks from the experts. It was then subjected to tests of validity and reliability. Measurement of the instrument is based on a five-point Likert scale (ranging from 1 to 5, where 1 denotes strongly disagree; 2 disagree; 3 uncertain; 4 agree and 5 strongly agree). The multiple choice test was answered by the respondents by choosing the best answers from 5 choices selection in each item. Table 1 shows the measurement instruments and scales of the instrument.

Table 1: Measurement Instrument

Constructions	Items	Scale
Survey Instrument		
Characteristics of Knowledge Assessment		
• knowledge ambiguity	15	5 -point Likert
• knowledge disruption	15	5 -point Likert
Behavior Assessment		
• attitude of learners	15	5 -point Likert
• practice of learners	15	5 -point Likert
Multiple Choice	20	choose best answer

Table 1 illustrates the measurement instrument and scale of the characteristic of knowledge assessment and behavior assessment. However, the instrument was developed based on the previous studies and will be showed in appendix. The next table shows the reliability of the instrument.

Table 2 The Internal Consistency (Cronbach's alpha) Scales of the Variables

Variables	Items	Cronbach's Alpha
Knowledge Ambiguity	10	.669
Knowledge Disruption	10	.668
Attitude	10	.899
Practice	10	.836
Multiple Choice Test	16	.644

■ Data Collection

There are 326 respondents who enrolled Innovation for Learning subject (Educ 104). from Nakhon Si Thammarat Rajabhat University (NSTRU),Information Technology for Life (IT 40008) from Songkhla Rajabhat University and (0214101) from Taksin University. This subject details involved the study of information technology such as innovative technologies and the methods to use the technology with projects. The subject took place between November, 2007 and March, 2008

Analysis and Findings

This study used descriptive analysis for analyzing the demographic characteristics of the respondents,

■ Demographic Characteristics of the Sample

Table 3 Demographic Characteristics of the Sample

Demographic Characteristics	Frequencies	Percentage (%)
Gender		
Male	170	52.5
Female	154	47.5
Age		
• 18-20	96	30.1
• 21-22	221	68.4
• 23-25	7	1.5
Religion		
• Buddhist	221	67.8
• Muslim	105	32.2
Language		
• Thai	326	100
Education Level		
• Year 3	326	100
Subject Name		
• Innovation for Learning (Educ104)	127	39.2
• Information Technology for life (IT4000108)	116	35.8
• Introduction to Computer (0214101)	81	25
University		
• NSTRU	127	39.2
• SKRU	116	35.8
• TSU	83	25

Table 3 illustrates the seven demographics characteristics of the respondents: 1) Gender, 2) Age, 3) Religion, 4) Language, 5) Education level 6) Subject and 7) University.

Of the sample, 170 (52.5%) are males and 154 (47.5%) are females. The ages range between 20-22 years. The religions are 68.2% Buddhists and 31.8% Muslims. All the respondents are undergraduate students in their third year. The respondents speak Thai and use the Thai Language to transfer knowledge in the classroom. 39.2% of the respondents are from Nakhon Si Thammarat Rajabhat University (NSTRU), 35.8% of the respondents are from Songkhla Rajabhat University (SKRU) and 25% of the respondents are from Taksin University (TSU).

■ Hypotheses Testing

H1: Knowledge ambiguity has affects the learners 'perception
H2: Knowledge disruption in knowledge transfer affects the attitude of learners
H3: Knowledge disruption in knowledge transfer affects the practice of learners

Hypothesis 1: Knowledge ambiguity affects the learners' perception

The simple regression analysis was performed, using a multiple choice test (dependent variables), to test whether knowledge ambiguity (independent variable) affects the perception of learners.

Table 4 Summary of Results

Predictors	*R*	R^2	*SEE*	*F*	*Sig.F*
Ambiguity	.463	.215	.161	90.48	.000

The results from table 4 show that the perception of learners was influenced by knowledge ambiguity. The simple regression coefficient (*R*) is .463 and multiply R (R^2) is .219 while the adjusted R square is .215. The value of F is 90.23 ($p<.05$) and the Durbin-Watson being 1.736 indicates that there is no errors in the variables.

With the tolerance statistics and VIF equal to 1.00, the b and beta coefficients (β= .463) are stable.

Table 5 Coefficient of Predictors in the Best Fit Model and Collinearity Statistics

	Unstandard (β)		Standardized Coefficients(β)	*t*	Sig	Collinearity	
	B	SEE	Beta			Tolerance	VIF
Constant	.163	.054	3.03	.000			
Ambiguity	.159	.017	.463	9.51	.000	1.00	1.00

significantly related at the .01 level (2-tailed)

The results from table 4 and 5 suggest that 21.5 percent of the variance (R2) in the perception of learners has been influenced and significantly explained by knowledge ambiguity (independent variable). Hence, the result supports the alternative hypothesis that knowledge ambiguity is significantly related to the perception of learners.

H2: Knowledge disruption in knowledge transfer affects the attitude of learners

The simple regression analysis was performed to test the attitude of learners (dependent variable) that was influenced by knowledge disruption (independent variable).

Table 6 Model summary

Model Summary(b)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.514(a)	.264	.262	.42520	1.758

a Predictors: (Constant), T_dis

b Dependent Variable: T_att

Table 7 Anova

ANOVA(b)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	20.876	1	20.876	115.468	.000(a)
Residual	58.217	322	.181		
Total	**79.093**	**323**			

a Predictors: (Constant), T_dis

b Dependent Variable: T_att

Table 6 and 7 show the results of the simple regression coefficient (R) of knowledge disruption and the behavior of learners is .514 and the multiply R (R2) is .264 while the adjusted R square is .262. The value of F is 115.468 ($p<.05$), while the Durbin-Watson is 1.758 which mean there is no error from this variable and the data is suitable for this study.

Table 8 Coefficient of Predictors in the Best Fit Model and Collinearity Statistics

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SEE	Beta		
(Constant)	1.572	.155		10.1	.000
T_dis	.543	.050	.514	13.7	.000

a Dependent Variable: Behavior

Based on the tolerance statistics and VIF of 1.00, the b and beta coefficients (β = .543) were stable. The suggestion of this hypothesis is 26.4 percent of the variance (R^2) in the attitude of the learners was influenced and significantly explained by the knowledge disruption (independent variable). Hence, the result supports the alternative hypothesis that the knowledge disruption was significantly related to the behavior of the learners.

H3: Knowledge disruption in knowledge transfer affects the practice of learners

The simple regression analysis was performed to test whether the practice of learners (dependent variable) was influenced by knowledge disruption (independent variable).

Table 9 Model Summary

Model Summary(b)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.532(a)	.283	.280	.50052	1.722

a Predictors: (Constant), T_dis

b Dependent Variable: T_practice

Table 10 Anova

ANOVA(b)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	31.767	1	31.76	126.806	.000(a)
Residual	80.667	322	.251		
Total	**112.434**	**323**			

a Predictors: (Constant), T_dis

b Dependent Variable: T_practice

Table 9 and 10 show the results which have shown that the simple regression coefficient *(R)* of knowledge disruption and the practice of learners is .532 and the multiplier R (R^2) is .283 which the adjusted R square is *.280.* The value of *F* is 126.81 ($p<.05$).

Table 11 Coefficient of Predictors in the Best Fit Model and Collinearity Statistics

Coefficients(a)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SEE	Beta		
(Constant)	1.247	.182		6.851	.000
T_dis	.669	.059	.532	11.261	.000

a Dependent Variable: Behavior

Based on the tolerance statistics and VIF of 1.00, the **b** and beta coefficients (β = .532) were stable, this hypothesis suggests that 28.3 percent of the variance **(R^2)** in the practice of learners was influenced and significantly explained by the knowledge disruption (independent variable).

Hence, the result supports the alternative hypothesis that the knowledge disruption was significantly related to the practice of the learners.

Discussion of the Findings

The purpose of this study was assessed learner's perception and behavior in knowledge transfer from the instructor to learners. This study used regression analysis for testing three hypotheses. Each hypothesis will discuss as the following section.

Hypothesis 1: Knowledge ambiguity is significantly related to learner's perception.

Hypothesis 1: examined the relationship between knowledge ambiguity and learner's perception. The study used simple regression to test this hypothesis; the model from regression analysis reported that knowledge ambiguity is significantly related to learner's perception at the p<.01. The learners' perception can be explained 21.5 by knowledge ambiguity. Accordingly, Hypothesis 1 which state that knowledge ambiguity is significantly related to learner's perception is supported. The study provides support for Szulanski (2003) indicated that knowledge ambiguity was a statistically significant barrier to knowledge transfer and affected the learner's perception. In addition, the complexity of knowledge had increased vague and made it difficult to understand the meaning of knowledge (Simonin, 1999). Therefore, this study can be summarized that knowledge ambiguity is difficult and made knowledge transfer problematic and affect learner's perception.

Hypothesis 2: Knowledge disruption is significantly related to attitude of learners.

Although, this study present the hypothesis of knowledge disruption is significantly related to attitude of learners at the p<.01. In addition, the attitude of learners can be explained 26.4 percent by knowledge disruption. Accordingly, Hypothesis 2 which states that knowledge disruption is significantly related to attitude of learners is supported. Monroe (2005), states that knowledge disruption can make learners have disruptive knowledge in process of the knowledge transfer from the instructor to learners. Since, learners had different background, different culture and different perspective. They can show the different viewpoints, different ideas and disruptive behavior in the classroom. Newell (2006) states that knowledge can be disruptive since learners had invested in their knowledge and knowledge is a source of power. Knowledge disruptive enables individual learning to flow of knowledge transfer in the classroom. Furthermore, Perez et al., (2008) states that the motivation of the learners related to the positively influence attitude of learners to perceive the knowledge from the process of knowledge transfer. In summary the process of knowledge transfer attitude of learners had influenced by knowledge disruption.

Hypothesis 3: Knowledge disruption is significantly related to practice of learners

Moreover, this study tested the hypothesis between knowledge disruption and practice of learners. The simple regression model was tested and showed that knowledge disruption is significantly related to practice of learners at the p<.01. The practice of learners can be explained 28.3 percent by knowledge disruption. Accordingly, Hypothesis 3 which states that knowledge disruption is significantly related to practice of learners is supported. This study is supported by Divjak and Kukec (2008) notes that the skills and practice important to the learners can also be the technology that the instructor used to transfer knowledge to learners. Gerjets and Hesse (2004) reports that the practices of learners can determine the skills of using technology in the educational system and is related to learning outcome of the learners. Stewart and Hyde (2002) report that practice can help learners to perceive experiences as the primary source of learning and provide the feedback to the instructor for improving the quality of knowledge transfer processing. As a result, the practice of learners has influenced by knowledge disruption. Since, knowledge disruption had occurred from the disruptive behavior of learners and affected the process of knowledge transfer from the instructor to learners.

Conclusions

This study emphasized on assessing learner's perception and behavior of learners in knowledge transfer. The study focused on the problem of knowledge transfer that occurred from the two key characteristics of knowledge and examined the relationship between the characteristics of knowledge with learner's perception and behavior. This study found that learner's perception and behavior influenced by the characteristics of knowledge and the model is significantly at $p>.05$. In summary, the learner's perception and behavior were influenced by the characteristics of knowledge. However, the study suggests that it will be grateful if the future research can be added the process of knowledge transfer in other viewpoints of education, not only perception,and behavior of learners.

REFERENCES

Albino, V., Garavelli, A.C., & Gorgoglione, M. (2004). Organization and Technology in Knowledge Transfer. **Benchmarking: An International Journal.** 11(6), 584-600.

Alvarez, K., Salas,E., & Garofano,C.M. (2004). An integrated Model of Training Evaluation and Effectiveness. **Human Resource Development Review.** 3(4) 385-416.

Breeze, R. (2002). **Attitudes Towards Learning Autonomy Among Spanish University Students.** Retrieve, April 29, 2007. from http://www.attantisjournal.org/papers/24-1/breeze.pdf.

Darr, E.D.& Kurtzberg, T.R. (2000). An Investigation of Partner Similarity Dimensions on Knowledge Transfer. **Organizational Behavior and Human Decision Process.** Volume 82, Number 1.

Gerjets P.H. & Hesse F.W. (2005). When are Powerful Learning Environments Effective ? The Role of Learner Activities and of Students' Conceptions of Educational Technology. **International Journal of Educational Research** 41. pp. 445-465.

Gerzina, M., Worthington, R., & McMahon, C. (2003). Student Use and Perceptions of Different Learning Aids in a Problem-Based Learning (PBL) Dentistry Course. **Journal of Dental Education.** 641-653.

Gouza, A. (2006). Key Factor of Knowledge Transfer within University Spin-offs. Retrieved October, 30, 2006. from http://www.secience.uab.es/dep-economia

Hilton, C.S. & DiEnno, C.M. (2005). High School Students' Knowledge, Attitude, and Levels of Enjoyment of an Environmental Education Unit of Nonnative Plants. **The Journal of Environmental Education.** 37 (1).

Jacob, M., & Ebrahimpur, G. (2001). Experience vs Expertise: the Role of Implicit Understanding of Knowledge in Determining the Nature of Knowledge Transfer in two Companies. **Journal of Intellectual Capital.** Volume 2, Number 1.

Kaiser, F.G., Woelfing, S., & Fuhrer, U. (1999). Environmental Attitude and Ecological Behavior. **Journal of Environmental Psychology.** 19, 1-19.

Lowyck, J., Elen, J.,& Clarebout, G. (2005). Instructional Conceptions: Analysis from an Instructional Design Perspective. **International Journal of Educational Research.** 41(6), 429-444.

Newell, S. & Galliers, R.(2006). Knowledge Transfer and Learning Problem of Knowledge Transfer Associated with Trying to Short-Circuit the Learning Cycle. **Journal of Information and Technology Management.** 2(3), 275-290.

Nonaka, I. & Takeuchi, H.(1995). The Knowledge-Creating Company. New York: Oxford University Press. In Wu, C.F. & Lee, Y.C. (2006). Factors Affecting Knowledge Transfer and Absorptive Capacity in Multination Corporations. Proceeding of Knowledge Management International Conference & Exhibition (KMICE) 2006, 141-148.

Ping L,W. (2006). **The Process of University-to-Industry Knowledge Transfer and Influential Factors.** (Online) Retrieved June.23, 2007, from http://www.ieee.com.

Simon, C. J., & Soliman, S. K. (2003). An Alternative method to Measure MIS Faculty Teaching Performance. **The International Journal of Educational Management** 17(5), 195-1999.

Spuzic,S. (1999). An Initiative in Improving Knowledge Transfer in Engineering Education. Forum Proceedings. **The 2nd Asia-Pacific Forum on Engineering and Technology Education.** The University of Sydney. 4 -7 July '99, ed. Z Pudlowski, p 41.

Tikka, P.M., Kuitunen, M.T., & Tynys, S.M. (2000), "Effect of Educational Background on Students' Attitude, Activity Levels and Knowledge Concerning Environment". **The Journal of Environmental Education** 31(3), 12-19.

Tsai, M.T. & Tsai, L.L. (2005). An Empirical Study of the Knowledge Transfer Methods used by clinical instructors. **Internal Journal of Management** 22(2).

Weaver, A.A.(2002). Determinants of Environmental Attitudes, **International Journal of Sociology** 32(1), 77-108.