AN EXPERIMENTAL STUDY ON SITUATED AND DYNAMIC LEARNING

ASSESSMENT (SDLA) ENVIRONMENT

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The current supplementary web based English learning in Taiwan provides online learning resources and gives assessments at the end of each lesson to evaluate learners' online learning results. Based on the testing results, instructors may adjust their in-class instructional method to focus on the students' weaknesses. For the average classroom size of 40 students with one instructor, it is extremely difficult to provide individual learning content for each learner's needs because each student has his or her own weaknesses. This study conducted the situated environment with Vygotsky's dynamic assessment theory to test learner's learning achievements and satisfactions as compared to the current web learning environment.

The study finds that when both groups of Taiwanese students used Internet based learning, those that utilized the situated and dynamic learning assessment environment showed a statistically significant higher achievement score than those using only the current online learning environment ($p < .01$). In addition, learners in the SDLA environment had statistically significant higher satisfaction scores than those in the current web learning environment.

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CHAPTER I

INTRODUCTION

Globalization Brings New Trends and Challenges to Taiwan

Globalization has an ever-increasing influence on the world in different ways including the increase in demand for English educators. English is the world's most widely studied, read, and spoken foreign language (Kachru and Nelson 1996). Asian countries send many students to study in the United States because of its highly rated educational systems and its diverse cultures. According to the Open Doors 2007 report, the top five countries with the most international students enrolled in schools in the United States are India (83,833 - 10% increase from the previous year), followed by China (67,723 up 8%), Korea (62,392, up 6%), Japan (35,282, down 9%), and Taiwan (29,094, up 4%). Among the five countries, India is the only country which has English as its official language. Therefore, international students from the other four countries are required to learn English before they can enroll in the United States educational system. As suggested by the increasing numbers of international students enrolling in the United States, there is a significant demand for language learning in these countries. To meet this need, the government of Taiwan has taken steps to combat the lack of proper English learning for its students. The rationale behind this is that Taiwan wants to develop a new generation of creative, energetic youth capable of international dialogue with English speaking countries. The Taiwanese government has launched the National Development Plan-Challenge 2008. One of the project goals is to create an English learning environment. The project authority believes that by building a bilingual environment with globalized living environments, Taiwan can attract more international professionals to dedicate their talent to Taiwan's future development.

In the L2 (English as second language) classroom, the Taiwanese government has encouraged the use of hybrid or blended courses in computer assisted language learning. The instructors in these classes are encouraged to integrate part of their learning materials on-line to provide practice outside of the classroom setting for students, since the Internet has become an integral part of our lives and a major resource for learning. In the last few years, Asia has boomed in developing its telecommunication infrastructure and showed a 406.1% user increase from the year 2000 to 2008. From Asian Internet usage statistics and population statistics, the total population of Taiwan is about 23 million people, and around 15 million people use the Internet, which is 67.2% of the population. If we simplify this, 7 out of 10 students are using the Internet. Furthermore, according to Wu's latest survey (2008), focuses on adolescent behavior, the 2008 National Adolescence Media Use Behavior and Investigation in Taiwan showed that adolescents view at least 43 hours of media weekly which is more than the average work week. The younger generation regards the Internet as the most important type of media; however 42% of their parents place no limitations or controls over their children on the time and content of what they view. The survey pointed out three possible reasons that the parents do not put limitations on adolescents' Internet use. First, parents are too busy to monitor their children's usage. Second, parents have limited knowledge regarding the Internet's ability. Third, parents may not care to monitor their child's access to the Internet as they may view this as being undemocratic. Wu (2008) points out that according to the mobile generation the mass media revolution has greater influence on our children than the current economic crisis. Media has influenced the current trends. Adolescents are over-dependent on the use of their cell phones as they may have anxiety of missing calls. Furthermore, parents are using the phone to connect with their children even though some children attempt to use the block functions to filter their

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calls. Additionally students take pictures of their teachers and send text messages during the professor's lectures. This highly dependent phenomenon can also be found on Web blogs and Web albums as adolescents want their Web sites visited by all of their friends and for messages to be left for them. Failure for this to occur may cause anxiety for the adolescents. Since the younger generations are so heavily involved with media, the Taiwanese government has realized the importance of media literacy and began to include a media literacy course in higher education curricula starting in early 2010. In the meantime, instructors must realize the gap and integrate the media literacy into their current courses. In addition to the media literacy course, it is also important for educators to be aware of the value of media among students, and to construct learning content that can motivate student learning. The rapid expansion of the Internet has brought about changes within learning environments. It has caused a need for the development of a new learning curriculum. The Internet has also fostered globalization; it has provided a space for educators to create a learning environment to help learners to learn. Many researchers have found the effectiveness of adopting multimedia in language instruction. When Huang (1998) interviewed Taiwanese students in regard to their preferences in language-learning, he found that some non-English-major freshmen in Taiwan prefer more class hours and opportunities for English listening and speaking. However, Li, Wang and Yao (2008) in their study, pointed out that some students do not feel comfortable in frequent, interactive oral communication. The focus on using Web application platforms and new strategies to satisfy ESL learning needs will be explored further in this study.

The New Digital Revolution

The digital revolution, along with the impacts of globalization, generates new kinds of trends and issues. The rapid development of the Internet has also transformed the landscape of

the education system.  One particular development has been the invention of the personal digital

assistants (PDAs).  They have become more widespread as telephone companies are making

wireless more affordable and accessible. This digital revolution makes learning possible

everywhere with any mobile device.  One such recent invention is the Apple iPhone which has

changed the phone into an information platform where e-mail and the browsing of Web sites are

available. Other mobile devices such as UMPCs (ultra mobile PC) and netbooks have also been

invented to meet the needs of this digital age. Some of these mobile devices use the new Web 2.0

platform, which emphasizes the dynamic functions of Internet service.  The success of some

popular Web applications such as YouTube, Flickr, Skype, Wikipedia, and various blogging

servers and other social networks have used Web 2.0 to combine all media, communication

information and knowledge that we need in our daily life. Liron (2006) says that for the last 10

years, an ever-increasing choice of portable electronic devices to help make communication and

collaboration an easier task has been made available. In addition, he points out that cell phones

now do more than just make calls. Small hand-held devices such as PDAs enable people to stay

connected with work while on the road. Instructional Technology (IT) companies are continually

producing new products that bring new surprises to our lives. With the fast speed of the Internet,

mobile-learning will be one of the trends of future educational technology that will nurture the

new digital revolution environment of the 21$^{st}$ century. Dunn (2001) in an article about the future

of schools predicted that in 25 years, traditional schools will become a vast wasteland.  The

Association of Governing Boards also predicted that one third of the current universities in

America will be closed. All the schools are going to face an education revolution from the mortar

and brick university to a virtual university. Regardless if one is optimistic or pessimistic about

the emergence of virtual universities, society needs to understand that future educational

institutes will be different. Adopting virtual learning environments can bring learners to new experiences. To make this happen, changes must be made on the teacher's side first, including how they present their material and their attitude about integrating technology into the classroom. These curriculum changes will require the integration of technology in future educational technology developments. School administrators have begun this process by bringing in new equipment that promotes new instruction and learning methods. Students who have been raised in the age of technology will be receptive to these new approaches. However, instructors will need to carefully select and integrate technology into their curriculum in order to provide students with the best learning environment.

Statement of the Problem

The current hybrid Web English learning resources found in Meiho Institute of Technology provide an external learning resource for ESL students in Taiwan. Instructors provide additional learning resources online and give assessments at the end to evaluate students' online learning results. Based on the results instructors may adjust their instructional method to focus on the students' weaknesses. For the current classroom size of 40 students with 1 instructor, it is extremely difficult for 1 instructor to provide individual learning content for different learners' needs because each student has his or her own weaknesses. Because it is an external online learning resource, instructors usually are unable to spend as much time online for each student as may be desired. Therefore in the current online ESL learning environment, learners have to go back to the learning content to identify their own specific problems and practice again.

Purpose of the Study

The purpose of this exploratory study is to determine the difference in learning satisfaction between two learning environments. Another intention is to discover if students might gain better understanding and learn quicker if instructors would correct their mistakes right away during the online learning process. This study adapts the dynamic assessment theory and designs a situated and dynamic learning assessment on the Website along with the current e-learning Web site to find out learners' learning satisfaction between two different Web learning environments.

According to the dynamic assessment theory, children may be underdeveloped due to a lack of social interaction and collaborative problem solving. Therefore, instructors may use social interaction (peer feedback and exam perceptions) to find out students' weaknesses and provide support. Matthew and James (2005) applied the dynamic assessment approach in the L2 classroom setting. In 2007, the Meiho Institute applied the dynamic assessment by constructing an e-learning English test and learners showed a high learning satisfaction over the environment. As Internet learning rapidly changes in education, students who are easily attracted to online Web 2.0 interactive platforms might need a new way of learning. This study examined students' learning achievement between two different Web learning environments. Furthermore, it will explore whether or not students in the two learning environments have different learning satisfaction.

Research Question

This study examined the learning achievement between the current Web learning environment with the SDLA environment, and measured students' learning satisfaction between two different English groups. The findings can be used to provide reference for future

development of Web learning environments, and provide more efficient ways to help ESL learners in Taiwan to learn English, and bring them more capacity in the global village. This study addressed the following questions.

1. Is there an achievement difference on the learning effect between those who are in the SDLA environment and those who are in the current Web learning environment?

2. Is there a learning satisfaction difference between those who are in the current Web learning environment and those who are in the SDLA environment?

## Research Hypothesis

As this study is the pioneer one on the SDLA environment and no empirical data exist in the literature, the following null hypotheses are established for the above research questions.

H1: There is no difference on the gain scores of the 20-item English test between the SDLA environment group and the group in the current Web learning environment.

H2: There is no difference on the post-test scores of the 40-item English test between the SDLA environment group and the group in the current Web learning environment.

H3: There is no difference on the gain scores of the 20-item English test between the intermediate and advanced English-level groups.

H4: There is no difference on the overall factor scores on the measurement of the learner satisfaction between the SDLA environment group and the group in the current Web learning environment.

H5: There is no difference on the learning-interface factor scores on the measurement of the learner satisfaction between the SDLA environment group and the group in the current Web learning environment.

H6: There is no difference on the learning-community factor scores on the measurement of the learner satisfaction between the SDLA environment group and the group in the current Web learning environment.

H7: There is no difference on the content factor scores on the measurement of the learner satisfaction between the SDLA environment group and the group in the current Web learning environment.

H8: There is no difference on personalization factor scores on the measurement of the learner satisfaction between the SDLA environment group and the group in the current Web learning environment.

## Definition of Terms

These definitions are provided for an understanding of the items and issues addressed by this study.

Digital native - used to describe a person who grew up with digital technology such as the Internet, mobile devices and digital devices. Prensky (2001) coined both the digital native and digital immigrant terms in the article of "On the Horizon."

Digital immigrant – used to describe a person who grew up before digital technology was widely adopted. In this study, digital immigrants are referred to as teachers who have a phobia of technology, thus preventing them from adopting new technology.

Dynamic learning assessment - is based on Vygotsky's theory of zone of proximal development (ZPD) and suggested that evaluators' cognitive ability is dependent on individual problem solving skills and their outcome (Lisbeth, 1996).

 E-course or e-learning platform - is the platform developed by Sun Net Technology in Taiwan (http://www.sun.net.tw/).  This platform is widely used in universities in Taiwan, and has similar features to Web-CT. E-course uses the UNIX system and has the capacity for more than 1000 students to learn simultaneously online. It meets the online-learning requirements of Ministry of Education in Taiwan.

Situated and dynamic learning assessment (SDLA) - is assessment combined with situated learning and dynamic assessment theories. Lee (2008) demonstrated the use of multimedia to create situated learning contents, along with the dynamic self-learning assessments.

Web 2.0 - refers to the new generation of Web applications.  It allows users to do communication, collaboration and information sharing through the Web based environment (O'Reilly 2005).

## Challenge and Solutions

For ESL students, language learning can bring high levels of frustration when performing Web-based learning tasks.  Therefore, professors need to teach their students problem solving

skills before implementing this research. In addition, both learning environments require learner's self control over the learning platforms. Williams (1996) points out that learner control refers to instructional designs where learners make their own decisions concerning the aspects of the path, flow or events; in addition, he also suggests that learner control is a way of allowing individual influences to exert a positive influence without trainer control. According to Merrill's research (1983, 1994), the number of errors on an achievement test following instruction represents one type of learning effectiveness. In addition, Williams (1996) states that learner control should be accomplished by aids for self-monitoring of progress. In both learning environments, self-monitoring of progress can be easily fulfilled through class assignments and online discussions. Some other challenges might occur during this research, such as students' self-learning awareness and English levels that may pose problems hindering success which may be worthy of discussion.

<p style="text-align:center">Significance of this Study</p>

This dissertation project intends to address five highlights of learning English with technology in related literature. In addition, this study provides two different online learning environments for two different groups of students. It intends to examine if the differences in the online instruction mythologies will influence learner satisfaction. The findings of this research can be used to provide reference for future development of Web learning environments in Taiwan, and provide more efficient ways to help ESL learners in Taiwan to learn English, and integrate them more fully into the global village.

The continual growth of Internet applications provides different possibilities as to how students can learn. Today, only teachers with innovative instruction can motive student learning.

An extension of this study and the re-modification of this model to support the computer assisted

instruction will be beneficial to future research.

CHAPTER II

LITERATURE REVIEW

Overview of English Learning in Taiwan

Overseas, literally tens of millions of non-English speakers are struggling to learn

English (Graddol, 2006). Often their intentions are to travel outside of their home countries and

into Western English-speaking lands to take advantage of those learning environments. Celona

(1983) pointed out six problems associated with learning English: 1) aural comprehension, 2)

slang and colloquialisms, 3) adjusting to the speed of others' speech, 4) thinking and producing

speech, 5) understanding jokes and other inside-cultural references and 6) dealing with people

who appear hostile.

For Chinese learners, communicating in English is difficult regardless of the situation.

Liao (2000) illustrated that Chinese learners tended to treat communicative activities as games

and entertainment as a waste of time without paying attention to the purpose of the activities.

Besides, due to the cultural influences, Chinese learners tended to avoid expressing their

opinions in groups and/or in pairs while doing activities to avoid losing face and offending other

classmates. Two common difficulties for most Chinese instructors for implementing

communicative language teaching are the large size of classrooms and the pressure to complete

course objectives and curriculum on time.

A solution to overcome the difficulties is e-learning. When educators try to incorporate

English Web-based learning technology to their teaching, positive results have been found in

many studies in Taiwan. Chen (2008) used a Web-based learning classroom, exploiting advanced

Web and multimedia technologies to overcome their language barrier. She pointed out that

overseas students in Taiwan whose native languages are not Chinese tend to have trouble in

learning and communicating particularly during the first year of their study. Liao, Chang, and Chen (2007) performed eta-analysis to synthesize existing research comparing the effects of computer applications versus traditional instruction on elementary school students' achievements in Taiwan. The results suggest that computer application instruction is more effective than traditional instruction for elementary school students in Taiwan. Chiu, Liou, and Yeh (2007) applied a Web-based conversation environment called CandleTalk, which allows learners to seemingly talk with the computer. It was developed to help EFL (English as a foreign language) learners receive explicit speech training that leads to better oral competence. The results of the study showed that the application was helpful for the college freshmen in the teaching of speech acts, particularly for the non-English major students. As seen in all the studies, more and more instructors are moving from traditional learning methods into the technology-assisted instruction.

<div align="center">English Learning with Technology</div>

For large classes, Web-based learning seems a solution where students can feel closer to the materials and the lecture. Furthermore, they have the opportunity to practice outside laboratory hours. "E-learning sights generally offer video and audio features that allow students to interact with teachers in real time" (Ling, 2001, p. 19). Warschauer and Healey (1998) stated that from the integrative approach, the Internet can not only integrate image, sound, graphics and text to help students understand the course concepts, but also to integrate the four language skills (reading, writing, speaking, and listening) together in one language-learning courseware. Furthermore, Tschirner (2001) stated that learners benefit from being in a community of speakers and participating in the world of native speakers. The digital classroom offered a "learner friendly way" for educating themselves (p. 308). Eyitayo (2005) pointed out that students with

"techno phobia" now had a chance to go through the materials over and over again until they felt confident (p. 163).

A Web-based language-learning environment integrates the use of multimedia and Web-based technologies and has become a new method for language-learning. In general, the Internet makes great contributions to the enhancement of learners' active involvement and positive attitude toward learning in the Web-based environment as well as the opportunities for learners to access and share information without the limitation of time and space (Ortega, 1997). "For Asians, many of whom may not have the funds for private lessons, the Internet can be a cost-effective and efficient way to learn the language and enhance their career prospects" (Ling, 2001, p. 18). "E-learning is the appropriate organization of information and communication" (Eyitayo, 2005, p. 161).

E-learning is an effective practice. Donohue and Neugebauer (2004) provided a useful summary of trends in e-learning and offer examples of model programs and practices. Wilder and Shuttle (2005) pointed out that the learning cycle has been implemented, researched, and refined over the years. Watkins (2005) presented a short list of e-learning activities that may be helpful in sparking some creative ideas. Liou (2000) discussed the assessment of learner strategies in the Internet context.

With the trend of affordable cell phones transforming into an enhanced portable communication device, many educators are trying to integrate them in their ESL learning. Clough, Jones, McAndrew and Scanlon (2007) provided the basis for the design of a flexible mobile learning framework that can be extended to support developments in mobile technology and increase the use of Web 2.0 technologies by informal learners. Roschelle (2003) highlighted the need for research to identify the relationship between mobile technologies and the desirable

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social practices of learning.  Mobile phones now contain Web browsing capabilities and the ability to customize their mobile Web 2.0 apps.  Therefore, technology has created a new definition of online learning.

E-learning is no substitute for participating in classroom lecture but is a very useful support tool. The use of e-learning in classrooms was supported in the literature with the benefits found in research regarding large classes that involved learning differences among learners.

<div align="center">Problems of the Current Web-Based Learning Environment</div>

Williams (1996) pointed out that learners may feel frustrated because of the feelings of being unable to receive effective and timely advice from instructors in Web-based learning environments. Maki et al. (2000) also stated that students in the traditional learning environments have higher levels of satisfaction with their learning experience than in Web-based learning environments. Olson and Wisher (2002) examined 47 studies on Web-based courses, and they pointed out the inadequacies in online instruction design. Kruse (2009) also pointed out two limitations of Web-based learning: The first drawback, when compared to live instruction, is the lack of human contact, which greatly impacts learning. The second major drawback is the lack of multimedia in many Web based training programs. Corporate information technology departments don't want large media files used because it can slow down the entire network. The result is that most Web based training programs are still comprised of text and graphics alone. In addition, Kruse pointed out that these problems could be solved in the future with advancements in network protocol standards and software compression. While some educators are using platforms provided by schools, many other instructors are building their learning materials with Web 2.0 applications. Web 2.0 applications allow interactions to be possible between users. Clark (2008) used Wiki and created a shared space with read/write permissions for all staff.  He

used an online employee schedule that all staff could edit independently, and an editable training and knowledge management Wiki. Skiba (2005) stated that Wiki also refers to the collaborative software used to create an information Web site. Wiki is one of the Web 2.0 applications that enable users to contribute over the platforms, and share information among other users.

Positive staff attitudes toward the development and delivery of e-learning are essential before e-learning can be effective (Newton, 2003). Zahner (2002) stated that "professional development ... goes beyond the term 'training' with its implications of learning skills, and encompasses a definition that includes formal and informal means of helping teachers not only learn new skills but also develop new insights into pedagogy and their own practice, and explore new or advanced understandings of content and resources (p.13). Harvey (2004) emphasized that teachers needed enough technology literacy to access and participate in the e-learning program. "E-learning refers to the way a professional development program is delivered." (p.34)

Some researchers mentioned ways to enhance teachers' professional development on e-learning proficiency. Ludwig and Taymans (2005) reported that the evaluation of the Teacher Technology Leaders (TTL) Project at George Washington University (GWU) documented the evolution of a professional development strategy exhibiting a number of these quality features. The experience of the TTL project showed that it was possible to engage faculty with a variety of experience and interest levels regarding technology and to encourage successful revision of their preparation courses with the goal of preparing technology proficient future teachers.

Furthermore, Lieberman and Wilkins (2006) used four steps (Assess the needs; Determine the appropriate professional development pathways; Reflect; Revisit) to consider teachers' professional development in e-learning. In addition to using reflection as a strategy for

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improving teaching and learning, the technique also should be used to determine the next steps toward addressing the larger needs of the school.

Even though the emphasis on professional development for teachers no doubt will continue, and school districts and institutions of higher education will likely continue to participate in its delivery, some problems and paradoxes with e-learning can't be ignored. Brian (2004) stated that "the problem with e-learning is that the emphasis has been not on learning but on teaching" (p.18). He thought that the typical e-learning product is what he called "the classroom in the box" (p.18) which ignored "the learner-centered informal learning" (p.19). Moreover, Guri-Rosenblit (2005) examined eight inherent paradoxes in the implementation of the new technologies in various higher education settings worldwide. The paradoxes relate to the differential infrastructure and readiness of different types of higher education institutions to utilize the technologies' potential; the extent to which the 'old' distance education technologies and the new technologies replace teaching/learning practices in classrooms; the role of real problems, barriers and obstacles in applying new technologies; the impact of the new technologies on different student clienteles; information acquisition vs. knowledge construction in higher education; cost considerations; the human capacity to adapt to new learning styles in the face of rapid development of the technologies; and the organizational cultures of the academic and corporate worlds. Understanding these inherent paradoxes is essential for policy-makers at institutional and national levels of higher education systems in the process of planning a macro-level comprehensive strategy for the efficient and effective application of new information and communication technologies.

Learner-Centered Approach and Its Influences

Based on the learner-centered approach, learners should be more active and take on more responsibilities for their own learning. Williams (1996) suggested that learner control may lead to positive results, because learner control is a way of allowing individual influences to exert a positive influence without trainer control. Yeary (1998) pointed out the two complementary components of the learner center: (1) Placing more responsibility in the hands of the students and (2) requiring the instructor to serve as the "presenter or facilitator of the knowledge." Today students have more responsibility for their own learning, while teachers face a new challenge for changing their role. Instructors act as facilitators to set up communicative activities and organize group interactions that learners are likely to encounter in their real-life situations. He further stated the learner-centered approach has transformed the role of the instructor into that of the facilitator of knowledge. The trend will parallel the growth of information technology as it becomes more prominent in the 21st century. Research emphasizing the comparison of teacher-centered and learner-center paradigms by Huba and Freed (2000) pointed out that during the learner-center approach students are gathering information with the general skills of inquiry, communication, critical thinking, and problem solving rather than receiving knowledge from the professor. It also helped learners generate better questions and to learn from errors. Miller (2007) reported that students in learner-centered online classrooms perform higher quality course projects and understand better than those in non-learner-centered classroom. In the study of Chou and Liu (2005), it showed that learners in the Web-based learning environment performed better than those learning in the traditional environment because they had control of their environment. Darden (2003) stated that learning occurs best in an environment that contains positive interpersonal relationships and interactions and in which the learner feels appreciated,

acknowledged, respected, and validated. Since the learner-centered model has become a necessary component for online distance-education, building a user-centered environment will be a crucial trend for future education.

<center>Dynamic Assessment on E-learning Platform</center>

According to Evrim (2003), students were more motivated to practice the target language if they can relate to the activities. Sato (2003) believed that "meaningful communicative language activities are defined as processes of exchanging information that are relevant to the speakers and listeners, cognitively connecting new information with existing information" (p.7). He also believed that "meaningful communicative activities aim at real communication and the development of communicative competence" (p.6). Gabrielatos (2002) emphasized that language was not used in a vacuum and people with specific purposes could use language at any given situation.

Assessing learners' performance during the learning process and not just the end product is critical. Huba and Freed (2000) stated that assessment in the learner-centered environment is used to promote and diagnose learning rather than used to monitor learning in the teacher-centered environment. Thus, the dynamic assessment towards learners' proficiency plays an important and essential role in learning. According to Haywood and Wingenfeld (1992), the dynamic assessment refers to a group of psychological and psycho-educational procedures that concern four common characteristics: an active role for the examiner, a collaborative interaction between examiner and subject, a deliberate effort to change what is being assessed, and the broad goal of assessing potential rather than only current performance. Moreover, according to Haywood and Tzuriel (2002), dynamic assessment is described as a subset of interactive assessment that includes deliberate and planned meditational teaching and the assessment of the

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effects of that teaching on subsequent performance. "The term *dynamic* implies change. A major goal is to assess processes of thinking that are themselves constantly changing (hence the term *assessment* rather than *measurement*)" (p. 41). Lantolf (2005) claims that dynamic assessment is an approach to assessment and instruction derived from Vygotsky's theory of the zone of proximal development in which learners need a higher level of peers or assistants to stimulate their potentiality. In other words, dynamic assessment refers to the interactive and durative-learning process led by co-operative and dynamic feedback and assistance.

Gerber (2001) argued that all clinical and more standardized approaches to dynamic assessment are predicated on the psychology of teacher-learner interactions and, therefore, offers the alternative perspective that all teachers (including parents, tutors, and examiners), in the act of teaching, are dynamic assessments. Cohen (2001) also emphasized that teachers must first and foremost be diagnosticians, capable of charting the diverse patterns of students' strengths and weaknesses with their distinctive intelligence, behavior, needs, goals and aspirations.

As we consider the teacher's role as diagnostician, its complexity becomes apparent. The teacher must be an expert in measurement techniques. He/she must know how to construct, administer, and interpret a wide range of test. Optimizing the cognitive load and building adaptive e-learning environments requires new and rapid methods of assessment of students' levels of knowledge. The constructed assessment program was dynamic, whole-task based, and individualized. Ala-Mutka's practical programming (2005) was one of the basic skills pursued in computer science education. In programming courses, the coursework consists of programming assignments that need to be assessed from different points of view. The practical programming concentrates on bringing forward different assessment techniques and approaches to give an interested reader starting points for finding further information in the area.

However, Ala-Mutka also pointed out that "automatic tools emphasize the need for careful pedagogical design of the assignment and assessment settings. To effectively share the knowledge and good assessment solutions already developed, better interoperability and portability of the tools is needed an essential requirement for automated dynamic assessment is to provide a secured running environment, the so called sandbox, for running students programs without risks to the surrounding environment" (p.87). In other words, the effective execution of the automated dynamic assessment relies on the efficient, fluent, secure, and adaptive environment that is designed properly according to the level of learner and the aim of the pedagogy.

Dynamic assessment has been applied to different fields in education. Kalyuga and Sweller (2005) suggested a method of evaluating learner expertise based on assessment of the content of working memory and the extent to which cognitive load has been reduced by knowledge retrieved from long-term memory. The method was tested in an experiment with an elementary algebra tutor using a yoked control design. In the learner-adapted experimental group, instruction was dynamically tailored to changing levels of expertise using rapid tests of knowledge combined with measures of cognitive load. In the non-adapted control group, each learner was exposed to exactly the same instructional procedures as those experienced by the learner's yoked participant. The experimental group demonstrated higher knowledge and cognitive efficiency gains than the control group.

Dynamic assessment is largely used in the language field. Langdon, Novak and Quintanar (2000) stated that the teaching–learning wheel is suggested as a model to assess possible language-learning difficulties in limited English proficient (LEP) students. A step-by-step process is described in which three approaches including components of this model are utilized.

The three approaches include; observations and ethnographic interviewing, formal analysis of oral and written performance, and dynamic assessment. Schneider and Ganschow (2000) also discussed how the concept of dynamic (cognitive) assessment and instruction might relate to the assessment and instruction of at-risk foreign/second language learners. They describe its relevance to a diagnostic/prescriptive approach to instruction for teaching a foreign language to students with identified dyslexia and other at-risk students. They explain how to assess learners' knowledge of the foreign/second language through questions and guided discovery. Examples in German and English illustrate its application to foreign/second language instruction. Hager and Gable (1993) believed that the teacher must use assessment systems that relate to the application of reading processes in the content domain and should focus on students' ability to apply learning strategies across the content areas. This kind of interactive feedback is presented in Marchel's article (2004). Marchel presented a rubric useful in assessing the quality of reflection and changes in socio-cultural thinking in service-learning journals. The author presents pedagogical implications for instruction, dynamic assessment, and grading. There are three levels for students to follow: descriptive, analytic, and integrated levels. Written feedback to students focuses specifically on student needs, and shared common limitations generate classroom activities that may benefit multiple students. Journals that contain elements of upper level reflection serve as models of skilled self-reflection. Poehner and Lantolf (2005) also focused on the implementation of dynamic assessment in the L2 classroom setting.

On the other hand, Ala-Mutka (2005) reminded us that many of the present assessment tools are developed for a local use and only for certain types of assignments. Hence, they are not often available for a wider use and would be difficult to adapt to another university. Thus, developing interoperable tool approaches would offer new and concrete co-operation

possibilities for teachers and students to share knowledge. Biner, Dean and Mellinger (1994) pointed out that student satisfaction, which reflects a student's attitude toward learning, should be studied and improved upon by all educators so that students can excel in a distance education setting.

The use of the open platform with dynamic assessment is an innovative approach to the assessment of human abilities, especially learning potential. By including teaching (mediation) of basic cognitive concepts and meta-cognitive operations as a phase of the assessment process, open platform and dynamic assessment avoids the trap of taking knowledge and developing skills as the primary indicator of ability to accomplish future-learning.

Situated Environment with Dynamic Learning Assessment

According to Haywood and Tzuriel (2002), dynamic assessment is described as a subset of interactive assessments that includes deliberate and planned meditational teaching and the assessment of the effects of that teaching on subsequent performance. Bork (1980) states that to some extent this interactive process, the dialog, was a formalization of early learning by interacting with others. He also pointed out that teachers should play a role that did not tell students knowledge, but rather tried through a series of carefully formulated questions to lead the students to understanding. Lee, Lin and Chuang (2007) used the dynamic assessment to construct e-learning English tests. From there, non-linear and diverse teaching materials were developed asynchronous and an interactive environment was created on the Internet. For this Situated and Dynamic Learning Assessment, scaffolding is provided to help different students to form individualized knowledge.

Children are able to learn a language at an incredible speed when they are actively participating in an environment where the language is spoken (Tretiakov and Kinshuk, 2003).

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Furthermore, situated learning seems a good way to help instructors answer some questions which are hard to explain through their course content. Constructing a learning assessment with the support of a situated environment can provide learners two learning experiences. Dynamic assessment is a method for assessing intellectual potential and remediating cognitive deficits in individuals with mental challenged (Feuerstein 1979). Schneider and Lanchow (2000) points out that teachers and students continuously learn from each other as they participate in a dialogue… This learning dialogue involves the teacher as the assessor of the students' progress through his/her individual learning stages. Dialog environments, which involve the dynamic assessment, can be created through the arrangement of videos. Lee (2008) used arranged videos to provide a dialog environment for learners to explore in the dynamic learning assessment.

Teachers can find out students' weaknesses from social interactions (peer feedback and exams) and provide support. However, it is difficult for teachers to spend as much time with each student as they would like. The use of dynamic self-learning assessment can help instructors provide different instructions for each type of problem. Lee (2007) encouraged the use of dynamic self-learning assessment in English education. The arranged video can create a situated environment for ESL students. This real time video integrated with the self-learning assessment can gain benefits from both the dynamic learning assessment and situated learning environment.

## What is Done? What Still Needs Work?

In the literature review overall, the research detailed current language-learning problems in Taiwan, and highlighted the learner centered approach. The researchers showed that students were more willing and actively participated to learn if they had more control over their learning environment. As increased use of technology is becoming the current educational trend, research found that instructors are implementing other Web-based applications to assist students to learn

English. A great number of researchers showed the effectiveness of adopting language-learning on Web-based environments. This research also described the effectiveness of using the dynamic assessment as a self-learning system, and suggested the integration of situated environment to provide a mentoring system for learners in Taiwan. The current e-learning environment in Taiwan is built from the instructor's viewpoint, where the Web course templates are from a formula that enables instructors to easily update their teaching materials. Instructors can upload their material without any interface design ability. In addition the current school platform required students to have an identification and password before students could enter the system to learn. While the Web 2.0 applications are becoming popular among students, by adopting the situated and dynamic learning assessment of the Web 2.0 applications as the-learning platform, we can actually provide students more control over the Internet. Furthermore, Web 2.0 applications provide more interesting learning materials with the latest multimedia. When constructing a course in the Web 2.0 environment, students will use the popular Web applications they are already familiar with. Even though some researches had already adopted the Web 2.0 concepts in language-learning, they had not evaluated the effectiveness of learning in the Web 2.0 learning platform which integrates with situated and dynamic learning assessment.

This research aims to find out the learning effectiveness within the situated and dynamic learning environments. The results of this study can help future researchers understand the needs of English learning and provide guidelines for conducting the Web-based learning. In addition, students will be provided with a standardized framework for learning in a Web 2.0 environment through the use of SDLA environment.

CHAPTER III

RESEARCH METHODOLOGY

Sample and Population

This research was a field experiment completed over a one semester time period and adopting a two-group repeated design – situated dynamic learning assessments (SDLA) environment and current Web learning environment. The total participants sample size in this study was 142 students who are college sophomores from Meiho Institute of Technology in Taiwan. They were from three different departments (Department of Recreation Sports and Health Promotion, Department of Social Work, and Department of Gerontology). Based on college entrance exam scores, students were divided into two levels for their English class. The levels, for the purpose of this study, were intermediate and advanced. To ascertain the effects of this study, each group (intermediate and advanced) was further divided into a control (CG) and experimental group (EG) for a period of one semester.

Seventy-five of the 142 students make up the treatment group; the other ($n = 67$) students belong to the control group. Subjects had no prior knowledge in the selected course. Subjects were representatives of traditional Taiwanese school populations. The EG subjects took a class using the dynamic learning assessment model. The CG subjects were learning on current e-learning environments and testing traditional assessment at the end of the learning. However, the CG subjects received no dynamic learning assessment training even though the e-learning materials for both groups were identical. Before this research project, all students studied English for at least three years in senior high school and college. They also received instruction on using technology. The number of subjects from the two groups is listed in Table 3.1.

Table 3.1
*Number of the Subjects from Two English Levels*

| Level | Intermediate | Advanced | Total |
|---|---|---|---|
| Experimental Group | 40 | 35 | 75 |
| Control Group | 27 | 40 | 67 |
| Total | 67 | 75 | 142 |

Meihio Institute of Technology is a private college in Taiwan. The population of interest is second-year College Sophomore students in Taiwan who are required to take an English conversation class as part of their curriculum. The goal is to test the research questions as to whether the independent variables are statistically significant in relation to learner achievement. Relationships between teachers, students and instructional designers will also be discussed throughout this study.

Research Design

Two groups (control/experiential) by two (pretest/posttest) ANOVA with repeated measures were conducted to examine the differential improvement in scores between the two groups. The statistical testing on the difference between the two groups ($n = 142$; 67 in control group and 75 in experiential group) on the two measurement occasions, 2 X 2 repeated measurement ANOVAs, were conducted on two factor scores. In this 2 X 2 design, there were three independent variables: group, testing scores, and English levels.

Program Design

*D&M IS Success Model*

To evaluate the online-learning systems, this research used the DeLone and McLean model of information system success model (D&M IS success model) (DeLone and McLean 2003) as the main framework for evaluating two Web-based learning environments and the learners' satisfaction. This model had three components: the creation of a system, the use of the system, and the effects of the system. According to this model, two systems on www.TaiwanESL.com and www.SDLAnow.info were created, and two learning groups were used to evaluate their learning satisfaction. Additionally, the survey questions explored the effectiveness of each system. Wang (2003) developed a comprehensive model and instrument for measuring learner satisfaction with an asynchronous e-learning system. In his model for measuring e-learner satisfaction, Wang developed four scales (learner interface, learning community, content, personalization) to measure e-learner satisfaction. This study adopted his model, to test the e-learner satisfaction between two different web learning environments.

On the updated D&M IS success model (2009), DeLone and Mclean concluded in their original paper that this success model needs future development and validation before it could serve as a basis for the selection of appropriate IS measures. DeLone and Mclean (2009) also pointed out that when measuring a system; one should capture the richness of a system phenomenon including the nature, level, and appropriateness of use, and should not simply measure the frequency of use. In their updated model, it did not show the negative or positive signs for those associations in a causal sense. This study used Wang's survey and testing scores as research methodologies. Furthermore, Web-based surveys were adopted during this research as they have gained traction within the research community even though mail, telephone, and in-

person interview surveys are still more prevalent (Scheuren, 2004). The Web-based collection method provides for an effective and efficient way to collect information in short form or in an open ended survey. The results of this survey were used to evaluate learner satisfaction between two different Web learning environments.

<div align="center">The Learning Interface Design</div>

The learning material used for online-learning was taken from a current English textbook. This textbook *Off We Go 3* had been used in regular English instruction by college teachers in southern Taiwan. All the learning materials were converted to streaming video formats with video or audio on demand functions. The e-learning assessments with pre-recorded instructions were made to provide-learning assessment exercises. This research used popular Google Blogger and open source Hot-potato assessment software from Half-baked Software Inc. as the main information integrations. Lastly, the domain name www.taiwanesl.com and www.sdlanow.info were purchased to provide convenient access for students. Two Web sites were then embedded inside the Meiho e-learning Web courses for administration control. Students were then given IDs and passwords so that they could access their accounts to perform their learning assignments. While both groups had different design formats, they both received an equal amount of time to perform and learn their objectives. In addition the pre/post test and pre/post survey were all conducted on the Meiho e-learning platform.

Instructors who developed learning materials for these subjects hold either a masters or doctoral degree in English or TESOL (Teachers of English to speakers of other languages). The researcher explained the purpose and procedure of this study before conducting the study. To start this study, online training Web sites and Web-based learning materials were developed according to the materials the instructors provided. For the validation of this study, instructors in

both subjects were only allowed to take the students attendance. They did not provide any instruction during the learning process. In order to motivate learning, students were informed that they would have a test at the end of the semester. Additional motivation came from extra points that were added if students post feedback on certain topics was exceptional. The instructors were responsible for allocating the extra points. During the e-learning process, instructors and the researcher monitored the online-learning behaviors and had provided necessary feedback via e-mail or message boards.

A well-designed learning environment should allow users to focus more on their learning tasks and less on becoming familiar with the learning environment. In this study, there were two learning interfaces/environments for two different groups. The control group was taking the current Web based learning interface as shown in Appendix G. On this current learning interface, learners learn with the course objectives, content and assessments. In this current Web-learning environment, learning takes place on the learning content section of the Web site. Learners can spend their desired amount of time and choose the part they need to emphasize. Assessments were given at the end of the learning to help students identify their mistakes. This enabled students with ability to go back to the learning contents section and practice after initial assessments had been completed.

The experimental group were learning within the SDLA environment as shown in Appendix H. The instructor and the instructional designer had spent much effort to pre-analyze users with related learning resources. When learners encountered questions using the SDLA environment, learners tried to find the answer in the online interactive environment through different pre-determined hints. This SDLA learning model may change the traditional role of the instructor. The chart in Figure 3.1 showed the flowchart of the situated dynamic learning

assessment. In this model, the instructor played the role of a constructer and an evaluator during the online learning. During the role-playing, he or she programmed the learning materials with carefully design hints into the computer interactive environment. The information was then transformed to the format that the learner could interact with.
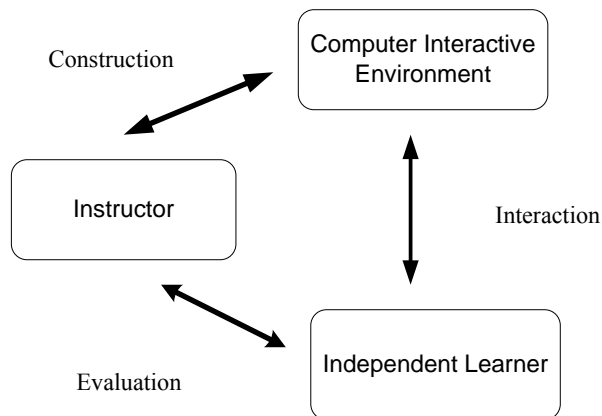


*Figure 3.1.* SDLA model diagram.

Situated dynamic learning assessments provide more of an instant feedback environment than the current Web-learning environment. Current Web-learning environment methods tend to evaluate learning results based on the learners' test results and instructors' comments. They also provide additional instructional materials to focus on learners' weaknesses. E-learning content development applications have rapidly utilized the Web 2.0 environment. Instructors can easily develop a learning system using various media to provide instant feedback. These hands-on applications can easily integrate different formats of information. For example, streaming video, audio and multimedia make "home instruction" or "self-instruction" possible.

The principle difference between the interfaces of SDLA and the current Web learning assessments was that students on SDLA used learning assessments to learn without the learning content. Within the SDLA environment, selected learning content would appear when learners

click the wrong answer, while on the current Web learning assessment, learners would learn with all the learning contents.  Assessments would be adopted only for learners to identify their learning problems when utilizing the current Web learning environment. Within both environments, standardization of instructors, treatments, learning assessments, discussions, assignments and exams are done to assure the integrity of the research.

Both learning groups had the same three hours per week for two months of learning during the semester. The designs of the course pages were simple and accessible.  In addition, the font size and the contrast of background were carefully chosen for the eye comfort of the students. Students answered questions and provided feedback every time they used the online learning platform.  Instructors then used the results to track students' learning behavior and make necessary course modifications in the future. This research study used English as the sole language used on the Web learning content.

Instruments

*Instrument 1-English Achievement Exam*

The first instrument used English achievement exams to answer the first research question, is there an achievement difference on the learning effect between those who are in the SDLA environment and those who are in the current Web learning environment?  Furthermore, this instrument was used to answer research hypotheses one, two and three.  The first hypothesis used in the study was a 20-item English achievement exam to assess participants' mastery of the learning content in the two learning environments. These 20-item questionnaires were from four *Off We Go 3* textbook units. There were 5 items per unit. Items 1−5 represent Unit 1 of the learning content.  Similarly, Items 6−10 are for Unit 2, Items 11−15 target Unit 3, and Items 16−20 are designed for Unit 4 of the learning content (see Appendix D). Each  item is worth 5

points with a total possible pre-test/post-test score of 100. The two-month test-retest reliability of this exam was 0.77.

In addition to the traditional research design requirement of repeated measure ANOVA on the above same 20-item test, the major advisor suggested the addition of more test items to cover the learned comprehensive material in the post-test. For this reason, an additional 20 items were added to the post-test (Appendix D). Based on the learning content, the additional 20 items were created with the courses instructors, and had been reviewed by the institutional director. The post-test scores on this 40-item exam in the two groups were examined by the independent *t*-test.

*Instrument 2-Learner Satisfaction Scale*

The second instrument applied the learner satisfaction scale to answer the second research question, is there a learning satisfaction difference between those who are in the current Web learning environment and those who are in the SDLA environment? Furthermore, this instrument was used to answer the Research Hypotheses 4,5,6,7, and 8. The fourth hypothesis measured learners' satisfaction in two different learning environments: the situated dynamic learning assessment (SDLA) model on the EG subjects and current Web learning environment model on the CG subjects. Based on Giese and Gote's findings (2000), learner satisfaction can be defined as a summary affective response of varying intensity that follows asynchronous e-learning activities, and is stimulated by several focal aspects, such as content, user interface, learning community, customization, and learning performance. Wang (2003) stated that the measure of e-learning systems must incorporate different aspects of learner satisfaction to become a useful diagnostic instrument; he developed questions with multiple-item scale to measure electronic learner's satisfaction. Wang (2003) assessed the internal consistency of the

items representing each factor using Cronbach's alpha. The 17-item instrument had a reliability of 0.93, exceeding the minimum standard of 0.80 suggested for basic research. Lei and Jennifer (2009) have adopted a global measure of satisfaction scale and the use of a global measure of satisfaction is consistent with previous studies of student satisfaction (e.g., Roszkowski and Ricci, 2005; Wang, 2003). The result of their study found significant differences ($\alpha = 0.1$, $p = 0.07$, one tail test) between classes with virtual office hours and classes without virtual office hours.

The second instrument was adapted from Wang's e-learner satisfaction scales (as shown in the Appendix C) to do a repeated measure ANOVA in which the survey questions would be used for measuring students' self-reported e-learning satisfaction. Both sets of subjects used this survey before and after the learning activity to measure learner satisfaction. E-learner satisfaction was measured using a 5-point Likert scale: 1 (*strong disagree*), 2 (*disagree*), 3 (*uncertain*), 4 (*agree*), and 5 (*strong agree*).

According to Wang's Learner Satisfaction Scale, there were four factors for this learner satisfaction scale; Factor 1 examined the learner interface using questions Q5, Q6, Q7, Q8 and Q9. Factor 2 examined the learning community using 4 questions Q21, Q22, Q23, and Q24. Factor 3 examined the content using 4 questions Q1, Q2, Q3 and Q4. Lastly, Factor 4 examined the personalization using 4 questions Q16, Q17, Q18 and Q19.

<center>Management of Missing Data</center>

There were 142 students sampled for the study. Students were requested to take the achievement tests and learning satisfaction survey at the same time, so that all the students completed the process. On the survey items, not all the students answered the 17 items, therefore after excluding the missing data, there were 141 samples used for the learner satisfaction survey.

According to the 80-20 rule, 20% of missing data is allowed (Hair et al., 2006). When inputting the data in the SPSS program, do not put a 0 for missing data because the computer will not interpret this as missing data, but instead as data with a value of 0 (Helms,1999). Therefore, for the Factor 1, with 4 survey items (4 X 0.2 = 0.8, 4-1=3), data were collected only for the students that completed 3 out of 4 items.

## Data Collection Procedure

The collected data were analyzed with SPSS software. Two-way repeated measures ANOVA was used to highlight the differences between the survey scores of two different environments. The conventional Type-I error rate of 0.05 (i.e. $p= 0.05$) was used throughout the study. This dissertation study was conducted during one semester with the adoption of the SDLA learning environment and current Web learning environment in two different groups. It also involved ongoing dialogues with student participants.  Lastly, the time table below showed the detail implementation schedule.

Table 3.2
*Implementation Schedule of Experimental Study*

| Date: | Schedule: |
| --- | --- |
| 06/05/2009 | Designing the open Web-based platforms |
| 08/20/2009 | Testing the function of the open Web-based platform |
| 10/02/2009 | Administrating the pre-survey and the pre-test for both CG and EG. |
| 10/16/2009 | Administrating online learning of Unit 1 on both subjects |
| 10/30/2009 | Administrating online learning of Unit 2 on both subjects |

*(table continues)*

Table 3.2 (*continued*)

| Date: | Schedule: |
| --- | --- |
| 11/13/2009 | Administrating online learning of Unit 3 on both subjects. |
| 11/27/2009 | Administrating online learning of Unit 4 on both subjects. |
| 12/04/2009 | Administrating the post-survey and post-test for both CG and EG. |
| 12/30/2009 | Computing and analyzing the collected data. |

CHAPTER IV

RESULTS

This chapter provides results of the data analysis. There are three sections in this chapter. The first section examines the statistical assumptions and the selected psychometric properties of the employed measurement instruments. The second section presents the results of the learning effectiveness by learning environment or by English proficiency level in 2-way repeated measure ANOVAs. In addition, this section investigates the learning effects between the two groups on the 40-items post-test with an independent sample $t$-test. Section three examines the learner satisfaction factors with a short discussion of the finding in each item provided.

Examinations on Statistical Assumptions and Psychometric Properties of the Instrument

*Statistical Assumptions of the Independent t-Test*

The main statistical assumptions for the independent sample $t$-test on the post-test of the exam score are: (a) independent and random sample from the defined population, (b) normal distribution of the dependent variable, and (c) homogeneity of variance (Hinkle, Wiersma, and Jurs, 2003). For the first assumption, although there was no way to justify that, this sample was random from the population, nevertheless, the effect of the violation to the first assumption on the Type I error rate was minimal (Glass, Peckham, and Sanders, 1972).

For the second assumption, this study used the guidelines by Hair, Black, Babib, Anderson, and Tatham, (2006). These researchers recommend employing the following formulae to convert the skewness and kurtosis statistics on the dependent variables to the $z$-scores to judge the normality: Zskewness $= \dfrac{skewness}{\sqrt{\frac{6}{n}}}$ and Zkurtosis $= \dfrac{kurtosis}{\sqrt{\frac{24}{n}}}$, where $n$ is the sample size. The

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three typically used threshold values are $\pm 1.96$, $\pm 2.58$, and $\pm 3.29$, corresponding to the 0.05, 0.01, and 0.001 levels of significance.

Table 4.1 shows the *Z*-scores for all of the dependent variables in the study. It demonstrates that the majority of the dependent variables are not normally distributed no matter what level of threshold is chosen. However, the departure to normality is not serious for all of the variables. Thus, no data transformations were performed in the present study to improve the normality assumptions as the transformed scores are harder than the original scores to be explained.

Table 4.1

*Skewness and Kurtosis Value of All Factors*

| Factors | Sample size | Skewness | Kurtosis | Zskewness | Zkurtosis |
|---|---|---|---|---|---|
| 20 Pre-Test | 142 | 0.71 | 0.07 | 3.43 | 0.18 |
| 20 Post-Test | 142 | 0.64 | 0.40 | 3.12 | 0.97 |
| 40 Post-Test | 142 | 0.51 | -0.20 | 2.50 | -0.49 |
| Pre-Learning Interface (Factor 1) | 141 | -1.03 | 1.58 | -5.00 | 3.82 |
| Pre-Learner Community (Factor 2) | 142 | -0.85 | 2.01 | -4.14 | 4.88 |
| Pre-Content (Factor 3) | 138 | -1.03 | 1.69 | -4.94 | 4.04 |
| Pre-Personalization (Factor 4) | 139 | -1.09 | 1.91 | -5.27 | 4.60 |
| Post-Learning Interface (Factor 1) | 140 | -0.67 | 1.21 | -3.23 | 2.92 |
| Post-Learner Community (Factor 2) | 141 | -0.49 | 0.86 | -2.39 | 2.09 |
| Post-Content (Factor 3) | 141 | -0.74 | 1.81 | -3.57 | 4.39 |
| Post-Personalization (Factor 4) | 138 | -0.82 | 1.38 | -3.94 | 3.32 |

For the third assumption on homogeneity, Levene's test of equality of variances was used for the independent sample *t*-test. If violated, the *t*-statistic and degree of freedom for the case of 'equal variances not assumed' were used.

*Statistical Assumptions of the 2-way Repeated Measure ANOVAs*

Repeated measure ANOVA also has three major assumptions: multivariate normality, homogeneity of covariance matrices, and independence (Maxwell and Delany, 2004). Furthermore, repeated measure ANOVA is typically robust to the violations of the first two assumptions (Hair, et al., 2006). The last assumption on independence often is hard to meet as it requires random sampling and assignment. In addition to these multivariate assumptions, the univariate approach of the within-subject effect requires the assumption of sphericity, and it is always met by the assumption in a 2 X 2 Repeated Measure design (Hair, et al., 2006).

*Psychometric Properties*

Internal consistency reliability of the pretest was determined by calculating Cronbach's alpha for the multi-item scales used in this study; it was found to be 0.96 on the pre-survey and 0.96 on the post-survey.  The Coranbach's alpha values of all of the items were over 0.70, thus it can be claimed they are all reliable. According to DeVellis' strength scale, the data between 0.70-0.79 is acceptable, between 0.80-0.89 is satisfactory and above 0.90 is adequate (Devellis, 1991, P85). All factors met the reliability test with a score of at least 0.87 with the exception of the post-survey on Factor 3, which had 0.77 reliability score. In addition, all the factors have been validated by previous studies before this study was conducted. Therefore the content validity can be regarded as acceptable.

Table 4.2
*Cronbach's Alpha for Learner Satisfaction (Reliability Statistics)*

|  | Items | Sample Size | Pre-survey | Post-survey |
|---|---|---|---|---|
| Factor 1-Learner Interface | 4 | 141 | 0.90 | 0.90 |
| Factor 2-Learner Community | 5 | 142 | 0.87 | 0.88 |
| Factor 3-Content | 4 | 138 | 0.91 | 0.77 |
| Factor 4-Personalization | 4 | 139 | 0.89 | 0.89 |
| Total | 17 | 142 | 0.96 | 0.96 |

Additional constructive validity on Table 4.3 was conducted to check the validity. Lawshe (1975) stated that if more than half the panelists indicate that an item is essential, that item has at least some content validity. The inter factor correction between pre-survey and post-survey had a high convergent validity and low discriminate validity. The shared covariance convergent validity on pre-survey and post-survey were high. Pre-survey ( $r^2 = 0.69^2 = 47.61\%$ , $r^2 = 0.77^2 = 59.29\%$) and Post-survey ($r^2 = 0.73^2 = 53.61\%$ $r^2 = 0.86^2 = 73.96\%$).

Table 4.3
*Inter-Factor Correlation*

| Subscales | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| Factor 1-Learner Interface | _ | 0.81 | 0.76 | 0.73 |
| Factor 2-Learner Community | 0.77 | _ | 0.86 | 0.77 |
| Factor 3-Content | 0.77 | 0.75 | _ | 0.80 |
| Factor 4-Personalization | 0.69 | 0.73 | 0.75 | _ |

(*table continues*)

Table 4.3 (*continued*)

Note 1: All of the correlations are significant at 0.001 levels.
Note 2: The bottom left is for the correction in the pre-test, the top-right part is for the post-test.

Analysis Strategies for Repeated Measure ANOVAs

All the results were measured using three different approaches: 1. Descriptive statistics,

2. ANOVA tables, and 3. Effect sizes by using Cohen's *d*. Analysis strategies for the statistical

measurement, 2 X 2 repeated measurement ANOVAs were conducted on two factor scores. The

*p*-value and a partial Eta squared ($\eta^2$) were used to determine effect size and the strength of the

findings. If a *p* value < 0.05, then statistical significant is meet. If statistical significance is found,

eta squared helps determine how much influence the dependent variable has on the outcome.

The partial eta squared is an estimate of the amount of variability in the dependent variables

explained, or accounted for by individuals defining the independent variables (Thompson, 2004).

Based on the following scale, a value of 0.0-0.009 was considered as trivial, 0-1%, 0.01-0.09 was

as small 1%-9%, 0.10-0.249 as medium, and 0.25-1.00 as large $\geq$ 25% (Cohen, 1988).  To

advance measure the effect sizes, a Cohen's *d* was conducted with the formula below.

$$\frac{(M_3 - M_1) - (M_4 - M_{2)}}{\sqrt{\frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2 + (n_3 - 1) + SD_3^2 + (n_4 - 1)SD_4^2}{(n_1 + n_2 + n_3 + n_4 - 4)}}}$$

Where M1, SD1, n1 are the mean, SD, and cell size for the experimental group in the pre-test; M3, SD3,
n3 are the mean, SD, and cell size for the control group in the pre-test; M3, SD3, n3 are the mean, SD,
and cell size for the experimental group in the post-test; and M4, SD4, n4 are the mean, SD, and cell size
for the control group in the post-test.

The guidelines for correlation efficient, 0.1 was considered as small, 0.3 as medium, and

0.5 as large; corresponding to 1% as small, 9% as medium, and 25% as large in terms of

percentage of variance explained (Cohen, 1988).  During examination the repeated measurement

ANOVAs when interaction effect(s) presented, the significant main effect(s) was usually not

Interpreted as advocated (e.g., Maxwell and Delaney, 2004; Pedhazur and Schmelkin, 1991)

unless the interaction was ordinal (Hair et al., 2006).

## Learning Groups Analysis

The first research question is going to see if there is a significant achievement difference

between students on the control group and experimental group.

*Descriptive Statistics*

Based on the descriptive statistics from the independent samples *t*-test, the pre-test for the

experimental group ($n = 75$) resulted in a mean of 55.27, for the testing scores. The pre-test

control group ($n = 67$) conducted a mean of 55.97. The post-test for the experimental group

generated a mean of 66.40 and the post-test from the control group conducted a mean of 63.13.

There was a visible difference between the post-test of the control and experimental groups.

Therefore, the results needed a further investigation.

Standard deviations between the pre-test and post-test on the experimental group were

normally distributed around the mean. Pre-test on the experimental group ($SD = 13.40$) had a

similar standard deviation of the post-test ($SD = 13.96$).  The control group for both tests also

generated similar distribution. Pre-test on the control group ($SD = 9.05$) had a similar standard

deviation of the post-test ($SD = 9.84$).

Table 4.4

*Descriptive Statistics on Learning Environment Report*

| | Experimental Group | | | Control Group | | |
|---|---|---|---|---|---|---|
| | *N* | *M* | *SD* | *N* | *M* | *SD* |
| Pre-test | 75 | 55.27 | 13.40 | 67 | 55.97 | 9.05 |
| Post-test | 75 | 66.40 | 13.96 | 67 | 63.13 | 9.84 |

*Group Difference*

Two groups (control/experiential) by two (pre-test/post-test) ANOVA with repeated measures was conducted to examine the differential improvement in scores between two different groups. For the statistical tests on the differences between the two groups ($n = 142$; 67 in control group and 75 in experiential group) in the two measurement occasions, 2 X 2 repeated measurement ANOVAs were conducted on two factor scores. In this 2 X 2 design, there was one independent variable: group and one dependent variable: testing scores. For between group differences (combining two tests), $F (1,140) = 0.46$, $p < 0.00$ $\eta^2 = 0.003$. For within-subject differences between the pre-test and post-test (combing two groups), $F (1,140) = 186.58$, $p <$ 0.00 with $\eta^2 = 0.571$. Significant differences were found on both group and test. Students in different groups had small significant differences, while students' pre-test/post-test showed a statistical difference $\eta^2 = 0.571$.

Table 4.5

*Repeated Measure ANOVA Summary Table for the Internal Scale Score*

| Subjects | Source | SS | df | MS | F | p | $\eta^2$ |
|----------|--------|-----|-----|-----|-----|-----|-----|
| Between | Group | 116.16 | 1 | 116.16 | 0.46 | 0.000 | 0.003 |
| Subject | Error | 3508.1 | 140 | 25.58 | | | |
| | Total | 3624.26 | 141 | 366.74 | | | |
| Within | Test | 5923.82 | 1 | 5923.82 | 186.58 | 0.000 | 0.571 |
| Subject | Test X Group | 278.75 | 1 | 278.75 | 8.78 | 0.004 | 0.059 |
| | Error | 4444.93 | 140 | 31.75 | | | |
| | Total | 10647.5 | 142 | 6234.32 | | | |

For the interaction effect between factors (pre-test and pos-test) and learning groups, a significant difference was found: $F(1,140) = 8.78$, $p = 0.004 < 0.01$ with $\eta^2 = 0.059$: The two groups had a significant influence on students' learning achievement. The mean-type effect size in Cohen's *d* was 0.04, even though it was considered as a small effect size.  The control group went from a pre-test mean score of 55.97, up to a post-test mean score of 63.13, equaling a gain of 7.16, and the experimental group went from a pre-test mean score of 55.27 to a post-test mean score of 66.40, equaling a gain of 11.13. Examining Figure 4.1, both the control group and experimental group improved numerically, but the experiential group improved more than the control group. Hypothesis 1 was rejected.
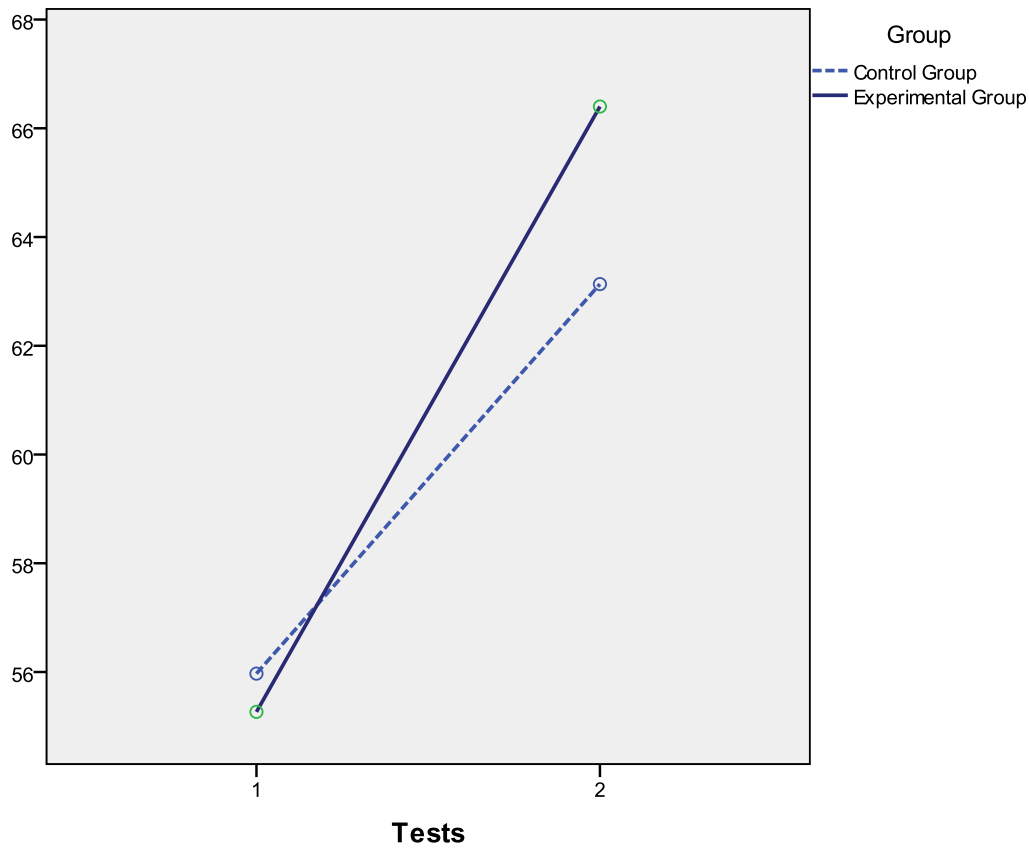
*Figure 4.1.* Achievement means of internal scale.

## 40 Post-Test Item Analyses

For the 40 items on the post-test, an independent-samples *t*-test was conducted to compare the 40 post-test scores for the control group and experimental group. There was a significant difference in the scores of the control group (*M* = 61.978, *SD* = 9.06) and experimental group (*M* = 67.10, *SD* = 15.96) conditions; $t$ (140) = -2.31, $p$ = 0.02 < 0.05. These results suggest that the group really did have an effect on learning achievement. Specifically, our results showed that the experimental group improved more significantly than the control group. Hypothesis 2 was rejected.

English Levels Analysis

In order to see if there was a level difference on learning achievement, a 2 X 2 repeated measure ANOVAs was conducted. Two different English levels (intermediate and advance) were measured with two different tests (pre-test and post-test).

*Descriptive Statistics*

Based on the descriptive statistics from the independent samples *t*-test, the intermediate group for the pre-test (*n* = 67) resulted in a mean of 53.13, for the testing scores. The advance group (*n* = 75) conducted a mean of 57.8. The post-test for the intermediate generated a mean of 63.20 and the post-test from the advance group conducted a mean of 66.33. Standard deviations between two different levels on the pre-test were normally distributed around the mean. Pre-test on the intermediate group (*SD* = 11.70) and a standard deviation of the post-test (*SD* = 13.61). The control group for both tests generated similar distribution. Pre-test on advance group (*SD* = 1.97) had a similar standard deviation of the post-test (*SD* = 1.79).

Table 4.6
*Descriptive Statistics on Learning Environment Report*

|  | Intermediate group | | | Advance Group | | |
|---|---|---|---|---|---|---|
|  | *N* | *M* | *SD* | *N* | *M* | *SD* |
| Pre-test | 67 | 53.13 | 11.70 | 75 | 57.80 | 1.97 |
| Post-test | 67 | 63.20 | 13.61 | 75 | 66.33 | 1.79 |

*Level Difference*

For the interaction effect between factor (pre-test and pos-test) and English level, there was no significant difference: $F(1,140) = 1.257$, $p = 0.264 > 0.05$: The two levels had no significance influence on students' learning achievement. Between English levels differences (combining two tests), $F(1,140) = 4.405$, $p = 0.038 < 0.05$, $\eta^2 = .031$. For within-subject differences between the pre-test and post-test (combing two levels), $F(1,140) = 183.20$, $p = 0.00 < 0.05$, $\eta^2 = 0.567$. Both Levels and Test had a significance difference.

Table 4.7
*Repeated Measure ANOVA Summary Table for the Two English Levels*

| Subjects | Source | SS | df | MS | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Between | Level | 1073.73 | 1 | 1073.73 | 4.405 | 0.038 | 0.031 |
| Subject | Error | 34123.88 | 140 | | | | |
| | Total | 35197.61 | 141 | | | | |
| Within | Test | 6126.540 | 1 | 6126.54 | 183.20 | 0.000 | 0.567 |
| Subject | Test X Level | 42.033 | 1 | 42.03 | 1.257 | 0.264 | 0.009 |
| | Error | 4681.647 | 140 | 33.44 | | | |
| | Total | 1085.22 | 142 | 6202.01 | | | |

The intermediate group went from a pre-test mean score of 53.134, up to a post-test mean score of 63.209, equaling a gain of 10.07. The advance group went from a pre-test mean score of 57.8 to a post-test mean score of 66.33, equaling a gain of 8.53. Examining Figure 4.2, both control group and experimental group improved numerically. The mean-type effect size in Cohen's *d* was -0.01. This explains why there was no significant difference found on the interaction effect, however, the net gain of the testing scores was significant. Hypothesis 3 was supported.
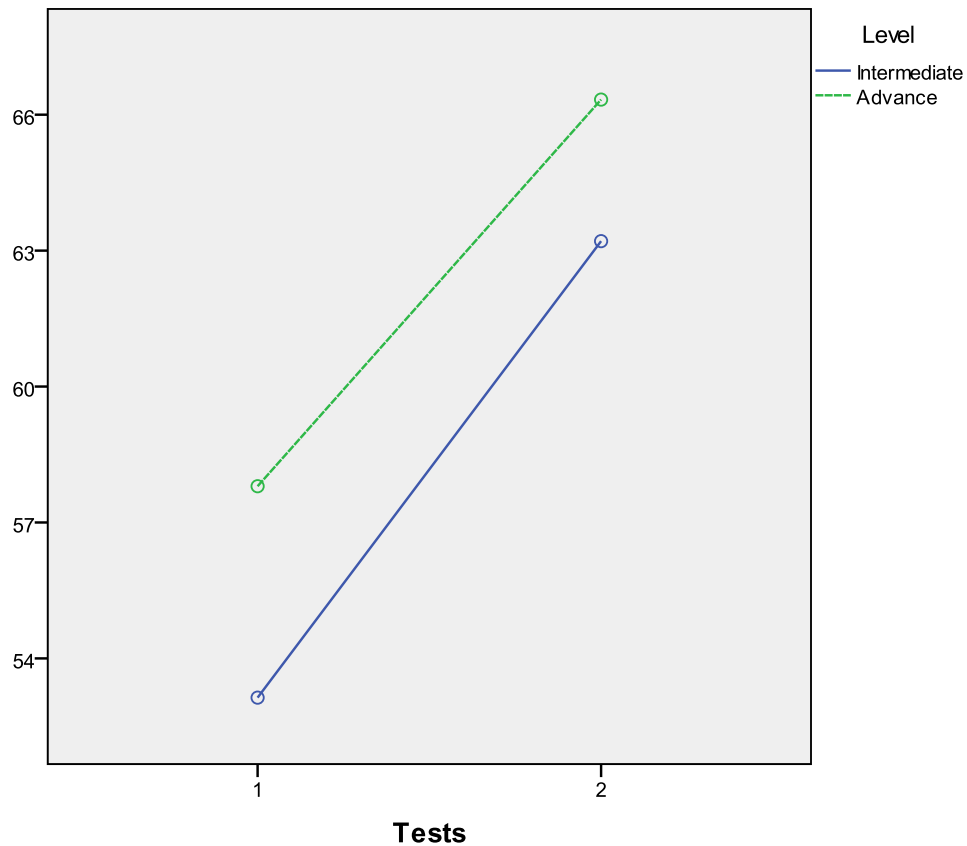
*Figure 4.2.* Estimated marginal means of English levels.

Learner Satisfaction Analysis – All Factors with 17 Items

*Descriptive Statistics*

The total factors are measured with the all 17 questions of the pre-survey and post survey. The descriptive statistics on Table 4.8 showed the pre-survey for the control group ($n = 67$) resulted in a mean of 3.37 for the survey scores. The pre-survey for the experimental group ($n = 74$) resulted a mean of 3.56. The post-survey of the control group generated a mean of 3.46, and the post-survey from the experimental group yielded a mean of 3.73. It showed that the experimental group had an insignificantly higher mean score then the control group.

Table 4.8
*Descriptive Statistics on Overall Factors*

| | Experimental Group | | | | Control Group | | |
|---|---|---|---|---|---|---|---|
| | *N* | *M* | *SD* | | *N* | *M* | *SD* |
| Pre-survey | 74 | 3.56 | 0.62 | | 67 | 3.37 | 0.70 |
| Post-survey | 74 | 3.73 | 0.47 | | 67 | 3.46 | 0.68 |

*Group Difference*

For the interaction effect between 17 items (pre-survey and post-survey) and the learning group, $F(1,139) = 0.81$, $p = 0.37 > 0.05$. $\eta^2 = 0.005$. The effect size in Cohen's *d* was 0.14, thus it had a small correlation efficient. There was a significance found on overall factors. For between group difference (combining two surveys), $F(1,139) = 6.11$, $p = 0.01 < 0.05$, $\eta^2 = 0.42$. For within-subject difference statistical significance was found between the pre-survey and post-survey (combing two groups), $F(1,139 = 6.40$, $p = 0.01 < 0.05$, $\eta^2 = 0.31$.

Table 4.9
*Repeated Measure ANOVA Summary Table for All Factors (Mean Scores)*

| Subjects | Source | *SS* | *df* | *MS* | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Between | Group | 3.70 | 1 | 3.70 | 6.11 | 0.015 | 0.04 |
| Subject | Error | 84.17 | 139 | 0.61 | | | |
| | Total | 87.87 | 140 | 4.31 | | | |
| Within | Factor | 1.14 | 1 | 1.14 | 6.40 | 0.013 | 0.04 |
| Subject | Factor X Group | 0.15 | 1 | 0.15 | 0.81 | 0.37 | 0.006 |
| | Error | 24.77 | 139 | 0.18 | | | |
| | Total | 26.07 | 141 | 1.17 | | | |

The post-survey mean on the experimental group had a change of 0.17 and the control group had a change of 0.09. As shown in Figure 4.3 a small difference of 0.08 was found with a post standard deviations of 0.47 and 0.68, respectively. Hypothesis 4 was rejected.



*Figure 4.3.* Survey means of all Factors.
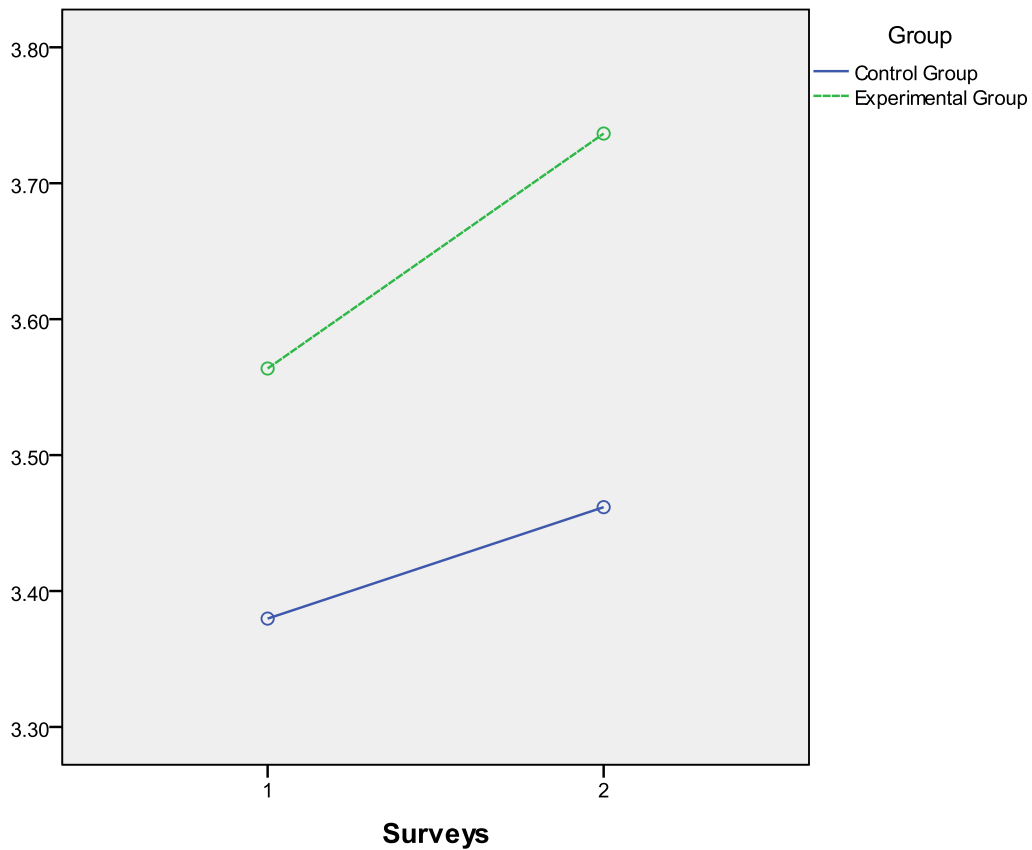
Learner Satisfaction Analysis –Learning Interface (i.e., Factor 1)

*Descriptive Statistics*

The descriptive statistics in Table 4.8 showed the pre-survey for the control group ($n =$ 65) resulted in a mean of 3.34 for the survey scores. The pre-survey for the experimental group ($n = 75$) resulted a mean of 4.51. The post-survey of the control group generated a mean of 3.43,

and the post-survey from the experimental group yielded a mean of 3.7. It showed that the experimental group had a slightly higher mean score then the control group.

Table 4.10
*Descriptive Statistics on Factor 1*

|  | Experimental Group | | | Control Group | | |
|  | N | M | SD | N | M | SD |
|---|---|---|---|---|---|---|
| Pre-survey | 74 | 3.51 | 0.69 | 65 | 3.34 | 0.83 |
| Post-survey | 74 | 3.70 | 0.60 | 65 | 3.43 | 0.73 |

*Group Difference*

For the interaction effect between Factor 1 (Learning Interface), five questions numbered 5-9 (pre-survey and post-survey), there was no statistical difference: $F(1,137) = 0.478$, $p = 0.491 > 0.05$, $\eta^2 = .03$: The two groups had no significance influence on Factor 1. A statistical significance in learner interface was found between the two groups and factors of this study. For between group differences (combining two surveys), $F(1,137) = 4.244$, $p = 0.041 < 0.05$, $\eta^2 = 0.03$. For within-subject differences between the pre-survey and post-survey (combing two groups), $F(1,137) = 4.439$, $p = 0.491 < 0.05$, $\eta^2 = .031$. The effect size in Cohen's $d$ was 0.15, thus a small correction effect was found.

Table 4.11

*Repeated Measure ANOVA Summary Table for Factor 1 (Learning Interface)*

| Subjects | Source | SS | Df | MS | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Between | Group | 3.123 | 1 | 3.123 | 4.244 | 0.041 | 0.030 |
| Subject | Error | 10.806 | 137 | 0.736 | | | |
| | Total | 103.929 | 138 | 3.859 | | | |
| Within | Factor | 1.306 | 1 | 1.306 | 4.439 | 0.037 | 0.031 |
| Subject | Factor X Group | 0.141 | 1 | 0.141 | 0.478 | 0.491 | 0.003 |
| | Error | 4.304 | 137 | 0.294 | | | |
| | Total | 41.751 | 139 | 1.741 | | | |

There was a group significance found on Factor 1, with the $p = 0.041$. The control group went from a pre-survey mean score of 3.346, up to a post-test mean score of 3.438, equaling a gain of 0.092, and the experimental group went from a pre-survey mean score of 3.513 to a post-survey mean score of 3.695, equaling a gain of 0.182. Examining Figure 4.4, both the control group and experimental group had improved: a statistical significance is met. Hypothesis 5 was rejected.
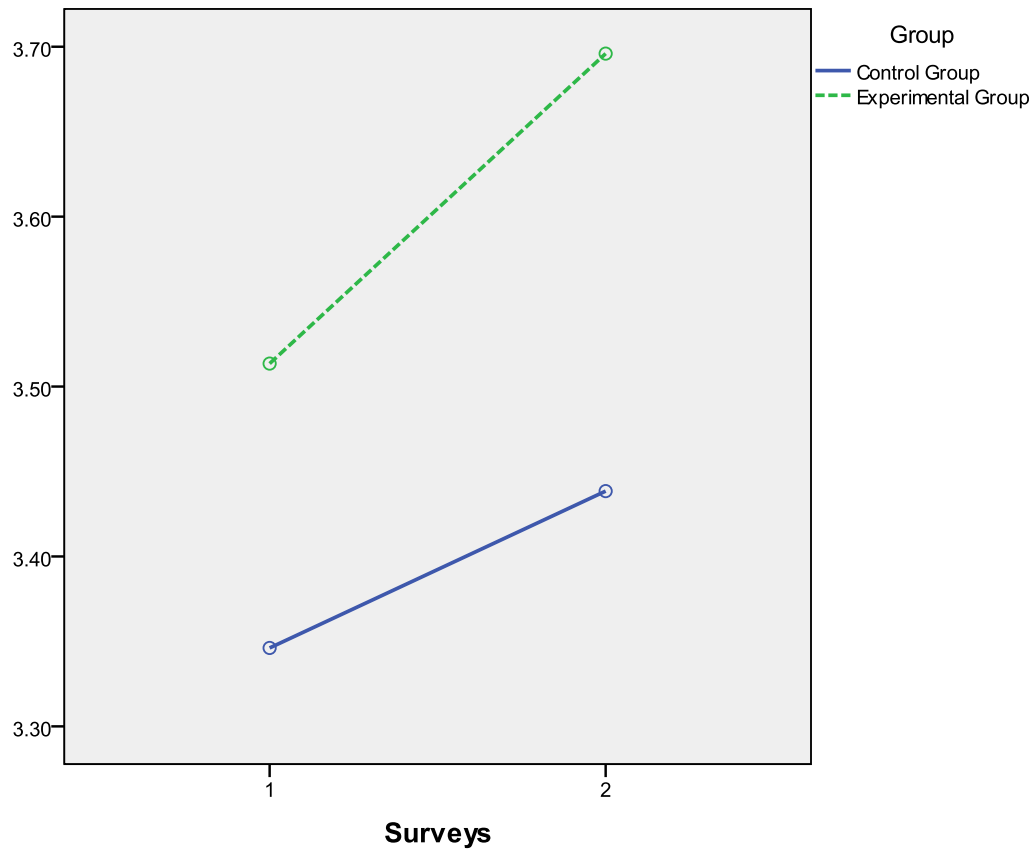
*Figure 4.4.* Survey means of Factor 1 (Learning Interface).

Learner Satisfaction Analysis – Learning Community (i.e., Factor 2)

*Descriptive Statistics*

The descriptive statistics on Table 4.12 showed the pre-survey for the control group ($n =$ 67) resulted in a mean of 3.4 for the survey scores. The pre-survey for the experimental group ($n = 75$) resulted a mean of 3.54. The post-survey of the control group generated a mean of 3.5, and the post-survey from the experimental group yielded a mean of 3.76. It showed that the experimental group had a slightly higher mean score than the control group.

Table 4.12
*Descriptive Statistics on Factor 2*

| | Experimental Group | | | Control Group | | |
|---|---|---|---|---|---|---|
| | *N* | *M* | *SD* | *N* | *M* | *SD* |
| Pre-survey | 74 | 3.54 | 0.69 | 67 | 3.40 | 0.76 |
| Post-survey | 74 | 3.76 | 0.49 | 67 | 3.50 | 0.66 |

*Group Difference*

For the interaction effect between Factor 2 (learning community), four questions numbered 21-24 (pre-survey and post-survey), there was no statistical difference: $F(1,139) = 1.233$, $p = 0.27 > 0.05$, $\eta^2 = 0.009$: The interaction between two groups had no significance influence on students' learning achievement. However, a statistical significance in Learner Community was found between two groups and two factors. For between group difference (combining two surveys), $F(1,139) = 4.396$, $p = 0.038 < 0.05$, $\eta^2 = 0.31$. For within-subject difference between the pre-survey and post-survey (combing two groups), $F(1,139) = 7.652$, $p = 0.006 < 0.05$, $\eta^2 = 0.05$. The effect size in Cohen's $d$ was 0.2, thus a correction effect was found.

Table 4.13

*Repeated Measure ANOVA Summary Table for Factor 2 (Learning Community)*

| Subjects | Source | SS | df | MS | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Between | Group | 2.831 | 1 | 2.831 | 4.396 | 0.038 | 0.031 |
| Subject | Error | 89.506 | 139 | 0.644 | | | |
| | Total | 92.337 | 140 | 3.475 | | | |
| Within | Factor | 1.686 | 1 | 1.686 | 7.652 | 0.006 | 0.052 |
| Subject | Factor X Group | 0.272 | 1 | 0.272 | 1.233 | 0.269 | 0.009 |
| | Error | 3.619 | 139 | 0.220 | | | |
| | Total | 32.577 | 141 | 2.178 | | | |

Examining Figure 4.5, the control group went from a pre-survey mean score of 3.40, up to a post-test mean score of 3.50, equaling a gain of 0.1. The experimental group went from a pre-survey mean score of 3.55 to a post-survey mean score of 3.76, equaling a gain of 0.22. Both the control group and experimental group had a minor improvement, but the experimental group had a higher improvement mean score then the control group. Therefore statistical significance is accepted on Factor 2. Hypothesis 6 was rejected.
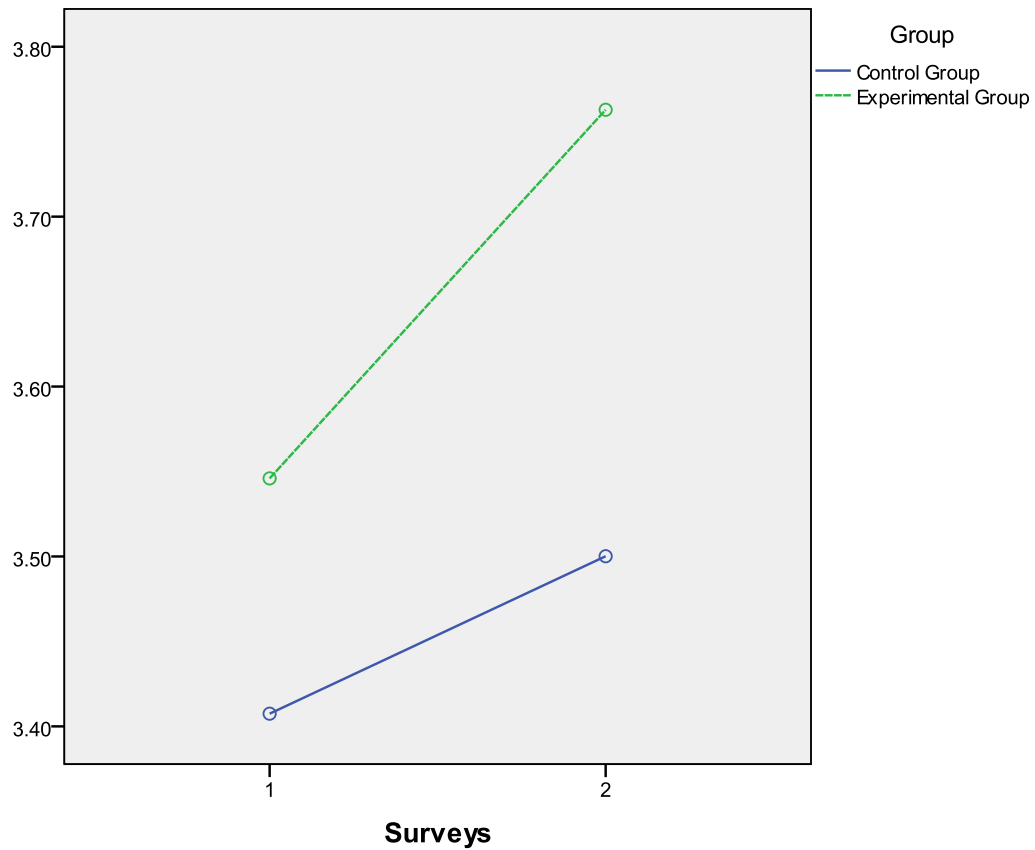
*Figure 4.5.* Survey means of Factor 2 (Learning Community).

Learner Satisfaction Analysis –Content (i.e., Factor 3)

*Descriptive Statistics*

The descriptive statistics in Table 4.14 showed the pre-survey for the control group ($n$ = 64) resulted in a mean of 3.32 for the survey scores. The pre-survey for the experimental group ($n$ = 73) resulted a mean of 3.65. The post-survey of the control group generated a mean of 3.49, and the post-survey from the experimental group yielded a mean of 3.84. Obviously, the two means of the two groups were similar in terms of how their scores improved.  Thus, further investigation of the results was needed.

Table 4.14
*Descriptive Statistics on Factor 3*

|  | Experimental Group | | | | Control Group | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *N* | *M* | *SD* | | *N* | *M* | *SD* |
| Pre-survey | 73 | 3.65 | 0.71 | | 64 | 3.32 | 0.78 |
| Post-survey | 73 | 3.84 | 0.42 | | 64 | 3.49 | 0.67 |

*Group Difference*

Factor 3 with repeated measure ANOVAs was examined below in Table 4.15. For between group difference (combining two surveys), $F(1,135) = 12.38$, $p = 0.001 < 0.05$, $\eta^2 = 0.08$. For within-subject difference, statistical significance was found between the pre-survey and post-survey (combing two groups), $F(1,135) = 1.53$, $p = 0.001$, $\eta^2 = 0.07$. The interaction effect between Factor 3, Q1-Q4 (pre-survey and post-survey) and learning group found no statistical difference: $F(1,135) = 0.06$, $p = 0.81 > 0.05$, $\eta^2 = 0.07$. The two groups had no significant influence on students' learning achievement.

Table 4.15

*Repeated Measure ANOVA Summary Table for Factor 3 (Content)*

| Subjects | Source | *SS* | *df* | *MS* | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| Between | Group | 8.03 | 1 | 8.03 | 12.38 | 0.001 | 0.08 |
| Subject | Error | 87.59 | 135 | 0.65 | | | |
| | Total | 95.62 | 136 | 8.68 | | | |
| Within | Factor | 2.26 | 1 | 2.26 | 1.53 | 0.001 | 0.07 |
| Subject | Factor X Group | 0.012 | 1 | 0.012 | 0.056 | 0.81 | 0.00 |
| | Error | 28.96 | 135 | 0.215 | | | |
| | Total | 31.23 | 137 | 2.49 | | | |

The effect size in Cohen's *d* was 0.03, thus no correction effect was found. The control group went from a pre-survey mean score of 3.32, up to a post-survey mean score of 3.49, equaling a gain of 0.17. The experimental group went from a pre-survey mean score of 3.65 to a post-survey mean score of 3.85, equaling a gain of 0.2. Examining Figure 4.6, both the control group and experimental group had similar improvements; therefore no statistical significance was found. Hypothesis 7 was supported.
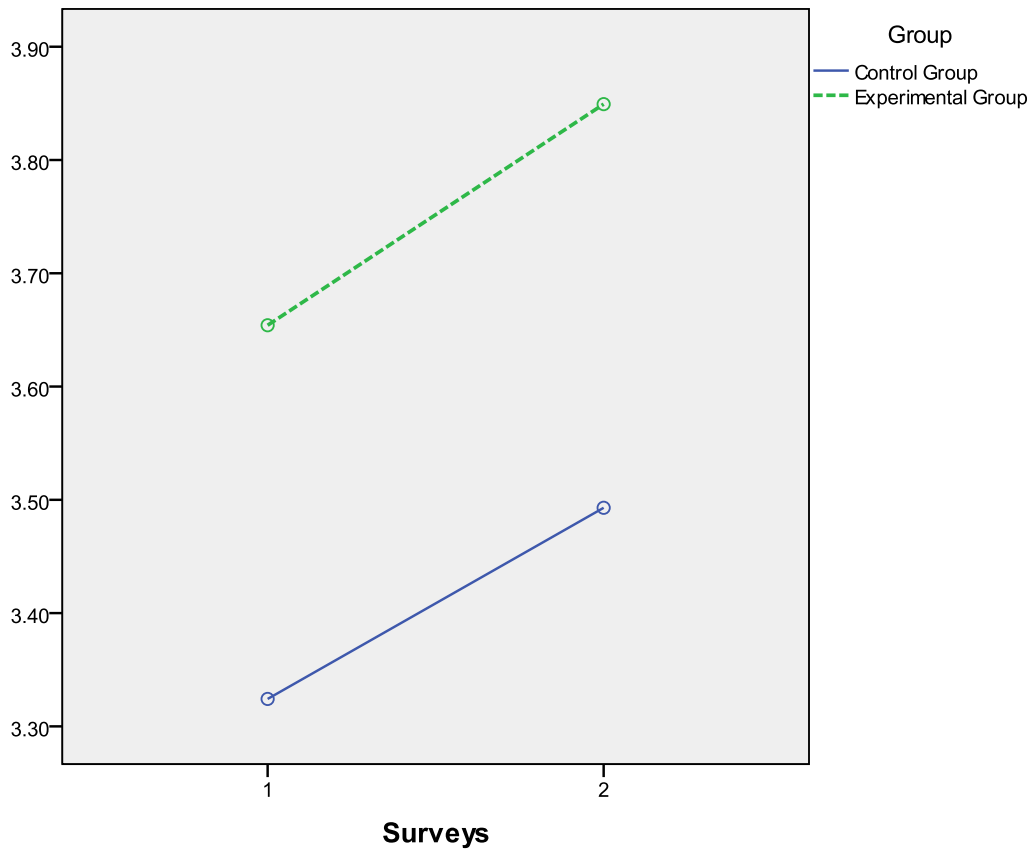
*Figure 4.6.* Survey means of Factor 3 (Content).

Learner Satisfaction Analysis – Personalization (i.e., Factor 4)

*Descriptive Statistics*

The descriptive statistics on Table 4.16 showed the pre-survey for the control group (*n* = 64) resulted in a mean of 3.38 for the survey scores. The pre-survey for the experimental group (*n* = 71) resulted in a mean of 3.52. The post-survey of the control group generated a mean of 3.48, and the post-survey from the experimental group yielded a mean of 3.72. It showed that the experimental group had a slightly higher mean score then the control group.

Table 4.16
*Difference between Pre-survey and Post-survey*

|  | Experimental Group | | | Control Group | | |
|---|---|---|---|---|---|---|
|  | *N* | *M* | *SD* | *N* | *M* | *SD* |
| Pre-survey | 71 | 3.53 | 0.76 | 64 | 3.38 | 0.74 |
| Post-survey | 71 | 3.72 | 0.54 | 64 | 3.48 | 0.73 |

*Group Difference*

Factor 4 (Q17-Q19) with repeated measure ANOVAs will be examined below in Table 4.17. For between group difference (combining two surveys), $F(1,133) = 3.84$, $p = 0.05$, $\eta^2 = 0.028$, there was no significant difference. For within-subjects a significant difference was found between the pre-survey and post-survey (combing two groups), $F(1,133) = 4.85$, $p = 0.03 < 0.05$, $\eta^2 = 0.035$. The interaction between effect of Q16-Q19 (pre-survey and post-survey) and learning group found no statically difference: $F(1,133) = 0.42$, $p = 0.52 > 0.05$, $\eta^2 = 0.003$. The two groups had no significance influence on students' learning achievement.

Table 4.17

*Repeated Measure ANOVA Summary Table for Factor 4 (Personalization)*

| Subjects | Source | SS | df | MS | F | p | $\eta^2$ |
|----------|--------|-----|-----|------|------|------|-------|
| Between | Group | 2.65 | 1 | 2.65 | 3.84 | 0.05 | 0.03 |
| Subject | Error | 91.74 | 133 | 0.69 | | | |
| | Total | 94.39 | 134 | 3.34 | | | |
| Within | Factor | 1.40 | 1 | 1.40 | 4.85 | 0.03 | 0.035 |
| Subject | Factor X Group | 0.12 | 1 | 0.12 | 0.42 | 0.52 | 0.003 |
| | Error | 38.34 | 133 | 0.29 | | | |
| | Total | 39.86 | 135 | 1.81 | | | |

The effect size in Cohen's *d* was 0.14, thus it had a small correlation effect. Hypothesis 7 was supported. The control group went from a pre-survey mean score of 3.38, up to a post-survey mean score of 3.48, equaling a gain of 0.1. The experimental group went from a pre-survey mean score of 3.53 to a post-survey mean score of 3.72, equaling a gain of 0.19. On examination of Figure 4.7, the experimental group had a higher post-test mean of the survey score. Therefore a statistical significance was met. Hypothesis 8 was rejected.
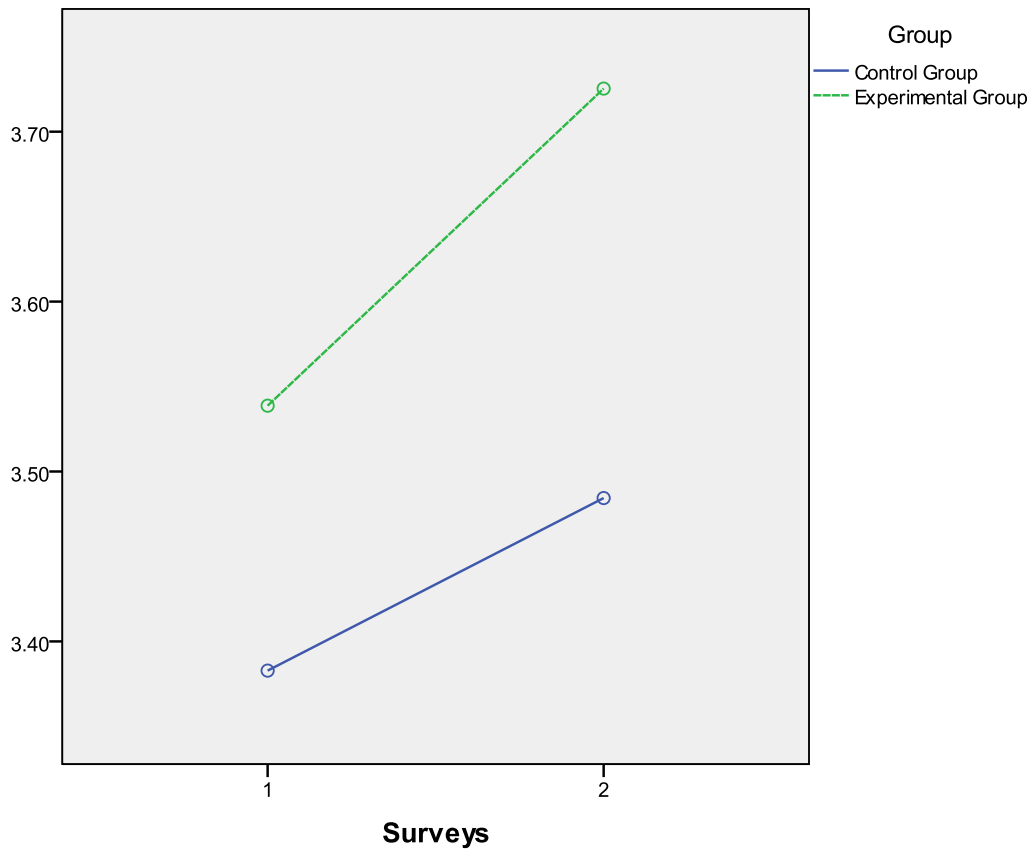
*Figure 4.7.* Survey means of Factor 4 (Personalization).

CHAPTER V

SUMMARY AND DISCUSSION

This chapter consists of five sections. The first section presents a brief summary of this study. The second section discusses the research findings. The third section addresses the implication of this study. The fourth section indicates the limitation of this study. Lastly, the final section provides suggestions for future research.

Summary of the Research

This study aimed to measure the learning difference between the effect of situated dynamic learning environment and the current Web learning environment. This study was an experimental design that was conducted in the fall 2009 at the Meiho Institute of Technology in Taiwan. The data collection methodology used the Wang's Leaner Satisfaction Scale and pre and post-test. The subjects were divided into two groups and two different levels in this study.

The initial sample consisted of 142 students who all completed the pre-test and post-test, however on the learner satisfaction survey items, one survey was incomplete. This left a true effective sample size of 141. The 142 participants were separated into two different groups. The control group adopted the current Web learning environment setting and the experimental group adopted the situated and dynamic learning assessment setting. Both groups covered the same learning materials but utilized different learning approaches. The learning outcomes for the study were measured by determining the difference between the pre-test and post-test.

A pre-test and pre-survey were conducted on the first day of the class to understand their current method of learning and their English knowledge. Online instructions were given for both groups. A post-test and post-survey were conducted after two months of the learning sessions. The achievement differences between the two different groups were measured by pre and post

tests. Furthermore, the satisfaction differences were measured by a pre and post survey with 17 items.

<div align="center">Discussions of the Findings</div>

The first research question was designed to investigate if there was an achievement difference on the learning effect between those who were in the SDLA environment and those who were in the current Web learning environment. More specifically, this research question consists of three components: the group X time (2 X 2) repeated measure ANOVA on the 20-item English exam, the independent $t$-test on the 40-item English exam, and the English-level X time (2 X 2) repeated measure ANOVA on the 20-item English exam.

*Group X Time (2 X 2) Repeated Measurement on the 20-Item English Exam.*

Based on the results from the data analysis, learners in the SDLA environment had a better learning outcome than the peers in the current Web learning environment. This conclusion was drawn from the result of a two way repeated measure ANOVAs. Based on the results of the interaction effects $p = 0.004 < 0.05$ with $\eta^2 = 0.571$, the mean-type effect size in Cohen's $d$ was 0.04. Even though it was considered a small effect size, the control group went from a pre-test mean score of 55.97, up to a post-test mean score of 63.13, equaling a gain of 7.16. Meanwhile, the experimental group went from a pre-test mean score of 55.27 to a post-test mean score of 66.40, equaling a gain of 11.13. The results found that both groups learned no matter what kind of learning environments students had. They all showed a difference on the testing scores. Therefore, it is clear to say, students can gain knowledge from each of the different instructional methods. In addition, the treatment group with the SDLA environment had a mean survey score

of 3.9 higher than the control group. Thus, Hypothesis 1 seemed to be rejected in favor of the experimental group.

*The Group Difference on the 40-Item English Exam in the Post-Test.*

For the 40 post-test items, there was a significant difference $p = 0.02 < 0.05$. The results suggested that the learning environment really does have an effect on learning achievement. Students on the SDLA environment made more progress than those in the current Web learning environment. Therefore, Hypothesis 2 was rejected in favor of the experimental group.

*English-Level X Time (2 X 2) Repeated Measurement on the 20-Item English Exam.*

The statistics showed the two English levels had no significance influence on students' learning achievement. $F(1,140) = 1.257$, $p = 0.264 > 0.05$. Each subject had two different levels and the results showed that learning levels did not influence their learning achievement. Even though there was no significant difference found on the interaction effect the net gain of the testing scores were significant. Both intermediate and advanced learners made progress on the test. Thus, Hypothesis 3 was supported

The second research question focused on the group difference on the learning satisfaction between those who were in the current Web learning environment and the counterparts in the SDLA environment. As for the 17 item survey, the treatment group showed higher survey scores in terms of learner satisfaction than those in the control group. The mean-type effect size in Cohen's *d* was 0.14. This small effect size was found for the two months pre-survey and post-survey. To better understand the satisfaction effects, the four different factors are discussed below. Based on the statistical results, 3 out of 4 factors met the statistically significant threshold. These were Factor 1 (Learning Interface), Factor 2 (Learning Community) and Factor

4 (Personalization). Factor 3 (Learning Content) did not yield statistical significance, the effect size in Cohen's *d* was 0.03, thus no correction effect was found when comparing the raw data of the two groups.  It is clear that both the control group and experimental group in Factor 3 had similar improvements which did not show a statistical difference. One possible reason may be the two groups were using the same textbook to create the same learning content, therefore, learners on both groups may have responded similarly.

Both of the two research questions had results of small statistical significance due to various possible reasons.  One reason may be due to the small sample size.  If there were 100-200 respondents per group, a greater statistical significant difference might have been found. Another reason might be the research time; this study was conducted over a two month period. If the research time were longer, the significant might be greater.

Implication of Findings

As the Internet became one of the major sources for information, the need for instructors to find out learner's needs and their preference of learning became greater.  As Brian (2004) stated, the current e-learning "the classroom in the box" style ignores the informal learner-center style. In previous studies, similar research on applying different Web-based environments on English learning was conducted. A study by Chiu, Liou, and Yeh (2007) used the Web-based conversation environment called CandleTalk to help freshmen in speech. The results showed that the Web-based application played an important role on learning motivation. This research aimed to test the effect of SDLA learning environments and provide results to help instructors create different learning content based on learner's preference. Like previous studies, this study also integrated the dynamic assessment to create the learning setting. The research results showed when both students were in the online learning atmosphere and used the situated dynamic

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assessment environment, students improved their scores more than those on the current college's Web learning environment. Kalyuga and Sweller (2005) adopted an assessment of working memory which showed higher knowledge levels within the experimental group over the control group. Some research suggested that if the dynamic assessment theory were applied in two different subjects, the group that used technology could gain an improved result. Tzuriel and Shamir (2002) applied the dynamic assessment approach in two different environments. They examined the effect of the computer-assisted dynamic assessment on cognitive performance as compare to dynamic assessment with an examiner. They found that the computer assisted dynamic assessment procedure was more effective than in the examiner. When dynamic assessment was adopted in different learning settings, some research showed the use of the Internet had a higher significant effect than the traditional classroom setting. The learning achievement result of this study shows a similar result to the study of (Lee, Lin and Chuan, 2007). On their study, the dynamic assessment on the treatment group without an instructor showed higher achievement scores than the control group in the classroom with an instructor lecturing. This study has the following new findings, which are not shown in previous studies:

1. When both groups of Taiwanese students used Internet based learning, those that utilized the situated and dynamic learning assessment environment showed a statistically significant higher achievement score than those using only the current online learning environment ($p < .01$). Although some studies had applied dynamic assessment in different research areas, this study takes further the dynamic assessment theory and integrated the use of current Web 2.0 applications to create the situated and dynamic learning assessment.

2. Learners in the SDLA environment had a statistically significant higher satisfaction scores than those in the current Web learning environment. When both groups of learners take control of their online learning process, the satisfaction on the SDLA environment is slightly higher than the current Web learning environment.

Learning online is an individualistic activity; different learners have different preferences on their ways of learning. The Internet today provides more applications to meet the needs of the individual learners. Instructors in Taiwan are following the template of the courseware to produce their online teaching materials, even though some researchers suggest the integration of dynamic assessment in learning. This study applied the dynamic assessment theory and created a model to provide a different learning preference for learners in Taiwan. The results of this research can be used as a reference for creating future interactive learning assessment for online ESL learning in Taiwan. In addition, as the number of Taiwanese learners in United States Universities increase, the findings from this study will have greater importance for American Educators who teach the Taiwanese ESL students in America.

<div align="center">Limitations and Suggestions</div>

This study has the following limitations and suggestions:

1. All the subjects in this study were 142 sophomores at Meiho Institute of Technology in Taiwan. They were not randomly sampled from all the colleges in Taiwan. Future research could also focus on a larger sample size from different schools and can try to investigate the relationship between ESL students throughout the world and Taiwanese ESL students.

2. This study focused on measure learning effects between two different Web learning environments; however, it is important to have a more complete analysis to understand the overall learning effect. In addition, the limitation of time may have also affected the study as the experiment lasted only eight weeks. Furthermore, the long term knowledge gain was not tested as both groups took the test right after the online learning. Therefore, future qualitative research studies should be done to investigate learner's perception of the relationship between their satisfaction and the online courseware. This should also include both perception of the live face to face interviews and the static test/surveys.

3. In this study, we examined the learner satisfaction after the tests with Wang's Satisfaction Scale (2003). There was a significant difference found in this study using Wang's Satisfaction Scale. Since Internet applications change rapidly, some items cannot be used to measure current online learning satisfaction. In addition, some researchers suggest learners' satisfaction should be examined before learning outcomes, because learners' negative opinions can hinder their learning (Biner, Dean and Mellinger, 1994). It suggests applying a modification of the learner satisfaction scale for measuring the learner satisfaction.

4. For this study, students from three different departments (Department of Recreation Sports, Department of Social Work and Department of Gerontology), and were divided into four different classes with two instructors based on their English knowledge levels. This study did not measure the departments' factors. However, the results show that the students in the experimental group had higher pre-test / pre-survey scores than students in the control group. Even though there was a significant difference found in the groups,

there were no significant differences found among the two different groups with the same test / survey. One possible reason may be students from the treatment group (Department of Social Work and Department of Gerontology) might have higher enrollment exam scores than the students from the control group (Department of Recreation Sports). Therefore, improvements on selecting the same group samples are necessary, because different departments might have different effects on learning English.

## Conclusion

Based on the research findings, significant results were found from the learning achievement scores by using the situated and dynamic learning assessment environment for a short period of time. The results of this study have provided an implication for developing future Web based learning courses. Research shows that the supplementary "HINTS" can provide step by step guidelines for learners to solve their individual problems in the process of online learning. This enables instructors to teach larger classes more effectively. Furthermore, learners with different problems can be accommodated with the help of Situated and dynamic assessment in Web learning activity.

The learner satisfaction on both Web learning environments showed improvement, however, the SDLA environment showed a higher satisfaction than the current Web learning environment. The results reflect that learners are more likely to try new things in terms of learning. The integration of situated and dynamic learning assessment in the Web based learning environment requires very little Faculty Instructional Technology training. The major investment is the time for instructors to conduct pre-analyzed hints for each assessment question. This learning model helps to reduce the possibilities that learners cannot learn the materials at efficient speeds and thus end up being left behind.

More and more advance technology is introduced every day in our lives. These technologies have also added more options to our life, such as the mobile devices.  When Amazon launched the Kindle reader in November 2007, the electronic book initially sold out and according to Arrington (2008) may sell 750 million US dollars of Kindles by the end of 2010. Therefore, it may change the way we gather information in the future. Furthermore, Apple's I-phone and I-PAD continue to change the way society communicates using Internet applications on mobile devices. Today, any platform has the capacity of information browsing over the Internet.  It is also very important for educators to ponder the new "Apps" for their students.

To conclude this study, instructors must be sensitive to the changing environments in which the learners have the capacity to create their own knowledge. Students can learn more effectively by experiencing the environment that is really significant for them. If instructors can conduct more innovative Web-based learning environments, learning will more likely occur. Thus, in this rapid information age, most language instructors expect new instructional environments which can develop learners' critical thinking skills and provide self-regulated learning strategies.

APPENDIX A

INITIAL EMAIL COMMUNICATION WITH MEIHO AFL DEPARTMENT CHAIR

Dear Mrs. Chuang:

I am a former instructor (2005) at Meiho Institute of Technology in the Department of Applied Foreign Languages. I'm currently doing my PhD at University of North Texas, and am about to finish my coursework this spring. The reason I am writing to you is to talk about the possibility of allowing me to do my dissertation research in your department.

Generally speaking, I am interested in the English learning experiences of Taiwanese students, especially with the adoption of interactive learning assessment.

I am looking for teachers who teach English conversation to college students, and would allow me to do on-line classroom observations throughout the semester.

If necessary, I would be more than happy to explain my project further, upon your request. I would also offer my assistance to the teachers who participate, in order to reduce their workload, if necessary. We can talk about that in detail during our next discussion. Please let me know if it is possible for us to work together on this project and if you have any questions. Your prompt response will be truly appreciated. Thank you for your precious time and consideration.

Best regards,
*Zenghan Lee*

APPENDIX B

INVITATION LETTER

Dear potential participant,

I am writing this to invite you to participate in a research study for the partial fulfillment of my doctoral study in the Computer Education Program of the University of North Texas in Denton. The purpose of this study aims at exploring the Web-based learning experience, knowledge, and beliefs of Taiwanese EFL students in Taiwan.

This will be a narrative study which will require ongoing (at least 90 days to one semester) observations and interviews.

Your participation in this study will contribute tremendously to my professionalism as well as the field of educational research. I will appreciate your input and support. In exchange for your participation, you may be given the following benefits: 1) gaining opportunities to present with me in conferences or co-author with me in publications, 2) helping you prepare Web based lesson plans or teaching materials.3) participating in your class discussions.

I will need 3-4 teachers and hundreds of students to participate in this examination of a study group environment. I will try also assisting you in converting your current course materials into a Web-based content design if desired. Most importantly, I sincerely hope to develop a friendship with you while sharing our experiences together. I hope to have an online meeting with you before the study begins.

Looking forward to hearing from you.
Best regards,

*Zenghan Lee*

APPENDIX C

MEASUREMENT OF LEARNER SATISFACTION

Thank you for participating in this survey research project. This survey will gather data on learner satisfaction with Web-based learning platforms. It will take you approximately 5 minutes to complete this survey.

Please score the following on a 1 to 5 scale by checking the appropriate box.

1 = Strongly Disagree; 2= Disagree; 3= Uncertain; 4= Agree; 5 = Strongly Agree.

| Student Satisfaction Scale | 1 2 3 4 5 |
|---|---|
| Q1. The e-learning system provides content that exactly fits your needs. | ☐☐☐☐☐ |
| Q2. The e-learning system provides useful content. | ☐☐☐☐☐ |
| Q3. The e-learning system provides sufficient content. | ☐☐☐☐☐ |
| Q4. The e-learning system provides up-to-date content. | ☐☐☐☐☐ |
| Q5. The e-learning system is easy to use. | ☐☐☐☐☐ |
| Q6. The e-learning system makes it easy for you to find the content you need. | ☐☐☐☐☐ |
| Q7. The content provided by the e-learning system is easy to understand. | ☐☐☐☐☐ |
| Q8. The e-learning system is user-friendly. | ☐☐☐☐☐ |
| Q9. The operation of the e-learning system is stable. | ☐☐☐☐☐ |
| Q10. The e-learning system responds to your requests fast enough. | ☐☐☐☐☐ |
| Q11. The e-learning system makes it easy for you to evaluate your learning performance. | ☐☐☐☐☐ |
| Q12. The testing methods provided by the e-learning system are easy to understand. | ☐☐☐☐☐ |
| Q13. The testing methods provided by the e-learning system are fair. | ☐☐☐☐☐ |
| Q14. The e-learning system provides secure testing environments. | ☐☐☐☐☐ |
| Q15. The e-learning system provides testing results promptly. | ☐☐☐☐☐ |
| Q16. The e-learning system enables you to control your learning progress. | ☐☐☐☐☐ |
| Q17. The e-learning system enables you to learn the content you need. | ☐☐☐☐☐ |
| Q18. The e-learning system enables you to choose what you want to learn. | ☐☐☐☐☐ |
| Q19. The e-learning system records your learning progress and performance. | ☐☐☐☐☐ |
| Q20. The e-learning system provides the personalized learning support. | ☐☐☐☐☐ |
| Q21. The e-learning system makes it easy for you to discuss with your teachers. | ☐☐☐☐☐ |

Q22. The e-learning system makes it easy for you to discuss with other students. □□□□□

Q23. The e-learning system makes it easy for you to share what you learn with the learning community. □□□□□

Q24. The e-learning system makes it easy for you to access the shared content from the learning community. □□□□□

Q25. As a whole, you are satisfied with the e-learning system. □□□□□

Q26. As a whole, the e-learning system is successful. □□□□□

APPENDIX D

ENGLISH ACHIEVEMENT EXAM

Reproduced with permission from LiveABC Interactive Corporation.

20 ITEMS PRE-TEST QUESTIONS (Q1-Q20)
40 ITEMS POST-TEST QUESTIONS (Q1-Q40)

1. Which one do you think is "soft skills"?

    a. Listening and writing
    b. Speaking and reading
    c. Writing and reading

2. According to the recruiters, many business majors_____

    a.   can't write well
    b.   are good at public speaking
    c.   have great interpersonal skills.

3. What are recruiters looking for?

    a.   People who don't care about morale
    b.   People who can speak English
    c.   People who are cocky

4. English is _____

    a.   the language of business
    b.   the mother tongue of everyone
    c.   for recruiters to learn

5. Why do some new employees alienate their co-workers?

    a.   They don't have any pet peeves.
    b.   They don't have a shiny diploma.
    c.   They think they are superior.

6. What do companies care about when choosing employees?

    a.   Their abilities
    b.   Their math skills
    c.   Their money

7. How can you prove your communication skills?

    a.   By singing great songs
    b.   By making a nice speech
    c.   By interviewing in English

21. Water is_____ to maintaining health.

    a.   impress
    b.   qualified
    c.   essential

22. _____ are somebody you work with in your job; a companion or workmate.

    a.   Customers
    b.   Co-workers
    c.   Candidates

23. You need a(n) _____, when you apply for a job or school.

    a.   applicant
    b.   essay
    c.   certificate

24. Taiwan's information technology innovation is world famous. Innovation refers to the ...

    a.   ability to speak English
    b.   ability to communicate with others
    c.   ability to come up with new ideas.

25. Harvard University is considered a _____ school.

    a.   prestigious
    b.   mentality
    c.   superiority

26. What are considered "positive characteristics"?

    a.   Confidence and cocky.
    b.   Polite and courteous.
    c.   Self-esteem and confidence.

27. "Team play" refers to _____ .

    a.   the ability to make a nice speech
    b.   the ability to work individually
    c.   the ability to work with others

8. What is the best way to learn English?

    a.   Improve your odds
    b.   Make better connections
    c.   Speak more

9. How can one improve one's chances of finding a job?

    a.   By being very cute.
    b.   By improving one's communication abilities.
    c.   By doing something that is odd.

10. Which statement is true?

    a.   Companies will only hire you if you have a famous mother.
    b.   Companies only care if you come from a prestigious school.
    c.   Companies care if you are able to communicate

11. _____people you invite, _____merrier we will feel.

    a.   More, the
    b.   More, X
    c.   The more, the

12. _____cheaper the dress is, _____ likely I am to buy it.

    a.   X, the more
    b.   The, the more
    c.   The, more

13. _____one's hair is, _____ more difficult it is to take care of.

    a.   The longer, the
    b.   The longer, X
    c.   Longer, the

14. _____you go to bed, _____harder it is to wake up.

    a.   Later, the
    b.   The later, the
    c.   The later, X

28. Successful people are always looking for _____.

    a.   opportunities to help others
    b.   money to improve life
    c.   jobs to earn money

29. I was born in Taiwan so my mother tongue is _____ .

    a.   English
    b.   Chinese
    c.   French
    d.   Spanish

30. Writing and reading are considered _____skills.

    a.   hard
    b.   soft
    c.   communication

31. She demonstrated her past achievements just to _____the employers.

    a.   impress
    b.   encourage
    c.   enhance
    d.   essential

32. _____ people you know, _____ time you have to see them.

    a.   X, the less
    b.   The more, the less
    c.   The more, X
    d.   More, X

33. _____ busier you are, _____ mistakes you will make.

    a.   The more, the more
    b.   The less, the more
    c.   The, the more
    d.   The, more

34. ____sooner, ___ better.

    a.   The, the
    b.   More, X
    c.   The, more

15. ____pieces the puzzle includes, _____easier it to becomes.

    a. The more, the
    b. The more, X
    c. The fewer, the

16. A good attitude is_____

    a. essential
    b. skills
    c. team players
    d. self-esteem
    e. impress

17. As life becomes more rushed, having good people_____ and the ability to communicate well with others is even more valued in the workplace.

    a. essential
    b. skills
    c. team players
    d. self-esteem
    e. impress

18. _____are needed in the workplace, and employers are looking for people with the ability to work well with others.

    a. essential
    b. skills
    c. team players
    d. self-esteem
    e. impress

19. _____and confidence are also considered positive characteristics.

    a. essential
    b. skills
    c. team players
    d. self-esteem
    e. impress

20. Are you ready to_____ your interviewer and get a job?

    a. essential
    b. skills
    c. team players
    d. self-esteem
    e. impress

35. _____ you eat, _____ fatter you get.

    a. More, the more
    b. The less, the
    c. The more, the

36. _____ books we read, _____ learned we become.

    a. The more, the more
    b. More, more
    c. The, the less

37. _____ one learns, ____ easier things become.

    a. More, more
    b. The more, the
    c. The more, X

38. _____ you have, _____ you want.

    a. The more, the more
    b. More, more
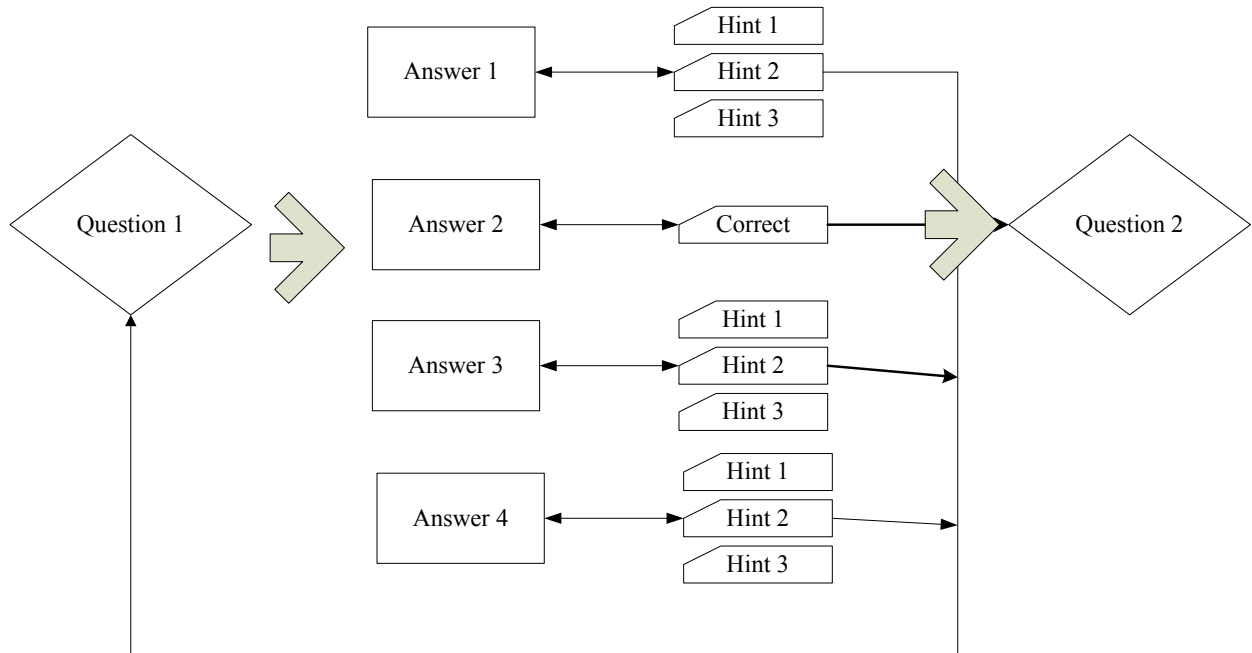    c. The more, the less
    d. More, the less

39. Do you know how much is the _____of gold?

    a. essential
    b. value
    c. impress

40. Another shortcoming among graduates according to recruiters is their lack of innovative thinking skills. What is "shortcoming" referring to?
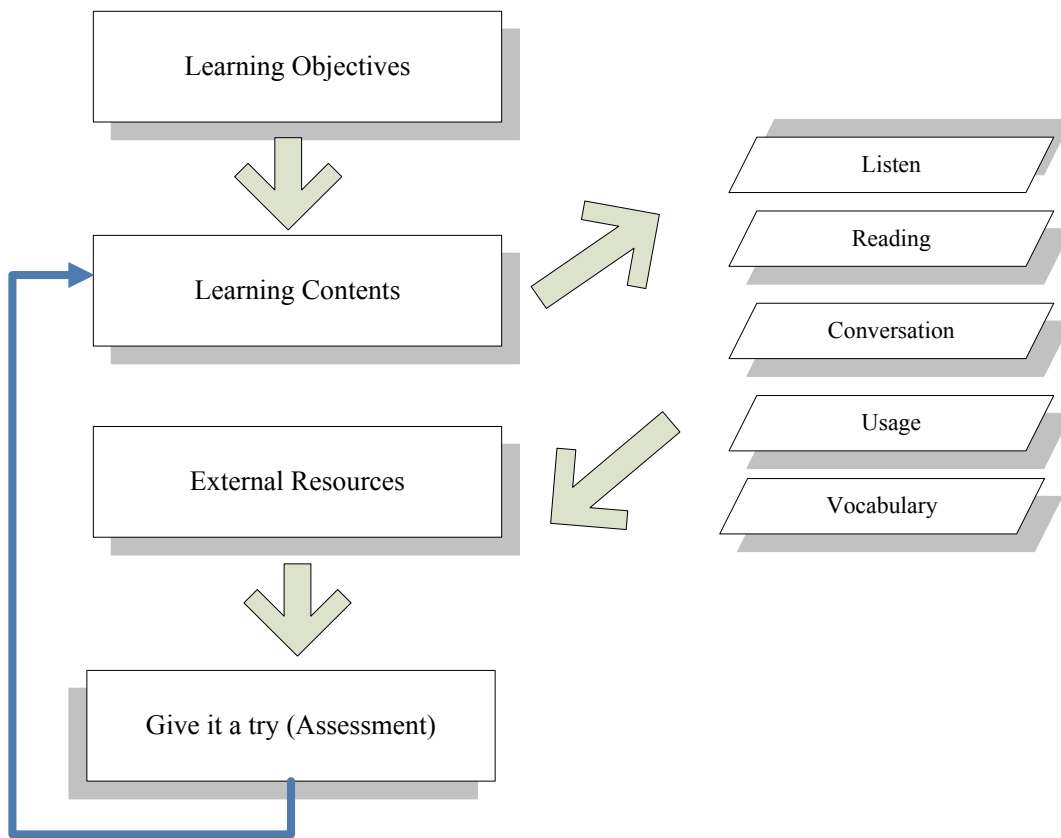
    a. Not very tall
    b. Advantage
    c. Problem

APPENDIX E

SDLA WEB SITE LEARNING STRUCTURE

SDLA Web Site Learning Structure

APPENDIX F

CURRENT WEB SITE LEARNING STRUCTURE

Current Web Site Learning Structure

APPENDIX G

COURSE WEB SITE, CURRENT WEB LEARNING ENVIRONMENT:
USE OF CURRENT WEB LEARNING NAVIGATION STYLE

# Meho E-Learning Resources

## Online Self-learning Resources

Home | Objectives | Learning Contents | External Resources | Give it a try | Quiz

Listen and look at the pictures below. What do you think is happening in each pictures?

"Successful people are always looking for opportunities to help others. Unsuccessful people are always asking, what's in it for me?? -Brian Tracy.

A good attitude is essential. As life become more rushed having good people skills and the ability to communicate well with others is even more valued in the workplace.
Team players are needed in the workplace, and employers are looking for people with the ability to work well with others.

Employers also want people to be supportive of their co-workers.
Employers are looking for employees that they can trust, and whom they believe will do a good job.

Self-esteem and confidence are also considered positive characteristics.

APPENDIX H

COURSE WEB SITE, SITUATED AND DYNAMIC LEARNING ASSESSMENT ENVIRONMENT:
USE OF ASSESSMENTS TO LEARN

# Learning Assessments

## Unit 2

Show questions one by one

1. What does "soft skills" refer to in the artice?

   A. [ ? ] Listening and writing

   B. [ ? ] Speaking and reading

   C. [ ? ] Writing and speaking

2. According to the recruiters, many business maj

   A. [ ? ] can't write well

   B. [ X ] are good at public speaking

   C. [ ? ] have great interpersonal skills

3. What are recruiters looking for?

   A. [ ? ] People who don't care about morale

   B. [ ? ] People who can speak English

   C. [ ? ] People who are cocky

Hint 1    Hint 2

OK

## Hints and More

You have just graduated from university
and think you have what it takes to make it in the corporate world.
Better think again.
Despite the high number of academically qualified candidates,
employers and recruiters are still complaining
about the lack of competent grads to choose from.
So, what's the problem?

According to recruiters, many graduates, especially those who majored in business,
lack "soft skills," such as writing and public speaking.
Although corporate managers depend greatly on soft skills,
they are emphasized more in liberal arts degrees than in business programs.
Recruiters have complained that some business school grads submit writing samples

REFERENCES

A. Tretiakov, Kinshuk & T. Tretiakov. (2003). *Designing multimedia support for situated learning*. (pp. 32–36). Athens, Greece: ICALT.

Alavi M. , Wheeler B. C. & Valaich J. S. (1995). Using IT to reengineer business education: an exploratory investigation of collaborative tele-learning. *MIS Quarterly 19*, 293-313.

Ala-Mutka, K. M. (2005). A survey of automated assessment approaches for programming assignments. *Computer Science Education, 15*(2), 83-102.

Arrington, Michael. (2008). *Amazon may sell $750 million in kindles by 2010 (that's a lot of kindles).* Retrieved March, 2010, from http://techcrunch.com/2008/05/14/amazon-may-sell-750-million-in-kindles-by-2010-thats-a-lot-of-kindles/.

Miniwatts Marketing Group. (2008). *Asia Internet usage and population. World Internet usage rate.* Retrieved Feb, 2009, from http://www.internetworldstats.com/stats3.htm#asia.

Biner, P. M. , Dean, R. S., & Mellinger, A. E. (1994). Factors underlying distance learner satisfaction with televised college-level courses. *American Journal of Distance Education, 8,* 60-71.

Bonk, C. , Olson, T. , Wisher, R. , & Orvis, K. (2002). Learning from focus groups: An examination of blended learning. *Journal of Distance Education, 17*(3), 97-118.

Bork, A. (1980). Interactive learning. *In R. Taylor (Ed.), The computer in school: Tutor, tool, tutee.* (pp. 53-66). New York: Teachers College Press.

Brian, Sutton (2004). Testing time for e-learning. *Computer Bulletin, 46*(4), 18-19.

Celona, J. M. (1983). What does "wicked good" really mean? Students talk about their ESL problems. *MEXTESOL Journal, 7*(4), 42-55.

Chiu, T. , Liou, H. , & Yeh, Y. (2007). A study of web-based oral activities enhanced by automatic speech recognition for EFL college-learning. *Computer Assisted Language-Learning, 20*(3), 209-233.

Chen, H. , & Liu, K. (2008). Web-based synchronized multimedia lecture system design for teaching/learning Chinese as second language. *Computers & Education, 50*(3), 693-702.

Chou, S. , & Liu, C. (2005). Learning effectiveness in a web-based virtual learning environment: a learner control perspective. *Journal of Computer Assisted Learning, 21*(1), 65-76.

Clark, C., & Mason, E. (2008). A Wiki way of working. *Internet Reference Services Quarterly, 13*(1), 113-132.

Cohen, S. R. (2001). The teacher as diagnostician. *Education*, *97*(4), 351-354.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Darden,  A. , & Richardson-Jones, K. (2003). Student learning outcome in a learner-centered genetics classroom. *Education*, *124*(1), 31-107.

DeVellis, R. F. (1991). *Scale development*: *Theory and applications*. Newbury Park, CA: Sage.

DeLone, W.H., and McLean, E.R. (2003). The DeLone and McLean model of information systems success: A ten-year review. *Journal of Management Information Systems, 19* (4), 9-30.

Donohue,C. & Neugebauer, R. (2004). Innovations in e-learning: New promise for professional development. *Young Children 59*(3), 22-25.

Dunn, Samuel L. (2001). *Fuel for The future - predictions about online higher education.* Retrieved Jun, 2009, from http://findarticles.com/p/articles/mi_m1272/is_2668_129/ai_69698406/.

Evrim, E. A. (2003). *EFL teachers' voice on communicative language teaching*. Paper presented at the Annual Meeting of Teachers of English to Speakers of Other Language, Baltimore, MD. (ERIC Document Reproduction Service No. ED 476 748).

Eyitayo, O. T. (2005). Experimenting e-learning with a large class using information and communication technology. *International Journal of Education and Development, 1* (3),160-171.

Feuerstein, R., Rand, Y., & Hoffman, M. (1979). *The dynamic assessment of retarded performers: The learning potential assessment device (LPAD).* Baltimore, MD: University Park Press.

Gabrielatos, C. (2002). Inference: Procedures and implications for ELT. In R. P. Mill Rood (Ed.). *Research methodology: Discourse in teaching a foreign language* (pp. 30-52). Tambov, Russia: Tambov State University Press.

Gerber, M.M. (2001). All teachers are dynamic tests. *Issues in Education, 7*(2), 193-201.

Glass, G. V., Peckham, P. D., & Sanders, J. R. (1972). Consequences of failure to meet assumptions underlying the analyses of variance and covariance. *Review of Educational* Research, 42, 237-288.

Graddol, D. (2006). *English next: Why global English may mean the end of English as a foreign language.* Commissioned by the British Council on Learning. Retrieved May 1, 20008, from http://www.britishcouncil.org/learning-research-englishnext.htm.

Guri-Rosenblit, S. (2005). Eight paradoxes in the implementation process of e-learning in higher education. *Higher Education Policy, 18* (1), 5-29.

G. Clough, A. C. Jones, P. McAndrew & E. Scanlon. (2007). *Informal learning with PDAs and smartphones.* CALRG/CREET, Institute of Educational Technology, Open University. Walton Hall, MK7 6AA, UK.

Hair, J. F. Jr., Black, W. C., Babib, B. J., Anderson, & R. E., Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson.

Hager, J. M. & Gable, R. A. (1993). Content reading assessment: A rethinking of methodology. *Clearing House, 66*(5), 1-8.

Harvey, C. E. (2004). Technology-based professional development: A meaningful alternative. *Young Children, 59*(3), 34-41.

Haywood, H. C. & Tzuriel, D. (2002). Applications and challenges in dynamic assessment. *Peabody Journal of Education, 77*(2), 38–63.

Haywood, H. C. & Wingenfeld, S. A. (1992). Interactive assessment as a research tool. *Journal of Special Education, 26*(3), 253-268.

Helms, L. S. (1999). *Dealing with missing data: How to write an SPSS syntax file*. Retrieved from ERIC database. (ERIC Document Reproduction Service No. ED 426096).

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (5th ed.). Boston: Houghton Mifflin Company.

Huang, S. Y. (1998). Are Freshman English Programs for Non-English Majors at Universities in Taiwan Meeting the Expectation of Students and Teachers? *Proc. Natl. Sci. Counc. ROC, 9*(2), 201-211.

Huba, M.E. & Freed, J. E.  (2000). *Learner-centered assessment on college campuses. Shifting the focus from teaching to learning.* Needham Heights, MA: Allyn & Bacon.

J.L. Giese, J. A. Gote. (2000). *Defining consumer satisfaction,* Academy of Marketing Science Review. Retrieved April 12, 2009, from http://www.amsreview.org/amsrev/theory/giese01-00.html.

Kachru B. & Nelson C. (1996). Language attitudes, motivation and standards. In S. McKay & N. Hornberger (Eds.), *Sociolinguistics and language teaching* (pp. 71-102). Cambridge: Cambridge University Press

Kalyuga, S. & Sweller, J. (2005). Rapid dynamic assessment of expertise to improve the efficiency of adaptive e-learning. *ETR&D, 53*(3), 88-93.

Kruse, Kevin. (2009). *Using the Web for learning: Advantages and disadvantages*. Retrieved April 13, 2009, from http://www.e-learningguru.com/library.htm.

Langdon, H. W. , Novak, J. M. & Quintanar, R. S. (2000). Setting the teaching–learning wheel in motion in assessing language minority students. *Multicultural Perspectives, 2*(2), 3–9

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*(4), 563-575.

Lee, Z. (2007). Applied dynamic learning assessment in English learning. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2007*, 2388-2394. Chesapeake, VA: AACE.

Lee, Z. , Lin, M. & Chuang, H. (2007). Dynamic assessment of constructing e-learning English test. *Collected papers of 2007 Conference. Department of English* (ISBN 978-986-01-0471-4), National Pingtung University of Education.

Lee, Z. (2008). The development of situated and dynamic learning assessment in computer assisted language instruction. In K. McFerrin et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2008*, 90-94. Chesapeake, VA: AACE.

Ling, Connie. (2001). Learning a new language: companies that teach English in Asia see their business quickly being transformed by the Web. *Wall Street Journal.* (Eastern edition*). (pp.* 18). New York.

Li, Lei and Pitts, Jennifer P. (2003). Does it really matter? Using virtual office hours to enhance student-faculty interaction. *Journal of Information Systems Education, 20*(2)

Liao, X. Q. (2000). *Communicative language teaching innovation in China: Difficulties and solutions*. New Zealand: Languages and Linguistics. (ERIC Document Reproduction Service No. ED 443 294).

Lieberman, M. J. & Wilkins, E. A. (2006). The professional development pathways model: From policy to practice. *Kappa Delta Pi Record, 42*(3), 124-128.

Ling, C. (2001). E-Commerce (A Special Report): The business - Learning a new language: Companies that teach English in Asia see their business quickly being transformed by the Web. *Wall Street Journal, 18*.

Lisbeth D.K. (1996). *Vygotsky in the classroom*. Longman: New York

Liao, Y., Chang, H., & Chen, Y. (2007). Effects of computer applications on elementary school students' achievement: A meta-analysis of students in Taiwan. *Computers in the Schools*, *24*(3/4), 43-64.

Liron, Marc. (2006). *UMPC - Stands For Ultra Mobile PC*. Retrieved Aug 10, 2008, from http://www.Webpronews.com/expertarticles/2006/07/10/umpc-stands-for-ultra-mobile-pc.

Ludwig, M. & Taymans, J. (2005). Teaming: Constructing high-quality faculty development in a PT3 project. *Journal of Technology and Teacher Education, 13*(3), 357-372.

Na, L., Lin-yao, W., & Ji-wei, Y. (2008). Relations network in the interactive ESL class: Analysis of individuals, groups, and a whole classroom network. *Asian EFL Journal, 10*(3), 78-108.

Newton, R. (2003). Staff attitudes to the development and delivery of e-learning. *New Library World, 104*(10), 412- 425.

Marchel, C.A. (2004). Evaluating reflection and sociocultural awareness in service-learning classes. *Teaching of Psychology, 31*(2), 120-123.

Maki R.H., Maki W.S., Patterson M. & Whittaker P.D. (2000). Evaluation of a Web-based introductory psychologycourse: I. Learning and satisfaction in on-line versus lecture courses. *Behavior Research Methods, Instruments and Computers 32*, 230–239.

Maxwell, S. E., & Delaney, H. D. (2004). *Designing experiments and analyzing data* (2nd ed.). Mahwah, NJ: Erlbaum.

Merrill M.D. (1983). Component display theory. In instructional design theories and model (ed. C.M. Reigeluth). *Lawrence Erlbaum Associates.* Hillsdale, NJ.

Miller, C. (2007). Enhancing Web-based instruction using a person-centered model of instruction. *The Quarterly Review of Distance Education, 8*(1), 25-34.

Ortega, L. (1997). Processes and outcomes in networked classroom interaction: Defining the research agenda for L2 computer-assisted classroom discussion. *Language-learning & Technology, 1*(1), 82-83.

O'Reilly, Tim. (*2005*). *"What Is Web 2.0". O'Reilly Network*. Retrieved Feb 9, 2009, from http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-Web-20.html.

Piaget J. (1967). Biology and knowledge. *Gallimard*, Paris, France.

Poehner,M.E.& Lantolf, J.P. (2005). Dynamic assessment in the language classroom. *Teaching Research, 9*(3), 233–265.

Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis*: *An integrated approach*. Hillsdate, NJ: Erlbaum.

Prensky, Marc. (2001). Digital natives, digital immigrants. *On the horizon* (MCB University Press, Vol. 9 No 5.

Roschelle (2003). Unlocking the learning value of wireless mobile devices. *Journal of Computer Assisted Learning 12*, 260–272.

Roszkowski, M. and Ricci, R. (2005). Measurement of importance in a student satisfaction questionnaire: Comparison of the direct and indirect methods for establishing attribute importance." *Journal of College Student Retention, Vol. 6, No. 3, pp. 251-271.*

Sato, K. (2003). Improving our students' speaking skills: *using selective error correction and group work to reduce anxiety and encourage real communication.* Japan: Akita Prefectural Akita Senior High School. (ERIC Document Reproduction Service No. ED 475 518).

Schneider, E. & Ganschow, L. (2000). Dynamic assessment and instructional strategies for learners who struggle to learn a foreign language. *Dyslexia, 6*, 72–82.

Scheuren, F. (Ed.). (2004). What is a survey? [Special issue]. *American Statistical Association 4*(2).

Skiba, D. (2005). Do Your Students Wiki?. *Nursing Education Perspectives*, *26*(2), 120-121. Retrieved April 14, 2009, from Education Research Complete database.

Taiwan National Development plan (2002-2007). Challenge 2008: *National Development Plan.* Retrieved Feb, 2009, from http://english.moe.gov.tw/ct.asp?xItem=7043&ctNode=784&mp=11.

Tschirner, E. (2001). Language acquisition in the classroom: The role of digital video. *Computer Assisted Language-learning, 14*(3/4), 305-319.

Tzuriel D. & Shamir A. (2002). The effects of mediation in computer assisted dynamic assessment. *Journal of Computer Assisted Learning 18*, 21-32

Vacha-Haase, T., & Thompson, B. (2004). How to Estimate and Interpret Various Effect Sizes. *Journal of Counseling Psychology*, *51*(4), 473-481.

Vogelstein, F. "*The Untold Story: How the iPhone blew up the wireless industry*". Retrieved Jan 11, 2010, from http://www.wired.com/gadgets/wireless/magazine/16-02/ff_iphone?currentPage=4.

Vygotsky L.S. (1978). Mind in Society: The development of higher psychological processes. *Harvard University Press*, Cambridge, MA.

Wang, Yi-Shun (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. *Information & Management 41*, 75–86.

Warschauer, M., & Healey, D. (1998). Computers and language-learning: An overview. *Language Teaching, 13*, 57-71.

Watkins,R.(2005). Developing interactive e-learning activities. *Performance improvement, 44*(5), 5-7.

Wilder,M.& Shuttleworth, P. (2005).  Cell inquiry: A 5 e-learning circle lesson. *Science activities, 41*(4), 37-43.

Williams M.D. (1996). Learner-control and instructional technologies. *In handbook of research for educational communications and technology* (ed. D.H. Jonassen). Simon and Schuster Macmillan, New York.

Wu, T. (2008). *2008 National adolescence media use behavior and investigation. Fubon culture and educational foundation.* Retrieved Feb, 2009, from http://www.fubonedu.org.tw.

Yeary, Mark B. (1998). Teacher-centered to learner-centered educational model. *Proceedings, Frontiers in Education 1998 Conference.* Tempe, Arizona. Nov. 4-7.

Zahner, J. (2002). Teachers explore knowledge management and e-learning as models for professional development. *Tech Trends, 46*(3), 11-17.