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A Probe Into Learning Approaches And Attitudes Towards Technology-enhanced Language Learning (tell) In Chinese Instruction

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A PROBE INTO LEARNING APPROACHES AND ATTITUDES TOWARDS
TECHNOLOGY-ENHANCED LANGUAGE LEARNING (TELL) IN CHINESE
INSTRUCTION

by

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ABSTRACT

This quantitative research, carried out at the military environment at the Defense Language Institute investigated whether learning approaches could predict learners' language proficiency and learners' attitude towards technology-enhanced language learning (TELL). In addition, it also examined whether learners' demographic factors, such as age, educational backgrounds, prior experience in foreign language learning and in TELL as well as their ability to use PC and the World Wide Web could predict the above mentioned language proficiency and attitude.

A cluster sampling method was adopted and data was collected in four Chinese departments at the institute. Both the learning approaches inventory ASSIST and the attitudes towards TELL survey were administered to 158 Chinese language learners. 137 valid responses were obtained. All data were input into SPSS for regression and correlation analyses.

Conclusions of the study are as follows:

1. The surface and apathetic approach ($p<.01$) was a significant predictor for both learners' measured language proficiency and their self-perception of academic performance.

2. The strategic approach was a positive predictor for learners' attitudes towards TELL; whereas, surface and apathetic approach was a negative predictor for learners' attitudes towards TELL.

3. None of the learners' demographic variables could not predict either learners' language proficiency or their attitudes towards TELL.

Implications for instructional design, curriculum development, teacher education, as well as relevant research issues were discussed.

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LIST OF ACRONYMS/ABBREVIATIONS

CALL: Computer-Assisted Language Learning

DLI: Defense Language Institute

ETL: Enhance Teaching-Learning Environment

FLO: Final Learning Objectives

GEFT: Embedded Figures Test: Group Version

ICC: Instructor Certification Course

OPI: Oral Proficiency Interview

SATECL: Survey of Attitude towards Technology-Enhanced Chinese Learning

SLA: Second Language Acquisition

SPSS: Statistical Package for the Social Sciences

TELL: Technology-enhanced Language Learning

PC: Personal Computer

PEP: Proficiency Enhancement Program

WWW: World Wide Web

CHAPTER ONE: INTRODUCTION

Educational psychologists have long understood that an important key to facilitating

students' learning is to deal with individual differences in cognitive functions (Cano-Garcia &

Hughes, 2000). Among these cognitive factors, the issue of learning styles is considered an

important individual variable and has long been a heated-discussed topic in both fields of

educational psychology and affective education (ibid).

Competing ideas about learning have generated a proliferation of different terms about

learning styles, among which "cognitive styles", "thinking styles", "learning style preferences",

"learning approaches" and "learning orientations" are commonly used ones. However, on most

occasions, they are used interchangeably to indicate learners' preferred ways to process

information. Sometimes these terms are used precisely so as to better differentiate their

respective theoretical constructs.

Statement of the Problem

As an instructor who combines Chinese language teaching and course design &

development at the Defense Language Institute (DLI), the present researcher has identified a

number of pedagogical problems, which seem to have tremendously negative effects on the

ultimate learning effectiveness. Above all, teaching materials largely remain old and

unsystematic; as a matter of fact it is based more on experts' teaching experiences than on

theories about language learning. The new CD version of Chinese Basic Course (Unit Book) has just been put in use. This is the first time for the Chinese program of this institute to systematically implement technology into the curriculum. Therefore psychological acceptance and pedagogical readiness by the faculty relatively remain uncertain.

Secondly, learner factors have neither been taken great consideration into material compilation nor into the pedagogical approaches to instruction of the language. It seems that the majority of the teachers, material writers as well as curriculum developers assume that providing authentic language input by teachers who are themselves native speakers of the target language is the only prerequisite for successful language learning. However, high fluency level in a certain language does not necessarily lead to high instructional effectiveness of the language. The Chinese language which is a branch of Chinese-Tibetan languages has completely different writing system which is characterized by very irregular and unsystematic sound-symbol correspondence. In spite of a good command of the language, native speakers often find it hard to explain to the non-native speakers.

Unfortunately, the learner group that is mostly the composite of soldiers and officers from the U.S. Army, Air Force, Navy, and Marine Corps, is exposed to the totally exotic oriental language in a completely new learning environment with virtually no attention being paid to their individual characteristics by curriculum developers and classroom teachers. Meanwhile, their prior learning experience in different subject areas, their well-established learning approaches may undergo substantial changes in this specific foreign language-learning context. What learning approaches they would consciously or unconsciously adopt and how these learning approaches would affect their language proficiency are worth studying.

Finally, in the aspect of the general environment of technology-enhanced language learning, there are issues between human factors and technology factors that remain unsettled. The U.S. Department of Defense has invested a huge bulk of money to equip every language class with the most advanced technological system called the Smart Board at DLI. The Smart Board technology system that costs approximately over $10,000 includes the computer, Internet access, cable TV attached directly to the VCR, the LCD projector as well as the large screen that is the core of the smart system. The screen is multi-functional indeed: it enables a larger image via the projector; however what is most amazing is that it incorporates advanced handwriting-recognition software which is of great value for learners to learn the exotic language of Chinese. Despite this impressive aspect of high-tech, how it is used and matched with the current textbooks and how to optimize its value by better integrating learner factors such as their learning styles or learning approaches, learners' attitudes towards technology-enhanced language learning (TELL) are of great necessity for in-depth research.

  Specifically, the present researcher has come up with the following research questions together with their respective hypotheses.

Research Questions and Hypotheses

1.   What are students' various learning approaches in language learning? Which of the learning approach (es) is/are more suitable for foreign language learning hence may lead to higher language proficiency?

Hypothesis: Students will show different degrees in deep learning approach, strategic approach and surface apathetic approach based on Entwistle's Approaches and Study Skills Inventory for Students (ASSIST).

 It is further hypothesized that:

A.   The deep learning approach is most suitable for foreign language learning, thus may lead to the highest language proficiency.

B.   The strategic approach which is usually associated with high motivation for achievement may result in relatively higher language proficiency.

C.   The surface apathetic approach, which shows learners lack study purpose and are syllabus-bounded, tends to lead to lowest language proficiency.

   2. Can learning approaches predict learners' self-reported language proficiency?

     Hypothesis:

     A. The deep learning approach is most suitable for foreign language learning, thus may lead to the highest rate in respondents' self-reported language proficiency.

     B. The strategic approach which is usually associated with high motivation for achievement will result in relatively higher rate in respondents' self-reported language

proficiency.

C. The surface apathetic approach, which shows learners lack study purpose and are syllabus-bounded, tends to lead to lowest rate in respondents' self-reported language proficiency.

3. What are the students' overall attitudes towards technology-enhanced language learning?

Hypothesis: Students' attitudes towards technology-enhanced language learning can be roughly categorized into two, namely, positive and negative attitudes. The majority of learners tend to have more positive attitudes towards TELL.

4. Is there any relationship between attitudes and the learning approaches? Which of the learning approach (es) is/are more likely to lead to positive attitude towards TELL?

Hypothesis: Due to the innate interest in language learning and relatively skillful management of study, learners who have the deep learning approach and the strategic approach tend to view TELL in a more positive way; whereas, learners with the surface apathetic approach tend to hold negative attitude towards TELL.

5. Can such demographic factors such as age, educational level, and prior experience in foreign language learning and in technology-enhanced foreign language learning predict higher language proficiency in learners?

Hypothesis: Such demographic factors as age, educational level, and prior experience in foreign language learning and in technology-enhanced foreign language learning cannot predict higher language proficiency in learners.

6. Can such demographic factors such as age, educational level, and prior experience in foreign
language learning and in technology-enhanced foreign language learning predict learners'
attitudes towards TELL?

Hypothesis: Such demographic factors as age, educational level, and prior experience in

foreign language learning and in technology-enhanced foreign language learning cannot

predict learners' attitudes towards TELL.

<u>Significance of the Study</u>

With the increasing integration of technology into the core of language curriculum, a

considerable amount of attention has been devoted to assess the cost-effectiveness of

computer-assisted language learning (CALL). On the other hand, learner factors have been

gaining increasing attention, among which importance of attitude is highlighted among various

learners' affective variables "…the crucial variables concerning its effectiveness may be those

associated with cognition and attitudes toward language study" and "attitudinal variables must

be examined" (Stevens, 1984). Sanders & Morrison-Shetlar (2001) also pointed out that

students' attitude toward the computer was an important influencing factor in the application of

technology in various instructional settings.

The Defense Language Institute (DLI) explicitly emphasizes the study of learning styles

by asserting that,

The DLI basic course is the beginning of a lifelong continuum of learning. It prepares students for the non-resident phase of their learning. In order for students to improve their language skills after leaving DLI, it would be useful for them to understand their own language learning styles and to use strategies appropriate to those styles. They should be taught about learning styles and strategies during the basic course and be given an opportunity to practice the strategies while at DLI (*FLO*, 2004, P 30).

With regard to the great importance of both attitude and learning style and the researcher's present experience teaching Chinese at DLI, the present researcher intends to carry out a regression study of these two individual variables by assessing the impact of learning approaches on students' language proficiency as measured by students' listening skills and by students' self-reported academic performance. In addition, the impact of learning approaches on students' attitudes towards TELL will be examined.

Delimitations

a)   The study was limited to the military setting in the U.S. Department of Defense.

b)   Learners only included those who had used the new Unit Book in the Chinese

          Basic Course.

c)   Language proficiency for this study was measured by learners' Unit 4 listening

          test as well as by learners' self-report academic performance.

Limitations

It should be pointed out that this regression study had its own limitations. The biggest

potential problem was the tests used as indicators of learners' language proficiency. Those unit

tests were still in the process of validation; thus their validity and reliability needed further

examination. In addition, the test were more achievement oriented than proficiency oriented;

thus rote learning and curriculum-bound learning approach such as surface approach might still

lead to relatively satisfactory grades. It was highly possible, therefore, learners' grades were not

significantly discriminated by the three approaches as indicated in the research hypotheses.

Definitions

Different researchers tend to define learning approaches from different angles. The

present research for the doctoral dissertation adopted the general definition illustrated by Dollar

(2001) and tended to follow the definition of learning approaches as ways learners approach

knowledge.

Technology-enhanced language learning in the present research is operationally defined

as any application of technology which mainly refers to the hypermedia packages in which

word, image and sound are embedded. In addition, language learning software Wenlin and

other Chinese language learning programs are both considered technology-enhanced language

learning (Lam & Kramsch, 2003).

<u>Overview of the Study</u>

The present research is divided into five chapters. Chapter one is an introductory part

that includes a brief introduction of learning approaches; in addition, research problems,

research hypotheses and significance of the study are stated. Finally, delimitations and key term

definitions are provided.

Chapter two aims at providing an overall description and a factual report of the research

in the field of learning approaches. Meanwhile, research in terms of relationship between

learning approaches and attitudes towards learning and between learning approaches and

language proficiency is also presented. In addition to such focal aspect of learning approaches

research, related issues such as second language acquisition, foreign language education as well

as technology-enhanced language learning are also reviewed.

Chapter three includes a panoramic view of research methodology employed by the

present research. Specially, how research sample and research instrument were selected, and

how data collection and data analysis were carried out are presented in this chapter. Meanwhile,

the pilot study which aimed to further refine the research instrument is briefly described.

Data collected is minutely displayed in the forms of tables and figures in Chapter four. Data presentation includes both data collected from the ASSIST instrument and the attitude questionnaire. Research questions and hypotheses are reviewed again in this chapter.

Chapter five presents findings generated from the data analysis. Based on these research findings, insights gained for curriculum development, instructional design, foreign language pedagogy as well as for teacher education are discussed. Furthermore, recommendations for future research are tentatively explored.

CHAPTER TWO: LITERATURE REVIEW

Overview

  This chapter will present a panoramic view of research related to second/foreign language learning and learning approaches. First, the importance of individual differences in second language acquisition (SLA) will be discussed. Second, learning approach research as well as a myriad of learning approach assessment instruments will be categorized and discussed. Third, Entwistle's ASSIST and its legitimate merits in this specific research context of Chinese instruction will be highlighted. Finally, the research concerning the relationship between learning approaches and attitudes towards learning and language proficiency will be presented.

SLA & Foreign Language Learning

SLA refers to the learning of another language after the native language has been learned (Gass & Selinker, 1994). Gass and Selinker further illustrated that SLA needs not to be strictly confined to the learning of a second language; instead, it can be used in learning of a third or fourth language other than the learner's mother tongue. Moreover, SLA is generally conceptualized as acquisition of a second language either in a classroom setting or in a more immersed target language situation.

Foreign language learning, on the other hand, is often differentiated from SLA by defining the learning environment as basically a native language surrounded setting as opposed to learning the target language in the totally immersed target language situation (ibid). It is often the case, however, that researchers and scholars in the field use "acquisition" and "learning" interchangeably. Hence in the following sections of this research paper, SLA research also refers to the more general academic circle which includes research in the field of second language learning and foreign language learning.

In the present research setting at the Defense Language Institute, the Chinese language program belongs to the fourth of four different language categories as judged by the potential learning difficulties by native speakers of English. The class requires 63 weeks' intensive training provided by native speakers of Chinese. With regard to the authentic target language learning environment where Chinese is strongly encouraged to be used, this Chinese language program can be considered SLA or at least in between SLA and pure foreign language learning.

The most distinguishing feature of Chinese language learning is the application of hypertext technology which refers to the use of word processor and CD-ROM. The combination of word, image and sound are well organized in the multiple layers of relevance (Lam & Kramsch, 2003).

Individual Differences in SLA

Krashen's Affective Filter hypothesis best explains different success rates among second language learners. According to Krashen, (Krashen, 1982), motivation, attitude, self-confidence and anxiety, all being considered principal factors in Affective Filter, play significant roles in the whole process of SLA. Krashen, in particular, highlighted the role of attitude by asserting that if learners' attitudes are not ideal for SLA, they will both hinder language input and increase the level of Affective Filter, which eventually has a negative impact on the effectiveness of language learning.

In addition to attitude, cognitive styles, which are often termed as learning styles, are believed to be intervening variables in the ultimate attainment of language proficiency. The research into learning styles in SLA, however, is largely restricted to field independence and field dependence. The research findings, however, are controversial indeed: some "reported correlations in the expected direction"; whereas others failed to show a relationship (Gass & Selinker, 1994)

In addition to the well-researched learner factors such as cognitive, affective as well as personality factors, demographic variables are often found significantly correlated with foreign language achievement. For example, research shows that those who have taken the least number of foreign-language courses in high school are likely to be lower foreign language achievers (Onwuegbuzie *et al.*, 2000; Walqui, 2000).

Research into Individual Differences in SLA

Earlier SLA research remained peripheral considering the fact that so much attention was given to the study of language pedagogy. Fortunately, however, SLA has become an independent subject of study in the past 20 years, with maximizing the effectiveness of language instruction being the underlying impetus. SLA research has now become interdisciplinary in nature, calling for areas of studies such as sociology, psychology, education, epistemology as well as linguistics (Gass & Selinker, 1994).

Research methods include but not limited to experimental method, ethnography, case study and etc (Nunan, 1986) Research into individual differences in SLA, as a matter of fact, requires many of the same skills used in the cognitive and epistemological sciences. Overt and tangible differences between first language acquisition and second language acquisition have been long noticed by researchers in the field. In terms of first language acquisition, almost all learners can achieve the optimal language proficiency despite such individual variables as

motivation, learning belief system, self-esteem, attitude and learning styles, etc; whereas in SLA, learners' language achievement differs tremendously due to the above-mentioned learner factors (ibid).

In SLA, however, researchers tend to disagree with the impact of such non-language factors as aptitude, attitude and motivation on the ultimate target language proficiency; validity & reliability embedded in the language proficiency measurement are often questioned. For example, Bernstein's (1970) research as discussed by Gass and Selinker (Gass & Selinker, 1994) which claimed that consistent differences in the way working-class and middle-class children spoke was partially responsible for why working-class children did more poorly in school, was severely attacked for its inaccurate measurement of language proficiency and the causal relationship (ibid).

It is generally accepted that the different success rates in SLA can never be accounted for without a valid and reliable measurement. So far, however, academic grades, language proficiency tests, student-reported language levels, and students' actual language use are the commonly adopted measuring approaches despite imperfections in terms of their validity and reliability.

Technology-Enhanced Language Teaching and Learning

"Technology is intensively integrated into the language classroom and research into technology-enhanced language learning has been conducted to evaluate the interface, the

quality of the program's language recognition procedures, and the effectiveness of certain technology as well as the learners' perceptions of such a learning approach." (Tudor, 1996).

With the rapid development of computer technology, the study of technology-enhanced language learning which usually refers to computer-assisted language learning (CALL) has been directed at assessing and improving CALL effectiveness. During the early stages of CALL implementation, technology posed a huge challenge for educators. In the beginning they were so fascinated and felt irresistibly seduced by the claims made by technology specialists and salespersons about the amazing potentiality that technology brought to education. However, they gradually realized that "beautiful pictures and high quality sound mean little if they are not well integrated into a series of tasks that varies according to student proficiency and differences in student learning styles" and that " education is not entertainment" (Knowles, 1992).

At the same time, however, researchers stated that technology did possess legitimate values that human instructors could never emulate; for instance, its never-flagging patience to provide practice and repetition was really beyond a human being's affordability (ibid). CALL developed rapidly as more learning programs were implemented and the factor of interactivity was seriously taken into consideration.

Research methodologies and paradigms began to be oriented towards learning effectiveness in the technology-enhanced environment; Chapelle commented that "Advancement in the design and use of CALL activities require that key questions about CALL be identified and effective research methods be used to answer them."(Chapelle, 1997).

Literature in the 1990s showed that professors were seeking principled means of designing and evaluating CALL by exhaustively searching for cross-disciplinary sources; therefore theories such as cognitive psychology, communication theory, linguistics,

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computational linguistics, and SLA were the most researched areas in the quest for theoretical

bases (ibid).

Later, the research approach shifted in that it was directed at empirical research, given

that SLA research is mostly conducted in the classroom setting.

Research into Individual Variables in CALL

Due to the multi-dimensional nature of interactivity and prominent differences in terms

of perception of the CALL environment, the tangible importance of learner factors has been

increasingly recognized by CALL researchers. As Tudor (1996) commented,

> "Learners are not simply learners… we cannot therefore assume that the
> technology of language teaching will lead in a neat, deterministic manner to a predictable
> set of learning outcomes. For the technology of language teaching to produce effective
> results, it has to work with people as they are in the context in which they find themselves
> at a given point in time. The technology, then, has to be used appropriately, and deciding
> on what is or is not appropriate calls for consideration of the total context of teaching in
> both human and pragmatic terms." (Tudor, 1996).

Among various learner factors, attitude is a much-researched aspect. In this line of

empirical research, descriptive study methods are the most frequently adopted study techniques

in which attitudinal orientation is measured by either researcher- designed questionnaires or by

adopting existing instruments. The majority of quantitative studies as well as qualitative

inquiries have shown that learners' attitude towards the technology-enhanced learning

environment is positive and closely related to learning styles or motivational factors (Ayres,

2002; Chapelle & Jamieson, 1986; Craven & R, 1998; Holmes, 1998; Klassen & Milton, 1999; Sanders & Morrison-Shetlar, 2001). A deeper probe into attitudinal factors and their relationship to learning approaches, in particular, is elaborated in the latter part of this chapter.

Definitions of Learning Styles/Approaches

Numerous studies have attempted to classify the wide array of learning style conceptualizations. According to Cano-Garcia & Hughes (2000) one of the most influential categorizations was made by Grigorenko & Sternberg (1995) and Rayner & Riding (1997). In conceptualizing learning styles, these researchers generally identified three distinct approaches. Cognition-centered approach focused upon individual differences in cognition and perception; thus it described several styles and dimensions of cognitive processing. According to Rayner and Riding, the distinctions between field dependence and field independence, analytic vs. holistic and verbal vs. imagery fell into this category. Second, personality-centered approach focused on the examination of learning style in relation to learners' personality characteristics as opposed to their cognitive preferences. According to Rayner and Riding, the Myers-Briggs style model was the only one in this category. Finally, an activity-centered approach or learner-centered approach focused on styles related to specific learning activities, settings, and environments. Rayner and Riding identified twelve models, among which the Kolb, Entwistle and Dunn's models were most frequently adopted in practical research in the field.

Competing ideas about learning have generated a proliferation of different terms about learning styles, among which "cognitive styles", "thinking styles", "learning style preferences", "learning orientations," and "learning approaches" are commonly used. Sometimes these terms are used precisely to better differentiate their respective theoretical constructs; however, on most occasions, they are used interchangeably to indicate learners' preferred ways to process information. Following are some of the definitions of learning styles based on the above-mentioned three approaches, as shown in relevant literature:

Based on cognitive approach, learning style is defined as a unique collection of individual skills and preferences that may affect how a person perceives, gathers and processes information (Johnston & Orwig, 1999). According to Johnston and Orwig, learning style affects learners in various ways such as learners' approaches to solving problems and participating in activities.

Claxton and Ralston's understanding of learning styles was based on the activity-centered approach. They indicated that learning styles referred to people's consistent ways of responding to and using stimuli in the context of learning (Claxton & Ralston, 1978). Keefe (1979) took a combination of the personality-centered approach and cognitive approach. He defined learning styles as "characteristic, cognitive, affective and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment". Dunn and Griggs (2003) took the personality-centered approach and considered learning styles as *"the biologically and developmentally imposed set of characteristics that make the same teaching wonderful for some and terrible for others"*(Dunn & Griggs, 2003).

Dollar (2001) took a more flexible approach to define learning style. In his book review

of *Practical approaches to using learning styles in higher education,* edited by Dunn and

Griggs, he quoted the editors' definition as

"…the way students begin to concentrate on, process, internalize, and remember new
and difficult academic information and is comprised of both biological and developmental
characteristics that make the identical instructional environments, methods, and resources
effective for some learners and ineffective for others." (Dollar, 2001).

Different researchers tend to define learning styles from different angles. The present

research will adopt the general definition illustrated by Dollar and tends to follow the definition

of learning styles as ways learners approach knowledge (ibid). Thus the term "learning

approaches" is adopted instead of "learning styles' in discussing this research design; whereas,

the two terms are used interchangeably when reporting about research findings in the field.

Benefits from Research into Learning Approaches

The investigation of learning approaches possesses the following underlying merits.

Above all, derived from various findings from learning approaches, educational psychologists

may expect to further investigate what are the specific learning approaches that a specific

educational system favors. Cano-Garcia & Hughes quoted other researchers' studies and further

asserted that several educational systems just encouraged "de-contextualized" learning

processes and tended to view learning approaches as "inherent", and "invariant"; thus in

practice, they cultivated the development of "executive" and "non-creative" learning as

opposed to viewing learning as an "active knowledge construction process" which was believed by some contemporary cognitive theorists. Therefore, a scientific and systematic study of learning approaches is particularly valuable to motivate educators to reassess and even re-orient the whole curriculum system with the optimal aim of cultivating appropriate learning approaches matched with specific learning environments and of adjusting teaching styles in harmony with students' learning approaches so as to enhance learning effectiveness(Cano-Garcia & Hughes, 2000).

In terms of lifelong learning, which is strongly advocated as the general goal of education, it is believed that learners are likely to be more motivated when they know their own strength and weakness, which in the long run, will benefit lifelong learning (Coffield *et al.*, 2004). In addition, by examining learners' learning approaches and by asking learners to reflect upon their own learning approaches, course designers, curriculum developers as well as classroom teachers might expect to incorporate learning approaches into material writing and into more effective pedagogical interventions.

Specifically, in the field of language education, Felder and Henriques (1995) pointed out that matching teaching styles with learning approaches had great potential in terms of cultivating more positive attitudes towards learning and towards enhancing their language proficiency. This is true in school education in all areas and is also true in foreign language instruction. Meanwhile, they asserted that this did not mean that students should use their preferred approaches exclusively; on the contrary, they should be exposed to those learning tasks that called for their less preferred ones to deal with possible challenges in general educational settings. Gremmo and Riley (1995, P. 158) further pointed out that it was inappropriate to categorize learners; instead, education should, based on research findings,

create more "learner-friendly" learning environments and "appropriate learning tasks" to better accommodate learners. A systematic operationalizing of learning approaches can benefit both learners and teachers.

Current Trend of Learning Approaches Research and its Potential Difficulties

The systematic probe into learning approaches might have started off from teachers' scattered thoughts about "How could we teach students when we don't know how they learn?" "How could we improve the performance of our employees, if we don't know how we learn or how to enhance their learning?" And "Are the learning difficulties better understood as the teaching problems of teachers/tutors/managers?" These are some of issues researchers have raised in the past 40-50 years of their studies into individual learning approaches (Coffield et al, 2004).

Research into learning approaches has great appeal to policy makers, curriculum developers, course designers and classroom teachers. Nevertheless, beneath this apparent prosperity of research, there are theoretical and empirical imperfections. The discussions here are only limited to conceptual and pedagogical problems excluding commercial issues. Above all, as indicated in the various existing definitions of learning approaches, different researchers have different interpretations about the nature of learning. Some claim that learning styles are more like personality traits and intellectual abilities which are usually considered fixed, thus

results can be reliably measured to predict academic performance and can be generalized to other educational settings; whereas other researchers argue that learning styles are "flexibly stable" (ibid, P.2) and claim that as opposed to learning styles per se, learners can develop approaches, preferences and strategies based on prior learning experience and learning environments, thus approaches are rather contextually dependent rather than stable. These latter points of view also generate two totally different notions about learning styles. Some researchers believe that learning styles can be validly and reliably assessed to predict learners' performance and to enhance learning. However, conservative researchers tend to argue that rather than investigating learning approaches or styles, more attention should be devoted to the study of learning biographies that are task or context-based (ibid).

Secondly, the majority of learning approaches research belongs to small-scale applications of models of specific learning approaches a small sample of learners in specific contexts; thus few insightful implications can be drawn from those empirical findings(ibid) .

Moreover, in terms of learning approaches measuring instruments, since researchers all have their own perspectives and tend to develop the measurements that are derived from the theoretical constructs in their own disciplines, such as psychology, sociology and education, it is difficult to have one unified theoretical underpinning; in addition, education is likely to be affected by political and social factors. Finally, academic researchers tend to greatly protect their own territories and argue against different opinions, which have greatly prevented knowledge accumulation and cooperative research (ibid).

In spite of the argument, research into learning approaches has always been well underway along the optimistic path of assessing reliability and predictability. Models and instruments flourish in both the academic and the non-academic world. Some aim at developing

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theories about learning approaches; while others are devoted to developing instruments for practical use in diverse contexts (ibid).

Approximately seventy instruments have been covered and reviewed in Coffield's learning styles research and three categories have been identified.

Learning Style Measuring Instruments

Cognition-centered approach (1940-1970)

In the 1940s, observations of learning styles were limited to the cognitive domain; cognitive styles, thus were conceived as self-consistent (Musser, 2004). Learning styles measuring instruments which take this approach focus on individual differences in terms of cognitive processing. Rayner and Riding (1997) identified seventeen different models, such as Allison and Hayes's Cognitive Styles Index (CSI) and Gardner's Multiple Intelligence (MI) all belong to the cognitive-centered approach (Rayner & Riding, 1997). The distinction between field dependence and field independence, however, is the most influential and frequently used measurement to assess learning style, as Musser commented "No other style has been more researched in our history than that of field dependence-independence…"(Musser, 2004)

Based on his research of people's perception, Witkin (1948) finally developed the instrument called Embedded Figures Test (EFT) and Group Version (GEFT) to measure learning styles. According to Witkin, dependent learners rely more on teacher and peer support; whereas independent learners are more analytic thus depend less on external assistance. A great number of studies have been conducted via the GEFT instrument and have produced higher language proficiency or performance in various subject areas favoring field independent learners (Goodenough, 1976, Goodfellow, 1980, Lu & Suen, 1995, etc**.). **This is also true in the field of second or foreign language learning. However, the cognitive approach is criticized by researchers pointing out that it only examined learners' perceptive variables; it tended to exclude context and other variables.

Personality-centered approach (1970s)

Learning style instruments based on personality-centered approach can be traced back to the 1970s. This approach focuses heavily on examining individual learners' personality characteristics. This approach unfortunately has had little impact on the theory development of learning styles (Cano-Garcia &Hughes, 2000). Apter's Motivational Style Profile (MSP) and Jackson's Learning Styles Profiler (LSP) fall into this category. Myers-Briggs Type Indicator (MBTI) model is the most distinguished instrument in this approach.

Based on Jung's theory about tripolar scales, Myers and Briggs identified 16 personality types. It is accepted as a reliable instrument with good face validity. However, its construct

validity is under severe criticism by some researchers in the field who have questioned whether the opposing pairs in the instrument can best represent the construct. Moreover, the stability of the 16 types is deemed as "less impressive" (Coffield et al, 2004). In terms of pedagogical values, the instrument is believed to be invaluable in counseling students into the proper areas of studies.

Activity-centered approach

Despite the use of various instruments to measure learning styles in both educational and business settings, some of the widely used learning styles instruments are commented as "low reliability", "poor validity" and "a negligible impact on teaching and learning" (*Source Public Management Journal)*.The most severe criticism, however, is that researchers tend to make "simplistic judgments" by stereotyping and labeling learners as 'verbalisers or imagers, activists or reflectors, left -brainers or right -brainers".

As Coffield (2004) commented "…teachers and trainers should move away from individual learning styles to broader notions of how learners approach and conceive learning." Activity-centered approach is based on this notion. Learning style inventories that take the activity-centered approach mainly focus on how learners approach knowledge or knowledge processing related to specific learning activities, contexts and environments. Rayner and Riding

(1997) identified 12 different models in this approach. Kolb's Learning Styles Inventory (LSI) is one of the influential ones.

Kolb's Learning Styles Inventory (LSI) (1984) was based on the concept of experiential learning which considered the learning process as knowledge creation through transformation of experience. The LSI proposed the following four learning modes: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE). Derived from the above four modes, four learning styles were identified: Diverger (CE and RO), Assimilator (AC and RO), Converger (AC and AE) and Accommodator (CE and AE).

The most impressive feature in Kolb's LSI is that Kolb takes a dialectical view of learning style by asserting that learning styles are not fixed personality traits but were rather stable behavior patterns. Moreover, the instrument is always under further development based on various criticisms it has received. However, its reliability and validity are considered controversial to most researchers. Furthermore, its claim of "stable states" is criticized as "decontexualized from cultural and social milieu" (Reynolds, 1997, as cited by Cano-Garcia &Hughes, 2000).

Entwistle's ASSIST

Entwistle's Approaches and Study Skills Inventory for Students (ASSIST) which also takes the activity/learning approach is a relatively well-structured learning styles assessing inventory (Coffield *et al.*, 2004). Entwistle's ASSIST is generally commented as a reliable instrument for discussing effective and ineffective strategies for learning orientations and strategies. In addition, the instrument is also useful for tracking learners' intellectual skills development and attitude in higher education (ibid). The wide use of the instrument in universities for staff development and discussion about learning and course design is due to the following merits embedded in the instrument.

First, in terms of the instrument per se, both internal and external evaluations of the inventory have shown satisfactory reliability and internal consistency. Furthermore, external analysis also shows that three learning approaches (deep, strategic and surface) as labeled by the instrument have good construct validity (ibid).

Secondly, the development of the instrument is based on both strong empirical studies and robust theoretical constructs. The instrument is under constant refinement ever since it was developed by Entwistle and other researchers in the 1980's. Quantitative studies which usually involved 800 or even more than 1000 students at the university level helped evolve and improve the instrument at the initial stage. Specifically, factor and co-relational analyses have

helped with the strict classification of the three learning approaches together with their respective relationship to "conceptions of learning", "preferences for teaching" and students' "self-reported academic performance".

Moreover, the instrument never ceases to be revised by the researchers. In 1998, Entwistle, Tait and McCune recruited 1284 first-year students of different fields of studies at different universities to reassess the instrument again. K-means relocation analysis and cluster analysis further tested the predictive ability of learning approaches on academic performances.

As a compensation for a lack of longitudinal studies in quantitative research and a step further from the quantitative studies, Entwistle and McCune (2000) conducted qualitative research in the form of case study and phenomenology to redesign the ASSIST inventory with the focus on further investigating the deep approach. As the researchers reported, "The inventories produce sub-scales which cover the categories found from the interviews, with the definition of the categories being refined through factor analysis of the sub-scales" (Entwistle, 2000).

Thirdly, from the perspective of educational practice, in comparison with cognitive and personality-centered approaches which view learning styles as static and fixed characteristics, ASSIST views learning as dynamic and contextually-based. In the ASSIST model, three learning approaches are identified: deep learning, strategic learning, and surface learning; each is composed discrete sub-scales as indicators. Because of its focus on learning approaches in contexts as opposed to stable personality characteristics, it has been widely used in various subject areas and the research results are reliable and shed light on pedagogical issues (Cassidy & Eachus, 2000; Diseth & martinsen, 2003; Sutherland, 95; Zhang, 2002). Learning styles research resulted in identification of effective and ineffective strategies in specific subject areas;

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thus instructional design takes into consideration of those strategies. As a matter of fact, more learner-geared instructional design and curriculum development can greatly promote both teaching and learning effectiveness.

Specifically in the pedagogical context of Chinese instruction and learning at the Defense Language Institute (DLI) where technology is intensively used to enhance learning effectiveness, Chinese learning, as a type of foreign language learning, is greatly impacted by learners' individual factors, such as learner belief systems, cognitive styles, personality types, self-esteem in language learning, motivation in learning, cultural acceptance, gender, age as well as attitude towards TELL (Freeman & McElhinny, 1996; Gass & Selinker, 1994; Richards & Lockhart, 1996). Due to the totally different pronunciation and writing, and grammar systems of the Chinese language compared to the English language, learners, as opposed to calling for their innate personality features and cognitive perceptions, are often observed to quickly adjust their learning by bringing in their preferred learning approaches to tackle this new language learning situation. Additionally, learners show a great variety of motivation and attitude towards language learning in the military environment. After examining many learning styles inventories, Entwistle's ASSIST is considered the most appropriate instrument to obtain learners' general understanding of learning, determining their motivation in and attitude towards language learning. What is more important is that using this instrument to predict learners' language proficiency as measured by Chinese language proficiency can provide practical insights and guidance for classroom teachers to cultivate appropriate learning approaches to the learning of Chinese to optimize learning effectiveness.

Finally, a general examination of the existing textbooks used at DLI does show serious pedagogical problems such as outdated and non-cohesive learning materials, unsystematic

course design as well as a missing link between mode of instruction (technology-enhanced instruction) and instructional content. A panoramic and comprehensive understanding about language learning per se, learners' learning approaches, as well as their relationship with other factors, therefore, will provide much-needed insights for adaptation of teaching material, for redesigning instruction, modes of instruction, and respective assessment methods.

Learning Approaches and Attitudes towards Technology-Enhanced Learning

Investigation into learning approaches and their relationship with learners' affective variables is of pivotal importance in obtaining a more systematic and in-depth knowledge on the learner's end. First, learning approaches have profound impact on learners' affective filters, which is believed by some language learning researchers to influence learning effectiveness. Among various affective variables, attitude towards learning is considered to have a close relationship to learning approaches. Christensen, Anakwe, and Kessler (2001) conducted their study to investigate the relationship between learning preferences and receptivity to distance learning with 399 students at two universities. As the researchers reported, general student DL receptivity was measured by a five-point Likert-type scale and learning preferences were measured by a five-item scale. The researchers reported that through regression analysis, they found learning preferences were significant predictors of DL receptivity (Adjusted R^2=.26 which indicated 26% of variance in receptivity scores could be explained by learning preferences)(Christensen *et al.*, 2001).

Wells (2000) carried out his study to assess the effects of several variables on students' internet attitudes, among which learning styles were one of the important influencing factors. Participants involved in the study were graduate students enrolled in the Computer-Mediated Communication in Education course at West Virginia University. The researcher reported that learning styles were measured by GEFT and the dependent variable Internet stage of concern which was an indicator of attitude was measured by the Stages of Concern (SC) instrument developed by Hall and Rutherford (1997). Wells indicated that there was a significant relationship between learning styles and stage of concern; students with higher GEFT scores tended to have higher concerns (Well, 2000).

Chapelle and Jamieson's (1986) study obtained similar results indicating that student attitudes toward CALL were significantly related to field independence and motivational intensity (ibid). Klassen & Milton's research (1999), (Aacken, 1999), and many other studies devoted to assessing the relationship between attitude and language proficiency have proved that metacognitive strategies, along with positive attitudes have tremendous impact on language learning, especially on language acquisition in CALL.

McCune and Entwistle carried out a qualitative investigation in the form of longitudinal interviews of first-year psychology students' learning approaches. They used the ASSIST instrument and found that students who had the deep approach showed active engagement and interest in their studies (McCune & Entwistle, 2000)

<u>Learning Styles and Academic Achievement</u>

It can be seen from the research literature that learning styles do have great influence on cognitive variables in learners which will ultimately affect learning effectiveness, and much research, has been conducted to assess the impact of learning styles on language proficiency. Information obtained from this line of inquiry will undoubtedly shed more light on the issue of how to enhance students' learning performance. Cano-Garcia and Hughes (2000) conducted a study to examine whether first year psychology majors' learning styles were related to their thinking styles and if they were related, whether they could predict academic achievement. They adopted Kolb's model and another inventory to conduct the study. Canonical correlation analysis and regression analysis showed a moderate relationship between the two styles and academic achievement was related to students' thinking styles.

Crosby and Iding (1997) examined whether cognitive styles had an influence on the effectiveness of multimedia tutors with the ultimate objective of helping students learn abstract concepts. They assessed whether Myers-Briggs Type Indicator was related to students' performance scores as determined by the tutorial. A repeated-measure of ANOVA showed statistical significance between their scores and style types as described by the learning style instrument (Crosby & Iding, 1997).

Armstrong (2000) examined relationships between individual's cognitive skills and students' ability to perform well on tasks requiring different approaches to information gathering, processing and evaluation. The study also assessed relationships between cognitive style and overall ability. The study involved 731 final year university students enrolled in a BA degree program in Business Administration and adopted the Cognitive Style Index (CSI) to measure learning styles. Several independent t-tests generated both significant and non-significant relationships between learning styles and academic achievement as specified in the study. In addition the relationship between learning style and ability remained vague in this research (Armstrong, 2000).

Zhang (2002) recruited students from three research universities in the United States to investigate the nature of thinking styles and their self-reported grade point averages which were operationally defined as academic achievement in this study. The researcher used both the Thinking Styles Inventory (TSI; Sternberg & Wagner, 1992) and Style of Learning and Thinking (SOLAT; Torrance et al., 1988) as research instruments. Multiple-regression procedures showed that three of the seven thinking styles statistically contributed to students' accumulative GPAs (Zhang, 2002).

Cassidy and Eachus (2000) conducted a study to assess the relationship between students' learning style and their self-reported research methods proficiency. The study involved 130 full-time undergraduate students in a university and adopted the Approaches and Study Skills Inventory for Students (ASSIST; Tait & Entwistle, 1996) to measure learning styles. Their correlation study produced mixed results: academic self-efficacy was positively correlated with internal locus of control beliefs, deep and strategic study approaches and self-confidence, and was negatively correlated with external locus of control beliefs and an

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apathetic study approach. On the other hand, the study indicated a positive correlation between academic achievement with a strategic approach and a negative correlation with an apathetic approach. Finally, a deep learning approach failed to be associated with academic achievement (Cassidy and Eachus, 2000).

In summary, various studies conducted in the field of learning styles have conspicuously shown that research into the issue of learning styles sheds much light on education in a variety of aspects. Especially, the impacts of learning styles on both learners' attitudes towards learning and on the ultimate academic achievement have been promoting great enthusiasm in this line of research. Studies on the issue have greatly encouraged researchers to detect the legitimate values embedded in such research. However, the mixed nature of research outcomes generated from learning styles and its relationship with academic achievement, attitudinal factors as well as with other learners' cognitive and affective variables does call for a need to examine and reexamine learning styles in a more rigorous manner. Unless such additional studies are begun, the scope of learning styles research will still fumble in its directions and potential impact on both learning and teaching will remain unsubstantiated.

CHAPTER THREE: RESEARCH METHODOLOGY

The present study aimed at assessing the relationship between learning approaches and learners' language proficiency and their attitudes towards technology-enhanced language learning. Specifically, the study assessed whether deep approach could predict higher language proficiency and more positive attitude towards technology-enhanced language learning; whereas surface approach was more likely to lead to lower language proficiency and more negative attitude towards TELL. Finally, this study further probed into some possible influencing factors on learners' formation of their specific learning approaches. This chapter consists of a brief description of the population, the research design, the pilot study as well as a factual report of how data was collected and analyzed.

Population and Sample for the Study

The target population in the main body research was made up of 137 Chinese language learners who were all currently enrolled in the Chinese language program (Basic Course) at DLI. The sample selected from the target population were learners who had been learning the new Unit book for at least 22 weeks, such a period of study could guarantee that learners had

already formed relatively stable learning approaches as well as established attitudes towards such technology-enhanced language learning.

General Learning Environment

Students used Chinese Basic Course (a new unit book) with its electronic version. Teachers normally uploaded the PDF version of the textbook together with the sound files onto the desktop in the classroom and projected it onto a large screen for students. In addition to such an overall TELL environment, students were strongly encouraged to buy and use the Wenlin software to help with their Chinese learning. Hence, the overall language learning environment with the sample could be considered as technology-enhanced language learning. The findings generated from the study, therefore could be generalized to the target population.

Research Design and Instrumentation

The present study was an empirical research quantitative in nature. Data were collected through two survey questionnaires. Learning approaches and students' self-reported language proficiency were examined by the well-established inventory of ASSIST designed by Professor

Entwistle and his research team at the University of Edinburgh in the UK. It was utilized to examine subjects' learning approaches. Subjects were basically categorized into three different approaches, namely deep approach, strategic approach and surface approach; learners' dominating approach was determined by the mean of the total score of the approach which was the result of the sum of all sub-scale scores embedded in each category. Permission to use the instrument was obtained from the instrument developers and the instrument

Learners' attitude towards technology-enhanced language learning was assessed by the Survey of Attitude towards Technology-Enhanced Chinese Learning (SATECL) designed by the researcher (See Appendix B). This attitude questionnaire included two parts. The first part aimed to obtain some of the learners' demographic information that contained the following items:

- Age

- Gender

- Educational background

- Prior experience in language learning

- Prior experience in technology-enhanced language learning

- Self-reported ability in using PC and the World Wide Web

The second part of the questionnaire which was designed in the form of Likert scale, ranging from "Agree" to "Disagree" for respondents to rate, aimed to elicit learners' reaction and attitudes towards the digitized textbook and towards the effectiveness of technology

application. Finally, an open-ended question was designed to elicit students' overall comments concerning TELL.

Pilot Study

In order to test the reliability and to further refine the SATECL for the main body research, the researcher conducted a pilot study with two classes of learners in the Basic Chinese Program. The clustered sample of students was both at 35th week out of the whole 63 weeks in the program. 40 sets of surveys were sent out and 38 valid responses were obtained. Factor analysis clearly showed that two factors were extracted. The first factor which contained six items was named "technology preference"; the second factor which contained seven items was named "technology implementation". Reliability showed that Cronbach's alpha coefficients were .833 and .834 respectively for the two factors. Only item thirteen "My own PDA is very helpful" turned out to be a bad-designed question and was removed from main body research. In addition, two other items concerning the effectiveness of technology were added to the main body of study. Reliability Analyses of the two factors are presented in the following tables.

Table 1

Reliability Analysis for Factor One "Technology Preference"

Technology Preference	Factor Loadings
Using TELL fits my learning style	.801
Using TELL holds my attention	.791
Continue to learn Chinese in the TELL environment	.823
Using TELL is a good idea	.832
It's fun to learn Chinese with the help of PC	.812
The Wenlin software is very helpful	.831

Table 2

Reliability Analysis for Factor Two "Technology Implementation"

Technology Implementation	Factor Loadings
Textbook presentations are very helpful for listening and speaking	.807
The textbook creates an authentic communicative environment	.780
The audio recordings are good in quality	.802
Teachers are well trained to use computer-related technology	.820
The CD is very help for my self-study	.820
The textbook requires learners' active participation	.831
Activities are very beneficial for reinforcing the language learned in the presentations	.823

Data Collection Procedure

After obtaining permission from the Research Division at DLL, from the Dean of Asian School I as well as from Chairs of the Chinese Departments, the present researcher formed contact with faculty members who were teaching the selected sample of learners. They agreed to help administer both the ASSIST and the SATECL. Learners, on the other hand, filled in the *Form of Informed Consent* and completed both surveys, which altogether took approximately 20 minutes to fill out. The consent form was signed right on the spot; whereas both surveys were taken home by the respondents to fill out in their spare time.

Data Analysis

The research questions and hypotheses worked out by the researcher form the basis of data analysis. Data obtained from ASSIST and the Attitude Questionnaire were input into the SPSS program. Both descriptive and inferential statistics were reported. Descriptive statistics showed specific learning approach and attitude towards TELL as indicated by the item scores. Meanwhile, inferential statistics, namely Linear Regression was run to assess the major six research questions and several other minor research questions and their respective hypotheses.

<u>Summary</u>

   Chapter Three provided a panoramic view of the design of the research. How sample

was selected from the population pool, research instruments, data collection procedure as well

as analysis were briefly discussed. The following two chapters will provide a factual report and

discussion of the findings generated from the analysis; in addition, implications and insights

gained from the research will be further explored in terms of both language pedagogy and

future research itself.

CHAPTER FOUR: DATA ANALYSIS

This quantitative study was designed and carried out to assess whether learning approaches could predict students' academic performance in the Chinese language learning, whether learning approaches could predict learners' attitudes towards TELL in the military learning environment at DLI, and whether learners' demographic factors could predict learners' academic performance and their attitudes towards TELL as well.

This chapter provides the analyses of data collected in the survey research. This section includes a brief account of learners' demographic information; a descriptive report regarding respondents' scores on language proficiency and a discussion of three learning approaches. Finally, it provides answers to all the research questions from the statistics point of view. The open question aimed to elicit respondents' comments or suggestions concerning TELL will be interwoven and discussed together with relevant research questions.

Factor Analysis and Reliability Analyses of the Factors

Pilot study factor analysis and reliability analyses as well as feedback from the dissertation committee members convinced the present researcher to delete the item "My own PDA is very helpful" and at the same time added two attitude statements to the SATECL, namely "Technology has been effectively integrated into the class" and "Technology has greatly helped in teaching the language". As in the pilot study factor analysis, two factors were generated，with the first added statement belonging to the second factor "technology implementation" and the second added statement belonging to the first factor "technology preference". However, the statement "The Wenlin software is very helpful" failed to fall into in neither of the factors. Reliability Coefficients for the two factors are Alpha=.8586 and Alpha=.7601 respectively. Data from the reliability analyses for both factors are shown in Table 3 and 4:

Table 3

Reliability Analysis for Factor One "Technology Preference"

Technology Preference	Factor Loadings
Using TELL fits my learning style	.8134
Using TELL holds my attention	.8080
Continue to learn Chinese in the TELL environment	.8448
Using TELL is a good idea	.8438
It's fun to learn Chinese with the help of PC	.8189
Technology has greatly helped in teaching the language	.8726

Table 4

Reliability Analysis for Factor Two "Technology Implementation"

Technology Implementation	Factor Loadings
Textbook presentations are very helpful for listening and speaking	.7278
The textbook creates an authentic communicative environment	.7353
The audio recordings are good in quality	.7584
Teachers are well trained to use computer-related technology	.7379
The CD is very help for my self-study	.7614
The textbook requires learners' active participation	.7275
Activities are very beneficial for reinforcing the language learned in the presentations	.7000
Technology has been effectively integrated into the class.	.7285

Learners' Demographic Information

Learners who participated in this research were cluster sampled from seven teaching teams in the four Chinese Departments. In order to make sure that students participate voluntarily and take a serious attitude towards the survey, a senior researcher in the Research and Analysis Division at DLI gave all participants ten minutes orientation before administering the survey. As

was also true with the pilot study group, learners were from different military services and had been learning the Chinese language in the setting of TELL for at least twenty-two weeks by the time data were collected. Two surveys were sent out to 158 learners. 137 were returned and considered as valid responses.

Gender composite of all the participants is presented in Table 5. It is worth mentioning that in the military setting, the number of males usually exceeds that of females.

Table 5

Gender Composite

Gender Composite	Respondents N (%)
Male	85 (62%)
Female	52 (38%)
Total	137 (100%)

Degree of Application: 0=Male; 1=Female

In terms of respondents' age, the majority of learners were between 18 and 25, which indicated that they were relatively young adult language learners. Detailed information concerning age of the respondents is presented in Table 6.

Table 6

Age Information of the Respondents

Age Range	Respondents N (%)
18-25	109 (79.6%)
26-30	21 (15.3%)
31-35	5 (3.6%)
>35	2 (1.5%)
Total	137 (100%)

Consistent with the age information presented in Table 6, demographic information concerning learners' highest educational levels achieved showed that the vast majority of the respondents (85.6%) had either a college degree or high school diploma with the former slightly exceeding the latter in number. On the other hand, very few respondents (4.2%) reported that they had completed graduate school. Detailed information about learners' education is presented in Table 7.

Table 7

Highest Education Levels Achieved by the Respondents

Educational Level	Median	Mode	Respondents N (%)
High School			63 (46%)
College			68 (49.6%)
Master Degree			5 (3.6%)
PhD Degree			1 (0.7%)
Total	2.00	2	137 (100%)

Degree of Application: 1=High School; 2=College; 3= Master Degree; 4=PhD Degree

In terms of learners' prior experience in foreign language learning, the overwhelming majority of respondents (81%) indicated that they had previously learned a foreign language of some kind. The ratio of those having prior experience in foreign language learning vs. having no experience is clearly shown in Table 8.

Table 8

Respondents' Prior Experience in Foreign Language Learning

Factor		Median	Mode	Respondents N (%)
Prior Experience in Foreign Language Learning		1.00	1	
	Yes			111 (81%)
	No			26 (19%)
Total				137 (100%)

Degree of Application: 1=Yes; 2=No; 99= Missing

Only 13 out of the 137 research participants mentioned that they had studied foreign languages in the technology-enhanced learning environment. Twenty-two (16.1%) students failed to respond to this question.

Table 9

Respondents' Prior Experience in TELL

Factor	Median	Mode	Respondents N (%)
Prior Experience in TELL	2.00	2	
Yes			13 (9.5%)
No			102 (74.5%)
Missing			22 (16.1%)
Total			137 (100%)

Degree of Application: 1=Yes; 2=No; 99= Missing

Despite the fact that a great number of respondents lacked experience in TELL, they considered themselves as either average or high proficient in using both personal computers and the World Wide Web. The numbers and percentages in each category are presented in Table 10.

Table 10

Self-Report Ability in Using Personal Computer and the World Wide Web

Self-Report Ability	Median	Mode	Respondents N (%)
Not Skillful			3 (2.2%)
Average			70 (51.1%)
Very Skillful			64 (46.7%)
Total	2.00	2	137 (100%)

Degree of Application: 1=Not Skillful; 2=Average; 3= Very Skillful

Learners' Learning Approaches

As illustrated in the literature of ASSIST, learners normally manifest three different learning approaches, namely deep approach, strategic approach and surface apathetic approach. The deep approach and surface apathetic approach are composed of four sub-scales, whereas the strategic approach consists of five sub-scales. Each of the sub-scales is further composed of various discrete questions scattered throughout the survey instrument. Approach scores are mean scores which refer to the summation of the scores on all the question items divided by the number of sub-scales that contribute to the specific approach. The learning approach score distribution table below indicates that the mean scores are quite close among the three approaches; this is especially true with scores of the deep and strategic approaches (14.77 & 13.89 respectively). The relatively even manifestation of the three learning approaches reflect what the ETL research groups termed as "dissonant responses" (McCune & Entwistle, 2000:2), which refers to the combination of approaches in a particular individual learner.

Table 11

Score Distributions of Learning Approaches by Respondents

Learning Approach	Mean	Median	Mode	Standard Deviation	Minimum	Maximum	Respondents N (%)
Deep Approach	14.77	15.00	16	2.05	8	20	137 (100%)
Strategic Approach	13.89	14.00	16	2.21	9	19	137 (100%)
Surface Apathetic Approach	11.09	11.25	12	2.59	7	19	137 (100%)

<u>Learners' Language Proficiency</u>

The learner's language proficiency, which is represented by their Unit 4 listening test scores, is presented in Table 12. The mean of Unit 4 listening test scores of the 137 respondents was 81.60, ranging from 59, being the lowest, to 100, the highest, with the standard deviation being 10.29.

Table 12

Respondents' Unit 4 Listening Scores

Mean	Median	Mode	Standard Deviation	Minimum	Maximum	Respondents N (%)
81.60	82.00	82	10.29	59	100	137 (100%)

Score distribution is more visually presented in Figure 1.
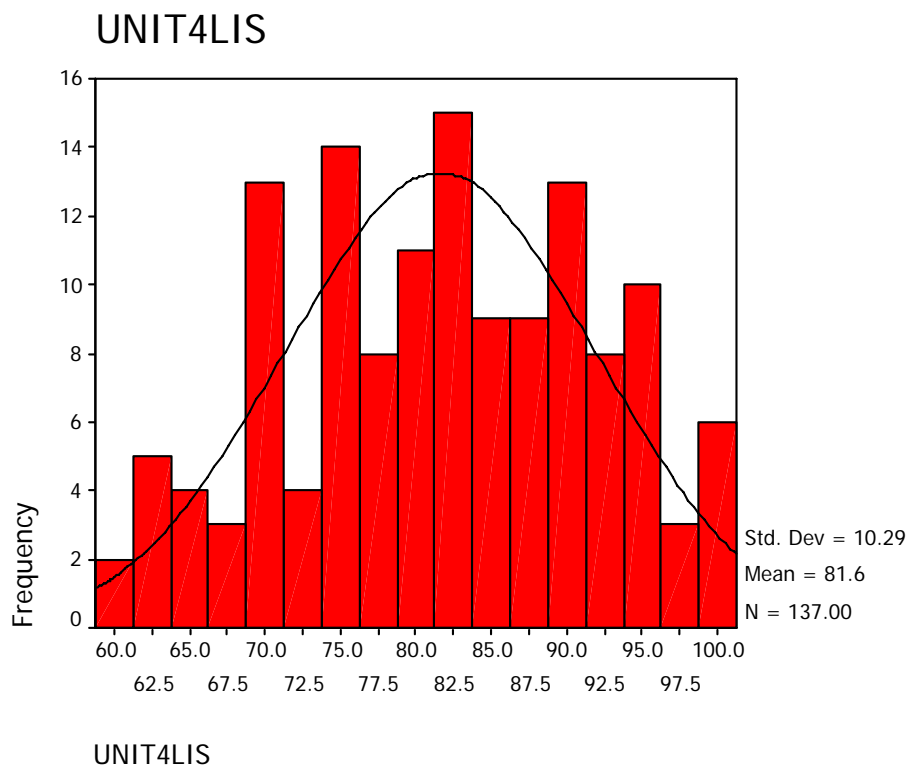
UNIT4LIS

Figure 1 Unit 4 Listening Test Scores

In addition to the actual assessment of learners' language proficiency, the ASSIST survey instrument asked learners to self-rate their academic performance. As can be seen in the following table, learners' overall self-perception fell into the category "between quite well and about average" (Median=6). The majority of learners deemed their academic performance as "quite well" (Mode =7).

Table 13

Self-Perception of Academic Performance by the Respondents

Academic Self-Report	Median	Mode	Minimum	Maximum	Respondents N (%)
Rather Badly					4 (2.9%)
Between Not So Well & Rather Badly					3 (2.2%)
Not So Well					14 (10.2%)
Between About Average & Not So Well					16 (11.7%)
About Average					18 (13.1%)
Between Quite Well & About Average					29 (21.2%)
Quite Well					32 (23.4%)
Between Very Well & Quite Well					16 (11.7%)
Very Well					5 (3.6%)
Total	6.00	7	1	9	137 (100%)

Degree of Application:
 1=Rather Badly
 2=Between Not So Well & Rather Badly
 3= Not So Well
 4= Between About Average & Not So Well
 5= About Average
 6= Between Quite Well & About Average
 7= Quite Well
 8= Between Very Well & Quite Well
 9= Very Well

Research Questions

The following sections address the research questions that guided this quantitative inquiry. Data and statistical analysis associated with each question are presented in each section.

Research Question 1

The first question set is "What are students' various learning approaches in language learning? Which of the learning approach (es) is/are more suitable for foreign language learning hence may lead to higher language proficiency?"

As shown in Table 11, three learning approaches, namely, deep approach, strategic approach and surface apathetic approach were manifested. Correlation analysis was conducted to further assess the correlations between different approaches and between each approach and language proficiency achieved by the learners. The correlation Table 14 indicates that the deep and strategic approaches are positively related to each other ($p<.01$). On the other hand, the strategic approach is negatively associated with the surface apathetic approach ($p<.01$). In terms of relationships between learning approaches and Chinese proficiency, it is evident from Table 14 that the deep approach is not related to language proficiency. Whereas the strategic approach is closely related to listening scores ($p<.05$), the surface apathetic approach is negatively associated with listening scores ($p<.01$).

Table 14

Correlation Analysis of Learning Approaches and Unit 4 Listening Score

Factors	(D)	(S)	(SA)	(L)
Deep Approach (D)	1.000	.544**	-.124	.057
Strategic Approach (S)		1.000	-.252**	.187*
Surface Apathetic Approach (SA)			1.000	-.494**
Unit 4 Listening Score (L)				1.000

Note: * p<.05; ** p<.01

Regression analysis indicates that learning approaches can predict respondents' listening scores. 23.3% of the variance, which was indicated by the statistics of Adjusted R^2=.233 in Unit 4 listening score can be explained by learning approaches (F=14.807; p<.01) (See Table 15). However, the regression table below shows that only the surface apathetic approach is a statistically significant predictor (t=-6.143; p<.01). Higher scores obtained on the surface apathetic approach lead to lower listening scores.

Table 15

Regression Analysis of Learning Approaches and Unit 4 Listening Score

Independent Variable		R Square	Adjusted R Square	t Value	F Value	Significance
Learning Approaches		.250	.233		14.807	.000**
	Deep Approach			-.608		.544
	Strategic Approach			1.045		.298
	Surface Apathetic Approach			-6.143		.000**

Note: Dependent Variable: Unit 4 Listening Scores
    ** p<.01

Research Question 2

The second research question is "Can learning approaches predict learners' self-reported language proficiency?"

Similar to the statistical results generated from the first research question, the strategic approach is positively related to learners' self-rating of their academic performance (p<.05); whereas the surface apathetic approach is negatively related to this type of self-report (p<.01). Findings from these two correlation analyses also indicate that learners' actual language proficiency is relatively consistent with self-perception of their academic performance, since they both have significant correlations with strategic approach and surface apathetic approach.

Table 16

Correlation Analysis of Learning Approaches and Learners' Self-Reported Academic Achievement

Factors	(SRAA)
Deep Approach (D)	.101
Strategic Approach (S)	.190*
Surface Apathetic Approach (SA)	-.474**
Self-Reported Academic Achievement (SRAA)	1.000

Note: * p<.05; ** p<.01

Regression analysis indicates that learning approaches predict learners' self-report of their academic performance (F=13.239; p<.01) and 21.3% of the variance in their self-report is explained by learning approaches (Adjusted R^2=.213) (See Table 17). It can be further concluded, however, only the surface apathetic approach is a statistically significant predictor of respondents' self-report of academic performance (t=-5.784; p<.01)

Table 17

Regression Analysis of Learning Approaches and Learners' Self-Reported Academic Achievement

Independent Variable	R Square	Adjusted R Square	t Value	F Value	Significance
Learning Approaches	.230	.213		13.239	.000**
Deep Approach			.045		.964
Strategic Approach			.788		.432
Surface Apathetic Approach			-5.784		.000**

Note: Dependent Variable: Self-Reported Academic Achievement
  ** $p<.01$

Research Question 3

Research question three is "What are the students' overall attitudes towards technology-enhanced language learning (TELL)?"

Learners' scores on attitudes towards TELL were computed by adding up each attitude question item. Altogether there were fifteen items and each item was rated with the Likert Scale ranging from 1 (disagree) to 5 (agree); thus the most negative score would be 15, a completely neutral score would be 45, and the maximum positive score would be 75. The mean, median, and mode presented in Table 18 indicate that the learners hold overall positive attitudes towards TELL.

Table 18

Respondents' Attitudes towards TELL

Mean	Median	Mode	Standard Deviation	Minimum	Maximum	Respondents N (%)
58.8	59.00	58	7.69	39	75	137 (100%)

Scores gained on each attitude statement are presented in the following table. Despite the fact that overall positive attitudes are held by respondents, they show relatively low ratings regarding "teachers were well trained to use computer-related technology" (Mean=2.93) and "The textbook creates an authentic communicative environment for you to practice Chinese" (Mean= 3.27).

Table 19

Means, Median and Mode for Respondents' Scores on Attitude Statements

Attitude Statements	Mean	Median	Mode
Using TELL is a good idea.	4.64	5.00	5
Using TELL fits my learning style.	4.19	4.00	5
Using TELL holds my attention	4.07	4.00	5
It' a lot of fun to learn Chinese with the help of a computer.	4.18	4.00	5
If possible, I will continue to learn Chinese in a technology-enhanced learning environment even after I graduate from DLI.	4.18	4.00	5
The CD that comes with the textbook is very helpful for my self- study.	3.91	4.00	5
The Wenlin software is very helpful.	4.53	5.00	5
Presentations in the textbook are very helpful for listening and speaking.	4.32	5.00	5
Activities in the textbook are very beneficial for reinforcing the language learned in the presentations.	3.58	4.00	4
The audio recordings that go with the textbook are good in quality.	3.47	4	4
The textbook requires learners' active participation.	3.84	4.00	4
The textbook creates an authentic communicative environment for you to practice Chinese.	3.27	3.00	3
Teachers are well trained to use computer-related technology.	2.93	3.00	4
Technology has been effectively integrated into the class.	3.74	4.00	4
Technology has greatly helped in teaching the language.	3.97	4.00	5

Degree of Application: 1=Disagree;
2=Disagree Somewhat
3= Unsure
4=Agree Somewhat
5= Agree

Research Question 4

Research question four set is "Is there any relationship between attitudes and learning approaches? Which of the learning approach (es) is/are more likely to lead to positive attitude towards TELL?"

The correlation table below demonstrates that both the deep approach and the strategic approach are significantly and positively associated with respondents' attitudes towards TELL ($p<.01$). On the other hand, the surface apathetic approach is negatively related to these attitudes ($p<.01$). In other words, higher surface apathetic scores are likely to be associated with lower attitudes scores towards TELL.

Table 20

Correlation Analysis of Learning Approaches and Learners' Attitudes towards TELL

Factors	(D)	(S)	(SA)	(ATT)
Deep Approach (D)	1.000	.544**	-.124	.206**
Strategic Approach (S)		1.000	-.252**	.350**
Surface Apathetic Approach (SA)			1.000	-.275**
Attitudes towards TELL (ATT)				1.000

Note: * $p<.05$; ** $p<.01$

Regression analysis shown in Table 21 indicates that learning approach can predict learners'

attitude towards TELL (F=8.434; p<.01) and that 14.1% of the variance in attitude score can be

explained by learning approach (R^2=.141). With regard to which specific learning approach or

approaches predict learners' attitudes towards TELL, the regression statistics in Table 21

indicate that the strategic approach (t=2.935; p<.01) and the surface apathetic approach (t=-2.429;

p<.05) are both statistically significant predictors for the attitude score; whereas deep approach is

not a significant predictor (t=.273; p>.05).

Table 21

Regression Analysis of Learning Approaches and Learners' Attitudes towards TELL

Independent Variable		R Square	Adjusted R Square	t Value	F Value	Significance
Learning Approaches		.160	.141		8.434	.000**
	Deep Approach			.273		.785
	Strategic Approach			2.935		.004**
	Surface Apathetic Approach			-2.429		.016*

Note: Dependent Variable: Attitudes towards TELL
   * P<.05
   ** p<.01

Research Question 5

Research question five is "Can such demographic factors such as age, educational level, and prior experience in foreign language learning and in technology-enhanced foreign language learning predict higher language proficiency in learners?"

Pearson correlation was conducted to assess the possible relationship between and their language proficiency which is represented by their Unit 4 listening scores. Such demographic factors include age, educational level, prior experience in foreign language learning, prior experience in TELL as well as self-perception of ability in using personal computer and the World Wide Web. It is worth mentioning that some respondents failed to provide responses concerning information about their TELL experience; only 115 respondents who generated answers to all question items are included in this analysis.

The Correlation Table 22 shows that age is significantly associated with educational level in a positive way (p<.01). On the other hand, both age and educational level are negatively related with their prior experience in foreign language learning (p<.05). It is interesting to note that respondents' self-report of their ability in using PC and the World Wide Web is positively related to their education level (p<.05) but negatively related to both their prior experience in foreign language learning and TELL (p<.05).

Table 22

Correlation Analysis of Learners' Demographic Information and Learners' Unit 4 Listening Scores (N=115)

Factors	(A)	(EL)	(EFLL)	(TELL)	(APW)	(L)
Age (A)	1.000	.688**	-.163*	-.042	.101	-.067
Educational Level (EL)		1.000	-.196*	-.091	.210*	-.111
Prior Experience in Foreign Language Learning (EFLL)			1.000	.068	-.157*	-.070
Prior Experience in TELL (TELL)				1.000	-.157*	.093
Ability in Using PC & the World Wide Web (APW)					1.000	-.058
Unit 4 Listening Score (L)						1.000

Note: * p<.05; ** p<.01

Regression Table 23 shows that none of the demographic factors are significant predictors for learners' language proficiency (F=.679; p>.05). No variance in listening scores can be explained by these demographic factors (R^2=-.014).

Table 23

Regression Analysis of Learner's Demographic Information and Learners' Unit 4 Listening Scores (N=115)

Independent Variable		R Square	Adjusted R Square	F Value	Significance
Demographic Factors		.030	-.014	.679	.640
	Age				.965
	Education Level				.370
	Prior EFLL				.284
	Prior TELL				.383
	Ability in PC				.708

Note: Dependent Variable: Unit 4 Listening Scores

Research Question 6

Research question 6 is "Can such demographic factors such as age, educational level, prior experience in foreign language learning, and prior experience in technology-enhanced foreign language learning predict learners' attitudes towards TELL?"

Correlation analysis Table 24 indicates that none of the demographic variables are significantly associated with respondents' attitudes towards TELL (p>.05).

Table 24

Correlation Analysis of Learners' Demographic Information and Learners' Attitudes towards TELL (N=115)

Factors	(A)	(EL)	(EFLL)	(TELL)	(APW)	(ATELL)
Age (A)	1.000	.688**	-.163*	-.042	.101	.099
Educational Level (EL)		1.000	-.196*	-.091	.210*	.109
Prior Experience in Foreign Language Learning (EFLL)			1.000	.068	-.157*	-.036
Prior Experience in TELL (TELL)				1.000	-.157*	-.051
Ability in Using PC & the World Wide Web (APW)					1.000	.072
Attitudes towards TELL (ATELL)						1.000

Note: * p<.05; ** p<.01

Regression analysis also indicates that none of the demographic variables are significant predictors for respondents' attitudes towards TELL (F=.377; p>.05) and no variance in attitudes

scores can be explained by those demographic variables (R^2=-.028).

Table 25

Regression Analysis of Learner's Demographic Information and Learners' Attitudes towards TELL (N=115)

Independent Variable		R Square	Adjusted R Square	F Value	Significance
Demographic Factors		.017	-.028	.377	.863
	Age				.700
	Education Level				.657
	Prior EFLL				.953
	Prior TELL				.711
	Ability in PC				.631

Note: Dependent Variable: Learners' Attitudes towards TELL

Summary

This chapter is devoted to presenting both descriptive and inferential data and their respective findings.

The ASSIST and Attitude surveys were sent out and administered as one set to 158 Chinese Basic Course learners from six teaching teams. Altogether 137 valid responses were obtained.

Descriptive data showed that the majority of learners ranged from 18 to 25 in age and had college degrees. The majority of respondents (111 out of 137) had prior experience in foreign language learning; however only 13 respondents reported that they had ever been exposed to the TELL environment. In terms of reporting their ability to use a PC and the World Wide Web, altogether 134 students out of 137 deemed their ability as either "average" or "very skillful".

In terms of learning approaches, all three learning approaches were manifested in this group of learners. The deep approach was positively related to strategic approach ($p<.01$) and the strategic approach was negatively associated with surface apathetic approach ($p<.01$).

Learners' language proficiency was indicated by their Unit 4 listening test scores (Mean=81.60). In addition, most learners (82 out of 137) reported their academic performance as above average.

A number of regression analyses were conducted to assess whether the hypothesized factors could be significant predictors for learners' language proficiency. Research indicated that the surface and apathetic approach ($p<.01$) was a significant predictor for both learners' measured language proficiency and their self-perception of academic performance. In addition, the strategic approach was a positive predictor for learners' attitudes towards TELL ($p<.01$); whereas, surface and apathetic approach was a negative predictor for learners' attitudes towards TELL ($p<.05$). Finally learners demographic information such as age, education level, prior experience in foreign language learning, prior experience in TELL as well as their skills in operating a personal computer ability to use a PC and the World Wide Web could not predict either learners' language proficiency or their attitudes towards TELL.

Conclusions generated from the data analyses will be discussed in the next chapter. Furthermore, insights gained for pedagogical issues and curriculum design and development will

be considered. Finally, research limitations as well as suggestions for further research in the field

will be included.

CHAPTER FIVE: SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Findings from Descriptive Data

This quantitative research was aimed at assessing the potential relationship between learners' learning approaches and their language proficiency and between learning approaches and learners' attitudes towards TELL. In addition to correlation analyses, this study specifically focused on whether learning approaches were significant predictors for both learners' language proficiency measured by their Unit 4 Listening Score and for their attitudes towards TELL. Finally, the study also collected some of learners' demographic information relevant to learning approaches and assessed whether such demographic variables as age, educational level, prior experience in foreign language learning and prior experience in TELL could predict learners' language proficiency.

Two survey instruments were used and administered to collect data. The first learning approach assessing inventory called ASSIST was designed by Professor Entwistle and other researchers in his research team; whereas the SATECL was designed by the researcher herself. The Pilot study involving 37 respondents was conducted to assess the validity and reliability of the second instrument. Factor analysis and reliability analysis helped further refine the

instrument. The main body research data were collected from seven individual teams that had been exposed to the TELL Chinese learning environment for at least 22 weeks.

Data collected from both surveys were put into the statistical analysis program SPSS. Both descriptive and inferential data were reported to provide a comprehensive view of learners' biographic information and to validate the research questions respectively.

As would be expected in the military setting, the respondents were relatively young language learners, they ranged from 18-25 years old, 49.6% of whom had college degrees and 46% had high school diplomas. In terms of their foreign language learning experience, it was surprising for the researcher to discover that the great majority of respondents (81%) indicated that they had learned a foreign language before; whereas, only 13 respondents mentioned that they had had prior experience in TELL.

As a result of my research, it was highly likely that technology-enhanced language learning at DLI was fresh and unique experience for most learners. Despite the fact that learners lacked previous experience in TELL, respondents showed confidence in their computer and online skills. Moreover, they demonstrated relatively high scores as well as high ratings in their language proficiency as assessed by their Unit 4 Listening Scores (Mean=81.6), self-report of academic performance which placed their ability at "between quite well and about average" as well as in their attitudes towards TELL (Mean=58.8/75).

Descriptive data concerning respondents' learning approaches demonstrated learners' fairly even possession of the three different learning approaches regarding the mean scores being 14.77, 13.89 and 11.09 which represented deep approach, strategic approach and surface apathetic approach respectively.

Summary & Conclusions Based on Answers to Research Questions

The first research question aimed at assessing whether learners' learning approaches could predict their language proficiency as measured by their Unit 4 listening scores. Regression analysis showed that neither the deep nor the strategic approach was a significant predictor of learners' language proficiency as hypothesized by the researcher; whereas, the surface apathetic approach proved to be a significant predictor (t=-6.143, p<.01) which was consistent with the research hypothesis. It was equally noteworthy, however, that the Coefficients table indicated that, although as an insignificant predictor, a negative relationship seemed to exist between the deep approach and respondents' language proficiency (t=-.608, p>.05). Such a research finding was utterly contradictory to the relationship between the deep approach and the learners' academic performance as was legitimately defined in ASSIST. As a matter of fact, this phenomenon termed "dissonant pattern" by Entwisle (Entwistle, 2003) was also reflected in one of his research studies. Based on data collected from 1284 first- year students in British universities, a k-means relocation analysis devoted to comparing four groups of different levels of academic achievement indicated that one group which showed "equally poor levels of performance" showed similar scores on both deep approach and surface apathetic approach which further indicated that with certain research samples, surface apathetic approach was associated with indications of relatively strong deep approach (Entwistle *et al.*, 2000).

Despite the apparent inconsistency, the correlation table embedded in such a regression analysis clearly demonstrated a significantly positive relationship between deep and strategic approach (p<.01) and that a significantly negative relationship between strategic and surface apathetic approach (p<.01). Such a research finding also proved to be consistent with other parallel research findings which often considered deep and strategic approach as the same approach (Meyer, 1991).

Statistical results from the second research question which was aimed at assessing whether learning approaches could predict respondents' self-reported language proficiency indicated that only the surface apathetic approach could significantly predict respondents' self-rated academic performance (t=-5.784; p<.01). Such a research finding, to a certain degree indicated that learners' actual language proficiency could be truly reflected by their self-perception of their academic performance.

In summary, statistical results obtained from the first two research questions which were devoted to assessing the predicting potentiality of learning approaches on learner's academic performance yielded sufficient similar research findings as shown in some previous studies. Above all, as discussed in Chapter Two, Cassidy and Eachus's correlation study (2000) showed that strategic approach was positively related to students' academic achievement and surface approach was negatively associated with their academic achievement; whereas, deep approach failed to manifest any relationship to the academic achievement. Furthermore, studies which adopted other learning approach measuring instruments generated similar results via statistically significant indication of relationship between learning approaches and academic achievement; such research included studies by Crosby & Iding (1997), Armstrong (2000) and Zhang (2002).

Similar results from a variety of studies including the present quantitative research reflected the elaborations of the three learning approaches as well as their respective predicted relationship with learners' academic performance. Specifically, the strategic approach which was characterized by effective time-management, well-organized study habits, intrinsic motivation as well as alertness to assessment criteria was positively related to learners' academic performance (Entwistle, 2003). However, surface approach which was manifested by "unreflective studying", "unthinking acceptance", ' memorizing without understanding"(Meyer, 2000)   and " syllabus-boundness" (Entwistle, 2003) was more likely to result in relatively poor academic achievement.

Research question three was included in order to examine learners' overall attitudes towards TELL. As explicitly shown in the descriptive statistics, learners held overtly positive attitude towards TELL considering the overall attitude mean score being 58.8/75. Therefore, such a statistical result was consistent with the research hypothesis. It can be concluded that the lack of exposure to a technology-enhanced language learning environment did not negatively impact their acceptance and willingness to learn a foreign language in the totally unfamiliar pedagogical setting at DLI. Such an overwhelming positive attitude might be partially explained by respondents' relatively high rating of their PC and internet skills as discussed earlier in this chapter. In addition, computer related technology and internet skills have become an increasingly indispensable part in people's daily lives. Hence, regardless of lack of prior experience in TELL learners still expressed positive attitudes which could be reflected by their high ratings in such attitude statements in the survey as "Using TELL is a good idea" (Mean=4.64/5), "Using TELL fits my learning style" (Mean=4.19/5), "Using TELL holds my attention" (Mean=4.07/5), "It's a lot of fun to learn Chinese with the help of a computer" (Mean=4.18/5), and " If possible, I will

continue to learn Chinese in a technology-enhanced learning environment even after I graduate from DLI".

At the same time, it is equally worth pointing out that the attitude survey generated related ratings in several aspects, as can be seen in the following attitude statements "Textbook creates an authentic communicative environment for you to practice Chinese" (Mean=3.27/5) and "Teachers are well trained to use computer-related technology" (Mean=2.93/5). Such practical imperfections or defects in terms of the actual technology implementation and application will be further analyzed and explored later in this chapter.

Research question four aimed at investigating the potential relationship between learners' learning approaches and their attitudes towards TELL. Regression analysis indicated that both strategic and surface apathetic approaches were statistically significant predictors, with the former being positively associated with their attitudes (t=2.935; p<.01) and the latter being negatively associated with the attitude variable (t=-2.429; p<.05). Therefore, such an attitudinal tendency and its relationship to the learning approach was a partially true reflection of the research hypothesis to this question with regard to the fact that the deep approach failed to be a significant predictor (t=.273; p>.05).

As defined characteristics in both strategic and surface apathetic approach, learners with higher scores on the former approach were highly sensitive to academic assessment and who possessed fairly effective learning strategies tended to adapt easily to the existing learning environment, thus were more likely to express favorable attitudes towards the current pedagogical approach. However, learners who scored higher on the latter approach were more syllabus-bound and product-oriented; thus they did not easily adapt to the academic environment (Entwistle, 2003).

In retrospection of various studies reviewed in Chapter Two, research findings from this research question were different from the qualitative interview study conducted by the learning approaches inventory developers McCune and Entwistle (2000) which showed the close relationship between the deep approach and their positive attitude towards studies as shown in participants' active engagement and interest in learning. Generally speaking, however, quite a number of studies which adopted other learning approach measuring instruments all indicated learning approaches were significant predictors of the specific attitudes being measured. Such was also shown in research conducted by Christensen, Anakwe & Kessler (2001), Wells (2000) as well as by Chapelle and Jamieson (1986).

Research question five which was designed to assess whether some of the respondents' demographic variables could predict learners' higher language proficiency showed that despite the fact that some of the demographic variables showed an innate and significant relationship among themselves, none of the learners' demographic factors such as age, educational level, prior experience in foreign language learning, prior experience in TELL as well as their ability in using PC and the Internet were significant predictors of their language proficiency.

Research question six which was devoted to assessing whether the above mentioned demographic variables could significantly predict participants' attitudes towards TELL yielded similar research findings to those from the fifth research question. None of the demographic variables turned out to be significant predictors. Neither of the research findings generated from the last two research questions was consistent with both of the two research hypotheses.

Implications for Instructional Design & Curriculum Development of the Chinese Language Program

Investigations into the relationship between learning approaches and learners' language proficiency and between learning approaches and learners' attitudes towards TELL in the present quantitative inquiry explicitly delineated the important role that learning approaches play in the learning process.

In a similar study, the complexity and mismatches between learners, teachers, and syllabus were pointed out by Entwistle and Smith (Entwistle & Smith, 2002). Research findings concerning the importance of learning approaches can be further reflected in the following diagram by Entwistle and his research team (2003). In addition to other elements, how students approach learning and study and how student perceive the teaching-learning environment are dominating factors that ultimately impact the quality of learning. These two factors are, in turn, influenced by "how course material is selected, organized, presented, and assessed" and by "how a teaching-learning environment is designed and implemented" respectively.
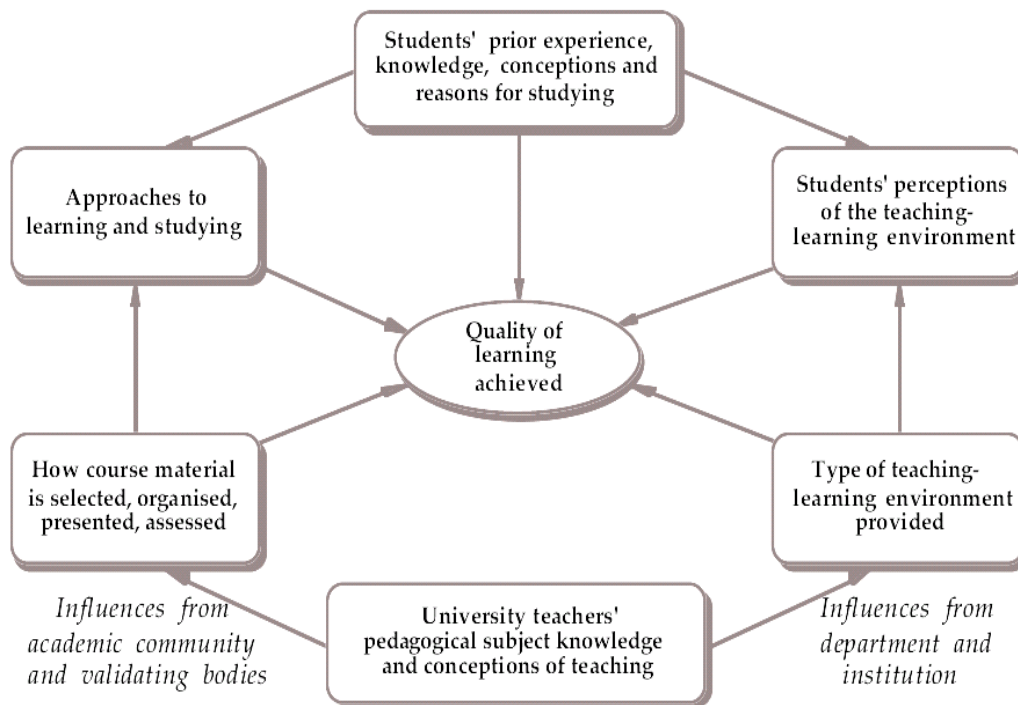
Figure 2 Roles of Learning Approaches and Attitudes (Entwistle, 2003)

A closer examination of the latter two issues which were also reflected in respondents' ratings to individual attitude statements may shed valuable insights upon curriculum development. First of all, learners manifested extremely positive attitudes towards the pedagogical approach of implementation of technology into the language learning curriculum. Nevertheless, learners tended to provide fairly low ratings concerning the actual material organization and presentation. This was especially true when learners pointed out a lack of active participation of learners and of the authentic communicative environment in the aspect of instructional design (See Table 19).

Technology implementation does not only mean the display of technology in the classroom. Nor does it mean the electronic copy of the textbook. Technology application and

integration should not be implemented for the sake of implementation per se. On the contrary, it should take into consideration the learners' needs and whether learners' existing learning approaches match the prescribed curriculum. As Riding pointed out, ineffective information processing was largely due to the mismatch of learning approaches with instructional design; optimal learning outcome could be attained when learners could best interact with the learning material (Riding, 2002).

Interaction, however, should by no means be limited to the interaction only between the learner and content; instead, interaction between learners, learners with the instructor, with non-human factors as well as with the interface and environment should all be addressed in an effective constructive learning environment (Jonassen, 1999). The actual curriculum development at DLI, however, reflected the lack of systematic needs analysis, scientific examination of learners' learning approaches as well as integration of all levels of interaction. As a matter of fact, content and skill-oriented curriculum development and instructional design are prevalent in the field of education. As was criticized by Skehan:

The units and sequences of syllabus design are regarded as being equally appropriate for all learners and no account is taken of approaches or preferences or abilities which might make some approaches to organizing course more appropriate for some learners than others (Skehan, 1998).

The lack of needs analysis was particularly true with task-based syllabus as adopted by the Chinese program at DLI. The updated electronic versions of the textbooks were topic-based in order to provide students with survival language skills through fulfilling a great variety of communicative tasks. Robinson highlighted the great importance of conducting needs assessment prior to the implementation of task-based curriculum as opposed to the adoption of

analytical language syllabus which is aimed at procedural knowledge and structures of the target language (Robinson, 2001)

How to effectively incorporate learning approaches into instructional design and curriculum development and how to maximize the effectiveness of interaction demand close attention by school administration, curriculum developers, textbook writers and technology specialists.

Implications for Teacher Training and Teacher Education

Paralleling the broader issue of instructional design and curriculum, in the opinion of the present researcher, teacher training and pre/post-service teacher education deserve equal attention by the institute authority. Such an urgent necessity can be clearly shown in the lowest rating of the individual attitude statement in the SATECL: "Teachers are well trained to use computer-related technology" (Mean=2.93/5).

As indicated in the article written by Entwistle and Smith, the teaching staff in universities has also been found to differ in both their knowledge and beliefs about teaching, which affect the way they teach (Entwistle & Smith, 2002).

A brief view of the composite of language instructors at DLI truly reflects this statement. The great majority of language instructors hired at the institute is native speakers; some immigrated to the U.S. many years ago. This research did not collect data from instructors; this

topic will be discussed briefly in the following section of research limitations. Nevertheless, informal interviews and information from various resources have enabled the present researcher to believe that teachers, especially elderly ones hold firm belief about language learning which they certainly derived from their experiences in learning English when there was no technology. As a result, many of them either openly or reluctantly use technology in the language classroom which, in turn, resulted in ineffective use of technology and the low ratings from the respondents. Such a negative attitude towards technology integration might be even true with the Smart board technology which always turns out to be a unique and fresh experience with both in-service and pre-service teachers. Little training about technology especially with the Smart board technology often results in poor exploration and insufficient use of the technology in the classroom.

In addition to technology training per se, insufficient attention paid to teacher training, in general, sometimes also termed as faculty development, seems to be a well-known problem documented and discussed by researchers. Wooldridge pointed out that faculty development in higher education failed to pay enough attention to pedagogical training. It assumed that a doctoral degree with professional expertise was the only prerequisite for successful teaching. He further criticized training in the aspect of teaching strategies, knowledge about learners' characteristics were sometimes deemed as "disdainful" in traditional academic programs (Wooldridge, 1995).

Skehan also analyzed the common situation of teacher training by asserting that the teacher training programs pretty much focused on the issues of overall class organization, implementation of textbook and "official syllabuses" or "testing in an approved manner"; on the other hand, little attention was paid to the practical issue such as adapting the material to individual learners. He also metaphorically commented that learners through training programs

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seems to be equipped with a " pawn with a larger pictures", which failed to be a "mediator" between, syllabus, teaching materials and learners themselves (Skehan, 1998: 261).

This is also true with the teacher training programs at DLI. It turns out to be a highly beneficial experience for pre-service teachers to enroll in the mandatory four-week ICC training courses. Such an intensive training course covers various topics of SLA and pedagogical issues, which is of great help in their classroom teaching. The issue of learning approaches and of matching teaching strategies with learners' individual characteristics is an entire teaching block covered in the course. However, this is only a brief introduction of the topic emphasized by FLO rather than an issue that is thoroughly utilized.

How to adapt teaching materials and teaching strategies to optimize ultimate learning outcomes, to foster individualized learning, and learning autonomy is worth considering. Such an urgent need in teacher training is especially true in this military teaching environment where the U.S. government invests great amounts of money to promote technology-enhanced learning. Teaching strategies training to match individual learners' learning approaches, in particular, is of both high necessity and feasibility considering that the U.S. Department of Defense is investing more money to promote PEP program to reduce the class size, increase teacher-student ratio. Individual learning approaches as well as other affective factors should be handled in smaller classrooms to help maximize academic success.

Research Limitations & Recommendations for Further Research in Learning Approaches

Despite a number of statistically significant research findings from collected data, it should be acknowledged that the present research conducted in the form of quantitative inquiry has its own limitations. First of all, as a common practice to seek potential relationships and to assess predicting values, this research also adopted regression analysis with embedded correlation analysis. However, the two survey instruments, one designed by Entwistle and his ETL research team and the other by the researcher herself were administered at a relatively early stage (around 22-25/63 weeks) of exposure of students to both the target language and the TELL environment. The underlying logic for the time to conduct both surveys was that after Unit Five (around 28th week), learners in the Chinese program will switch back to the old module books which demands less integration of technology.

Intensive exposure to the application of technology in language learning guaranteed their fresh memory and more accurate self-reflection concerning technology; on the other hand, it may result in less accurate representation of their language skills and in-depth perception about technology. Moreover, their language proficiency and attitudes towards TELL might be largely affected by their study time or other individual variables that were not spelled out in either surveys.

Secondly, in terms of measurement of learners' language proficiency, the researcher chose to use one individual unit listening test as opposed to other language skill indicators such as speaking and reading. One reason was because speaking was considered as an unreliable language proficiency indicator due to the fact that huge difference existed among different

teaching teams in terms of assessment rubrics and the actual testing procedure. For another, reading tests at a fairly early testing stage, like other skill testing items which had gone through validation, turned out to be an inaccurate representation of students' proficiency levels; instead, they merely stayed at a lower level of character recognition and rote learning. Therefore, reading tests did not usually effectively and accurately differentiate learners at different levels. On the other hand, among all units listening tests, Unit Four Listening Test turned out to be highly proficiency-oriented. Nevertheless, one individual test still may not be the most accurate reflection of learners' language proficiency.

Thirdly, in terms of research methodology, due to time constraints and complicated issues involved concerning conducting research in the military environment, the researcher could not afford to conduct a longitudinal study to elicit more accurate and in-depth information overtime, as were conducted by the ASSIST developers Entwistle and his ETL research team. In addition, due to the available sample size, group comparisons via cluster and k-mean relocation analysis classified by different learning approaches were not conducted in this research. Hence, a clear picture of learners' learning approaches and score distribution could not be elicited from this small sample of data.

Finally, this research aimed at quantifying learners' perspective in both learning approaches and attitudes towards TELL; thus faculty attitudes towards TELL was not examined in this study. Language instructors were required to use basic Smart board technology which mainly referred to the PDF file of the textbook. However, respondents' low ratings on teachers' ability to use computer-related technology might be attributed to their minimum or inefficient use of technology in the classroom. Whether and how much such technology incapability on the

part of the language instructor would impact learners' language proficiency is worth an equal amount of attention.

Research imperfections and limitations, therefore, leave room for further research in the field of learning approaches. Above all, as has been reviewed in Chapter Two and also claimed by Wooldridge (1995), the lack of consensus of definition and conceptualizations of learning approaches resulted in potential hindrance of improving instruction. Nevertheless, great progress has been made in this line of research, as Skehan has summarized that research has been conducted in response to specific criticisms and that some measurement limitations have been overcome (Skehan, 1998).

In terms of studies in learning approaches, future research can be directed to use other valid and reliable measuring instruments which views learning as a more dynamic process and which is more appropriate for a learning a certain subject as opposed to considering learning as fixed individual capability.

Following research progress made in other disciplines, researchers in the field of general education and language education proposed the idea of cognitive skill development (Anderson, 1981; Gagne, 1985; O'Malley & Chamot, 1990). In language learning theory and practice, viewing learning as more dynamic rather than stable and static provides plenty of room for researchers to describe how language ability is gradually cultivated and improved. Minute and on-going academic observations on the part of the learner from the instructor's perspective not only enable teachers to constantly improve their teaching strategy, but also help learners to conduct both retrospection and introspection to come up with better learning strategies, which will ultimately help improve their learning outcomes.

It is equally true that cognitive processes and skill development are, to a certain degree affected by the interactive patterns in the language classroom (Morris & Tarone, 2003). This line of research pinpoints the importance of cognitive development through social dynamics in the classroom. Kuiken et al conducted a study about cognitive task complexity and writing performance. The study examined how to balance the cognitively demanding tasks and linguistic accuracy (Kuiken *et al.*, 2005). With the purpose of enhancing effectiveness of reading comprehension, Barrère & Duquette explored cognitive-based model for cultivation of reading ability in foreign language learning. In addition, they discussed how they utilized cognitive theories in designing CALL courseware. The study also sheds much light on the use of cognitive theories as well as on how to develop cognitive abilities in learners in foreign language learning (Barrère & Duquette, 2002).

Therefore, in addition to research into teaching strategies to match learners' different learning approaches, further research can be conducted in the aspect of how to help learners cultivate better learning strategies to compliment learning approaches so that learners will gradually progress along a continuum of cognitive skill development to attain learning autonomy which is also the ultimate goal of education.

APPENDIX A
APPROACHES AND STUDY SKILLS INVENTRY FOR STUDENTS SKILLS
(SHORT VERSION)

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions that overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers will **accurately** describe your **actual** ways of studying, and work your way through the questionnaire quite **quickly.**

Background information

Name or Identifier ....   **Age :**   **Sex**   M   F

Department: **Team:**

Course: Chinese Basic Course (Unit Book)...   **Week of study:**

Approaches to studying

The next part of this questionnaire asks you to indicate your relative agreement or disagreement with comments about studying again made by other students. Please work through the comments, giving your **immediate** response. In deciding on your answers, think in terms of **your Chinese Basic Course.**

5 =agree; 4 = agree somewhat; 2 = disagree somewhat; 1 = disagree.   Try not to use   3 = unsure, unless you really have to, or if it cannot apply to you or your course.

	Agree	Agree Somewhat	Unsure	Disagree somewhat	Disagree
1. I manage to find conditions for studying which allow me to get on with my work easily.	5	4	3	2	1
2. When working on an assignment, I keep in mind how best to impress the teacher.	5	4	3	2	1
3. Often I find myself wondering whether the work I am doing here is really worthwhile.	5	4	3	2	1
4. I usually set out to understand for myself the meaning of what we have to learn.	5	4	3	2	1
5. I organize my study time carefully to make the best use of it.	5	4	3	2	1
6. I find I have to concentrate on just memorizing a good deal of what I have to learn.	5	4	3	2	1
7. I go over the lessons I've learned carefully to check the reasoning and how I can apply the words or structures in real-life communication.	5	4	3	2	1
8. Often I feel I'm drowning in the sheer amount of material we have to cope with.	5	4	3	2	1
9. I look at the example sentences carefully and try to reach my own conclusions about grammar rules, and then I try to make new sentences on my own.	5	4	3	2	1
10. It's important for me to feel that I'm doing as well as I really can in the Chinese Basic Course here.	5	4	3	2	1

	Agree	Agree Somewhat	Unsure	Disagree somewhat	Disagree
11. Whenever possible, I try to categorize and relate words and structures I come across in the Chinese Basic Course.	5	4	3	2	1
12. I tend to do very little beyond what is actually required to pass.	5	4	3	2	1
13. Regularly I find myself thinking about ideas from class when I'm doing other things.	5	4	3	2	1
14. I think I'm quite systematic and organized when it comes to reviewing for exams.	5	4	3	2	1
15. I look carefully at my teachers' comments on course work to see how to get higher grades next time.	5	4	3	2	1
16. There's not much of the work in the Chinese Basic Course that I find interesting or relevant.	5	4	3	2	1
17. When I read an article or book, I try to find out for myself exactly what the author means.	5	4	3	2	1
18. I'm pretty good at getting down to work whenever I need to.	5	4	3	2	1
19. Much of what I'm studying makes little sense: it's like unrelated bits and pieces.	5	4	3	2	1
20. I think about what I want to get out of this course to keep my studying well focused.	5	4	3	2	1
21. When I'm working on a new topic, I try to see in my own mind how all the ideas fit together.	5	4	3	2	1
22 I often worry about whether I'll ever be able to cope with the work properly.	5	4	3	2	1
23. Often I find myself questioning things I hear in class or read in books.	5	4	3	2	1
24. I feel that I'm getting on well, and this helps me put more effort into the work.	5	4	3	2	1
25. I concentrate on learning just those bits of information I have to know to pass.	5	4	3	2	1

	Agree	Agree Somewhat	Unsure	Disagree somewhat	Disagree
26. I find that studying academic topics can be quite exciting at times.	5	4	3	2	1
27. I'm good at following up and doing some research about the language on my own.	5	4	3	2	1
28. I keep in mind who is going to grade an assignment and what they're likely to be looking for.	5	4	3	2	1
29. When I look back, I sometimes wonder why I ever decided to join the military or come to DLI.	5	4	3	2	1
30. When I am reading, I stop from time to time to reflect on what I am trying to learn from it.	5	4	3	2	1
31. I work steadily through each unit or mod, rather than leave it all until the last minute.	5	4	3	2	1
32. I'm not really sure what's important in class so I try to write down all I can.	5	4	3	2	1
33. Ideas in course books often set me off on long chains of thought of my own.	5	4	3	2	1
34. Before starting work on an assignment or exam question, I think first how best to tackle it.	5	4	3	2	1
35. I often seem to panic if I get behind with my work.	5	4	3	2	1
36. When I read, I examine the details carefully to see how they fit in with what's being said.	5	4	3	2	1
37. I put a lot of effort into studying because I'm determined to do well.	5	4	3	2	1
38. I gear my studying closely to just what seems to be required for assignments and exams.	5	4	3	2	1
39. Some of the ideas I come across in the course I find really gripping.	5	4	3	2	1
40. I usually plan out my week's work in advance, either on paper or in my head.	5	4	3	2	1

	Agree	Agree Somewhat	Unsure	Disagree somewhat	Disagree
41. I keep an eye open for what my teachers seem to think is important and concentrate on that.	5	4	3	2	1
42. I'm not really interested in this course, but I have to take it for other reasons.	5	4	3	2	1
43. Before tackling a problem or assignment, I first try to work out what lies behind it.	5	4	3	2	1
44. I generally make good use of my time during the day.	5	4	3	2	1
45. I often have trouble in making sense of the things I have to remember.	5	4	3	2	1
46. I like to play around with ideas of my own even if they don't get me very far.	5	4	3	2	1
47. When I finish a piece of work, I check it through to see if it really meets the requirements.	5	4	3	2	1
48. Often I lie awake worrying about work I think I won't be able to do.	5	4	3	2	1
49. It's important for me to be able to understand grammar rules, or to see the reason behind things.	5	4	3	2	1
50. I don't find it at all difficult to motivate myself.	5	4	3	2	1
51. I like to be told precisely what to do in my assignments.	5	4	3	2	1
52. I sometimes get 'hooked' on academic topics and feel I would like to keep on studying them.	5	4	3	2	1

Finally, how well do you think you have been doing in your graded work overall so far?

Very well	Quite well	About average	Not so well	Rather badly
9 8	7 6	5 4	3 2	1

Please Check to be sure you have answered all the questions you are willing to answer!

APPENDIX B
SURVEY OF ATTITUDES TOWARDS TECHNOLOGY-ENHANCED
CHINESE LEARNING FOR PILOT STUDY

Instructions

This survey aims at collecting information concerning your prior and present experience in and attitudes towards technology-enhanced language learning, which specifically refers to the Chinese Basic Course (CBC Unit Book). Your honest responses and feedback will help improve curriculum development and the technology application of the textbooks. You may skip questions that you feel uncomfortable answering. Your participation is greatly appreciated.

Demographic Data **1. Age: ___ 2.Gender: Male:____ Female_____** **3. Highest educational level: _____** **4. Have you studied or learned a foreign language at any time before DLI? Yes_____; No_____.**

Please indicate your level of agreement with the following statements:

Statement	5 —Agree	4 —Agree Somewhat	3 —Unsure	2 —Disagree Somewhat	1 - Disagree
7. Using technology-enhanced language learning is a good idea.	5	4	3	2	1
8. Using technology-enhanced language learning fits my learning style.	5	4	3	2	1
9. Using technology-enhanced language learning holds my attention.	5	4	3	2	1
10. It's a lot of fun to learn Chinese with the help of a computer.	5	4	3	2	1
11. If possible, I will continue to learn Chinese in a technology-enhanced learning environment even after I graduate from DLI.	5	4	3	2	1
12. The CD that comes with the textbook is very helpful for my self-study.	5	4	3	2	1
13. My own PDA is very helpful	5	4	3	2	1
14. The Wenlin software is very helpful.	5	4	3	2	1
15. Presentations in the textbook are very helpful for listening and speaking.	5	4	3	2	1
16. Activities in the textbook are very beneficial for reinforcing the language learned in the presentations.	5	4	3	2	1
17. The audio recordings that go with the textbook are good in quality.	5	4	3	2	1
18. The textbook requires learners' active participation.	5	4	3	2	1
19. The textbook creates an authentic communicative environment for you to practice Chinese.	5	4	3	2	1
20. Teachers are well trained to use computer-related technology.	5	4	3	2	1

Please feel free to write additional comments (e.g., what you like and/or dislike, if anything) concerning technology-enhanced language learning in the box below.

APPENDIX C
REVISED SURVEY OF ATTITUDES TOWARDS
TECHNOLOGY-ENHANCED CHINESE LEARNING FOR THE MAIN
BODY RESEARCH

Instructions

This survey aims at collecting information concerning your prior and present experience in and attitudes towards technology-enhanced language learning, which specifically refers to the Chinese Basic Course (CBC Unit Book). Your honest responses and feedback will help improve curriculum development and the technology application of the textbooks. You may skip questions that you feel uncomfortable answering. Your participation is greatly appreciated.

Demographic Data

1. Age: ___ 2.Gender: Male:_____   Female_____

3. Highest educational level: _____

4. Have you studied or learned a foreign language at any time

before DLI? Yes_____; No_____.

Please indicate your level of agreement with the following statements:

	5—Agree	4—Agree Somewhat	3—Unsure	2—Disagree Somewhat	1- Disagree
7. Using technology-enhanced language learning is a good idea.	5	4	3	2	1
8. Using technology-enhanced language learning fits my learning style.	5	4	3	2	1
9. Using technology-enhanced language learning holds my attention.	5	4	3	2	1
10. It's a lot of fun to learn Chinese with the help of a computer.	5	4	3	2	1
11. If possible, I will continue to learn Chinese in a technology-enhanced learning environment even after I graduate from DLI.	5	4	3	2	1
12. The CD that comes with the textbook is very helpful for my self-study.	5	4	3	2	1
13. The Wenlin software is very helpful.	5	4	3	2	1
14. Presentations in the textbook are very helpful for listening and speaking.	5	4	3	2	1
15. Activities in the textbook are very beneficial for reinforcing the language learned in the presentations.	5	4	3	2	1
16. The audio recordings that go with the textbook are good in quality.	5	4	3	2	1
17. The textbook requires learners' active participation.	5	4	3	2	1
18. The textbook creates an authentic communicative environment for you to practice Chinese.	5	4	3	2	1
19. Teachers are well trained to use computer-related technology.	5	4	3	2	1
20. Technology has been effectively integrated into the class.	5	4	3	2	1
21. Technology has greatly helped in teaching the language.	5	4	3	2	1

Please feel free to write additional comments (e.g., what you like and/or dislike, if anything) concerning technology-enhanced language learning in the box below.

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