行政院國家科學委員會補助專題研究計畫成果報告

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※　　自主學習與網上英語學習　　※

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行政院國家科學委員會專題研究計畫成果報告

自主學習與網上英語學習

Autonomous Learning and Web-based English Learning

計畫編號：NSC 91-2411-H-002-083
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一、中文摘要

由於社會快速變遷及全球化產業競爭，企業與個人對於快速和持續學習能力的需求更是與日俱增。現代電腦與通訊技術解除了溝通上的時空限制，加上新興網路與多媒體科技更促成了線上學習環境的實現與多元化蓬勃發展。藉由網上課程訓練，人們可隨時、隨地、隨意(視其所需)地習取新知。成功的網上教育不僅需要在教材上精挑細選，亦需將課程作完善設計。課程設計必須著眼於學習者，並結合相關教學機制以支持學習者自主學習。「以學習者為主之教學方式」與「自主學習」是外語教學領域最近之研究重心，但是少有研究針對網上學習之環境來探討如何培養學習者自主。自主學習正是成功運用網上學習以及培養持續學習能力的關鍵因素。本研究計劃旨在探討將學習者自主的觀念融入設計網上英語學習課程之可行性及有效性。計劃內容包含對自主學習、學習策略、網上教育訓練、和線上課程設計之文獻理念探討，以及討論自主學習於網上英語課程之相關議題。總言之，本研究嘗試結合自主學習和網上教育的觀念，並探索其課程設計架構與原則。結果將有助於未來英語學習網路課程建構，亦對其他外語或學科網上學習具有參考價值。

關鍵詞：自主學習，網上學習，課程設計，自修課程，英語學習，電子線上學習。

Abstract

The advent of the Web-based and multimedia technologies contribute to the realization and thriving multiple applications of e-learning.. We can learn anytime, anywhere and at will through Web-based training (WBT). Success of WBT requires not only carefully selected materials but also well-designed programs. The program design should be learner-centered and incorporate a supporting mechanism for learner autonomy. In the field of second language learning and teaching, “learner-centered approach” and “self-directed learning (or autonomous learning)” have been a recent research focus. However, few studies have touched upon how to develop learner autonomy in a Web-based learning environment. The primary goal of the study is to explore the possibility and efficacy of incorporating the concept of learner autonomy into the design of the Web-based English self-study course. This study consists of literature review and concept integration concerning autonomous

learning, learning strategies, Web-based instruction, and e-learning course design, as well as discussion of learner autonomy issues for the Web-based English program. In summary, this study attempts to incorporate the concepts of learner autonomy and the Web-based instruction, and to explore the framework and principles of designing and evaluating a Web-based self-study course. The results will not only benefit the formulation of future Web-based English learning programs, but can be also applied to the learning of other foreign languages or subjects in different contexts.

Keywords: Learner autonomy, web-based learning, course design, self-study program, English learning, e-learning.

2. Background and Purposes

With the fast changes in society and the globalized competition in industries, there is a growing need for corporations and individuals to develop the ability to learn quickly and continuously. Modern computers and communications have removed barriers of space and time in communication. Furthermore, the advent of the Web-based and multimedia technologies contributes to the realization and thriving multiple applications of e-learning. We can learn anytime, anywhere and at will through Web-based training (WBT). Today almost half of the U.S. universities and colleges provide some form of education online [1]. All levels of schools in Taiwan also attempt to use WBT to offer online education to their students [e.g., 2; 3]. Besides, WBT may have produced a pervasive and profound impact in language learning [4]. In fact, the Web has generated an amazing amount of target language available to students, as well as greater opportunities to communicate with native speakers [5; 6].

Success of WBT requires not only properly selected content but also well-designed programs that should be learner-centered and incorporate a supporting mechanism for learner development and autonomy. In the field of second language learning and teaching, "learner-centered approach" and "self-directed learning (or autonomous learning)" have been a recent research focus. However, few studies have touched upon how to develop learner autonomy in a Web-based learning environment. Thus, the objectives of this study are to integrate the concepts of learner autonomy in the framework of WBT and to discuss their implications for English learning.

3. Overview on Web-Based Training

Web-based training (WBT), or Web-based instruction (WBI) can be viewed as "any purposeful, considered application of Web technologies to the task of educating a fellow human being" [7]. WBT draws on the technologies, traditions, and techniques of all three areas: distance learning, computer-conveyed education, and Web technology. First, distance learning has its roots in the correspondence education in the mid 1800s, which made education and training available to those in remote areas or working during school hours. Today, distance education has readily adopted new technologies to reach wider audiences and teach more effectively. WBT is just the latest technology to advance distance learning. Second, computer-conveyed education —using computer systems to store and deliver educational lessons—takes various names. Compute-aided instruction (CAI), computer-based education, and computer-based training are just some common terms. Yet, this training was limited to single computer systems or proprietary networks. Finally, the invention of the Internet and related Web technologies, like e-mail, file-transfer programs, Web browsers, Hypertext, newsgroups all contribute to the creation of the World Wide Web and its application—WBT [7].

3.1. Web-Based English Learning

Today about 80% of the information on the Web is in English, which has generated an amazing amount of target language available to students and offered greater opportunities to communicate in English. Consequently, the Web has produced a pervasive and profound impact in English learning and teaching [4; 5; 6]. For example, some of the Web-based activities, such as e-mail, online discussion, and web authoring, open up opportunities for interactions among English learners, between learners and native English users, and between learners and teachers that could be difficult or impossible to achieve in ordinary classrooms [8]. In some Web-based English learning projects, students could search the Web for articles for their topics, read and study them, write their own drafts online, get teacher's or peer's critiques and suggestions online, and then prepare and publish their own articles on the Web and reply to Web readers' comments around the world [9 cited in 10]. Such a Web-based learning experience not only supports learner autonomy by placing control over learning content into the hands of the learners. It also facilitates learners' control over interaction. As Benson (2001) indicated, the Web supports learners' self-directed English learning for they can study whenever they want using a potentially unlimited range of authentic materials [10].

3.2. Characteristics and Issues of Web-Based Instruction

WBI design requires careful consideration of the Web's potentials and limitations. For instance, WBI and WBT let people learn where and when they need learning; but as Horton pointed out, WBI works best for teaching well-organized objective knowledge to mature, motivated learners [7]. Besides, WBI (or WBT) can reduce costs such as travel, facilities, administration, and lost time; yet, WBI typically costs more to develop than conventional training or instruction. Therefore, an understanding of capacities of WBI components and their features may facilitate the design of meaningful learning environments for effective English learning on the Web.

First of all, a well-designed WBI program usually provides numerous features or characteristics conducive to learning and teaching. Khan divided WBI features into two categories: key features and additional features. Key features are inherent to the Web and are available to the designers to incorporate within WBI lessons, while the effectiveness of additional features depends mostly on how well the key features are incorporated into the WBI design.. Examples of the key features may include interactive, multi-media, open system, online search, device-distance-time independent, globally accessible, electronic publishing, uniformity world-wide, online resources, distributed, cross-cultural interaction, multiple expertise, industry supported, learner-controlled, etc. Additional features, depending on the quality and sophistication of the WBI design, may include convenient, self-contained, ease of use, online support, authentic, environmentally friendly, non-discriminatory, cost effective, ease of course development and maintenance, online evaluation, virtual cultures, etc. [for details, see 11].

Next, several issues are involved in designing a WBI program. Hill (2000) specified these issues in five areas: (1) pedagogical (e.g., the importance of the medium, the impact on the learner, information overload, timing), (2) technological (e.g., software, hardware, access, costs, intimidation or fear of the equipment, frustration from technological difficulties), (3) organizational (e.g., preparation and planning of the course, ongoing support, aid in community-building), (4) institutional (i.e., policy-related concerns) and (5) ethical issues, which include admission, intake and retention of students,

course development and presentation, learner/facilitator interaction, and program, course, and learner evaluation [12]. All the above issues should be considered when developing a WBI program.

3.3. WBI's Demands on the Learner

Despite the enormous potentials and benefits it promises, WBI inherently places greater demands on the learner than traditional modes of instruction. These demands cannot be overlooked and should be recognized when designing and developing a WBI program. As Wolfe (2000) indicated, these demands include: (1) Cognitive demands on the reader, which result from the nonlinear nature of the Web for text processing; (2) Demands of heterogeneous information, which is an intrinsic property of WBI and may create mismatches between learners and technologies and thus place additional burdens on the learner; (3) Demands for high level of cognitive flexibility, such as high tolerance of ambiguity, low anxiety, field independence, and internal locus of control; and (4) Social demands, which are caused by more demanding environments for social interaction in the Web [13].

In addition, working in an environment that is filled with multiple media and information could make the learner feel overwhelmed. Without direct face-to-face contact with the instructor and other students, the learner may also feel isolated and disconnected [7; 12]. Therefore, the learner needs to have high levels of metacognitive ability for monitoring and regulating their learning in Web-based instructional settings [13].

To sum up, using the Web as a tool for learning and teaching has a mixed blessing. While the self-paced, synchronous or asynchronous Web learning environment offers more choices and greater control to the learner, it also leads to greater demands on learner autonomy..

4. Learner Autonomy and Learner Development

Most WBI is self-directed, or self-paced to some degrees.. Hence, the success of such instructional program relies heavily on if and how learner autonomy and phases of learner development are taken into account.. How to foster learner autonomy? How can autonomous learning be supported in the context of Web-based instruction environment? These are some of the important issues to explore.

4.1. Concepts of Learner Autonomy

The concept of learner autonomy was introduced to the second language pedagogy in the 1970s through the Council of Europe's Modern Language Project. The main idea of learner autonomy is that a learner develops "the ability to take charge of his or her own learning" [14, p. 3]. Benson (2001) later defined autonomy as the capacity to control one's learning behavior, cognitive process, and learning situations [10]. While autonomy is considered as a capacity or attribute belonging to the learner, autonomous learning is "learning in which the learner's capacity for autonomy is exercised and displayed" [10, p.110].

Holec (1981) believes that learner autonomy consists in making decisions in learning, including setting objectives, defining contents and progressions, selecting methods and techniques, monitoring the procedure, and evaluating the outcome of learning [14]. Thus, in the early views, autonomy was seen as natural product of self-regulated learning i.e., learning in which the learners determine the objectives, progress and evaluation of the learning. Benson (2001), on the other hand, noted that participation in self-directed modes of learning does not necessarily imply that the learner is autonomous; but autonomy might develop through participation in self-directed modes of learning [10].

Learners' attitudes and perceptions also play an important role in learner autonomy. In discussing autonomy and its relation to successful learning, Wenden (1991) wrote:

> In effect, successful or expert or intelligent learners have learned how to learn. They have acquired the learning strategies, the knowledge about learning, and the attitudes that enable them to use these skills and knowledge confidently, flexibly, appropriately and independently of a teacher. Therefore, they are autonomous [15, p.15].

This statement indicates an important fact about learner autonomy, that is, the concept of learner autonomy associates with learners' actions and their perceptions toward learning. On the one hand, it relates to learners' actions or ability to take charge of learning individually and cooperatively [14; 16]. On the other hand, learner autonomy refers to learners' perceptions, beliefs, and attitudes toward learning. Just as Carver and Dickinson [17, in 18] defined, being responsible for one's learning is an attitude of mind. A similar point was made by Little (2002), who said, "the practice of learner autonomy requires insight, a positive attitude, a capacity for reflection, and a readiness to be proactive in self-management and in interaction with others" [19]. Little's definition captures a holistic view of the learners that involves the cognitive, metacognitive, affective and social dimensions of language learning.

Though there have been slightly different interpretations or definitions regarding the terms of learner autonomy, autonomous learning, and self-directed learning, many researchers seemed to suggest that learner autonomy is not an in-born ability for every language learner. The general consensus also suggested the importance and need to foster and develop learner autonomy for successful language learning..

4.2. Learner Development for Autonomy

Learner development, or learner training, is "a learner-centered innovation which intends to help learners learn how to learn [20]. As Wenden (2002) indicted, there have been two distinct learner-centered educational innovations which influenced the research and practice of learner development, that is, self-directed language learning (SDLL) and learner strategies in language learning (LSLL). Self-directed language learning (SDLL) is the result of adult education which responded to the social and practical needs for permanent education. Learner autonomy was its basic educational goal. In helping learners to plan, monitor, and evaluate their learning, self-directed learning intends that learners learn to manage their language learning and realize their potential for autonomy.. Self-access centers (also known as resource centers) were established in the late 1960s and the early 1970s in Europe outside the classroom settings to provide materials for direst use by the learners.

Learner strategies in language learning (LSLL) is an application of insights derived form cognitive research to instruction in language learning.. Studies on good language learners [e.g., 21 , 22] also motivated second language researchers to find the key to effective learning and provide teachers guidance in helping students learn to use learning strategies to attend to incoming information or be earned, comprehend it, and to store and retrieve what is learned.. Thus, LSLL aims to enhance the processing of learning mostly associated with the classroom.

For years, with the dissemination and implementation of SDLL and LSLL, developing the learner's autonomy has been included as a general objective in most national curricula for modern languages. The need to integrate learning strategies into language instruction and curricula has been recognized [e.g., 23 , 24]. Chamot and O'Malley's Cognitive Academic Language

Learning Approach (i.e., the CALLA model) and Strategies-based instruction (SBI) were two examples of such practices.

Researchers have suggested the general procedures or steps to teach learners how to use learning strategies for learner autonomy, which were found to be congruent with the components of learner autonomy identified by Holec (1981) above. The procedures include goal-setting, assessing own ability, planning for language study, monitoring learning process for strategy use and for difficulties or problems, and evaluating own progress [24; [25]]. Thus, these learner training procedures are essential in learner development for autonomy.. In addition, to help learners to develop learner autonomy, teachers should pay attention to learners' beliefs and attitudes as well as teach them how to effectively use various learning strategies, such as cognitive strategies, metacognitive strategies, affective strategies and social strategies [see [26] for details of inventory of language learning strategies].

Furthermore, Lee (1998) identified three factors that are crucial to the development of learner autonomy: learner choice, supporting environment, and self-assessment [18]. Learner choice implies that learners can work at their own pace and decide on questions of what, when, how and how often. Supporting environment is necessary for learners to learn to be more independent and it should provide learners with flexibility in changing options (e.g., objectives, contents, process of learning) according to their needs and interests. Besides, teacher's and peer's support are essential in the successful establishment of supporting environment. Self-assessment of own performance on a learning task after it has been completed is also an important characteristic of autonomous learning..

4.3. Instructional Applications of Autonomous Learning

There exist a variety of instructional practices that support, explicitly or implicitly, the development of learner autonomy in the literature. These practices can be classified as six approaches: (1) resource-based, which emphasize independent interaction with learning materials; (2) technology-based, which emphasize independent interaction with educational technologies; (3) learner-based, which focus on the direct production of behavioral and psychological changes in the learner; (4) classroom-based, which focus on learner control over the planning and evaluation of classroom learning; (5) curriculum-based, which extend the idea of learner control to the curriculum as a whole; and (6) teacher-based approaches, which emphasize the role of the teacher and teacher education in the practice of fostering autonomy among learners [10]. Among them, technology-based approaches and resource-based approaches are most related to current discussion.

4.3.1. Technology-Based Approaches

While much of the research on autonomy and learning strategies applies to language learners in various classroom contexts, few studies have investigated how to develop learner autonomy particularly in a technology-based or Web-based learning environment. Therefore, claims made by the potential of new technologies being supportive of autonomy (e.g., they provide learners with opportunities to self-direct their own learning) need to be evaluated against empirical evidence in practice. The key research questions in regard to technology-based approaches to autonomy, as Benson suggested, are concerned with the learning activities which new technologies play a role rather than with their characteristics [10].

4.3.2. Resource-Based Approaches

Self-access centers are products of the resource-based approach. In resource-based learning, learners do not only have freedom to choose learning materials, but they also

have the opportunity to take control over their learning plans and the evaluation of learning. For example, the first self-access language learning centers at Centre de Recherches et d'Applicaitns en Langues (CRAPEL) and the University of Cambridge were created to provide learners with access to a rich collection of second language materials in order to offer them opportunity for self-directed learning.

However, the recent proliferation of self-access language learning centers is criticized for assuming that self-access language learning is a synonym of self-directed or autonomous learning [10]. The producers of self-instructional and distant learning materials have assumed that autonomy will result from self-access work. Benson (2001) cautioned that such self-access language learning, or resource-based approach to language learning, though providing learners with opportunities to direct their learning, does not necessarily lead to learner autonomy or create better language learning, for research has suggested that "the provision of self-access learning opportunities is insufficient in itself to foster autonomy" [10, p. 134].

4.4. Autonomous Learning with Technology

If the provision of self-access learning opportunities is insufficient, what else should be noted to foster learner autonomy in technology-based or Web-based learning environment? In a paper entitled "Learner autonomy with technology: What do language learners need to be successful?" Healey (2002) specified four areas in which language learners need for autonomous learning with technology [27]:

1. Linguistic – Learners need language data, rules, and opportunity for practice.
2. Metacognitive – Learners need to know their path of learning and way to judge progress on the path.
3. Psychological – Learners need engagement, motivation, self-validation in learning a second language.
4. Social – Learners need to have a sense of community and get community support when learning with technology.

When examining these four areas of learners' needs with previous discussion on learner development for autonomy, three of the four areas, i.e., metacognitive, psychology, and social, can be related to teaching language learning strategies for learner development. In other words, this has pointed to the importance of learner development for language learners in the technology-based or Web-based instructional environment. To conclude, language learners need assistance and support in developing appropriate learning strategies to be autonomous and successful in WBI programs.

5. Discussions

5.1. Implications for WBI Instructional Design

1. The importance of learner development for language students: As discussed previously, language learners need assistance in developing appropriate learning strategies to be autonomous and successful in WBI programs. Three of the four areas, identified by Healey, pointed to the importance of learner development [20] for English learners in the technology-based or Web-based instructional environment. Among the various learning strategies, metacognitive strategies are especially important, for learners need to be able to set goals, plan for their own learning, monitor their learning process, and evaluate their progress in the Web-based self-study English learning environment. Affective strategies are also required, for learners need to use

affective strategies to help them sustain their learning motivations and encourage themselves when in low spirits. Social strategies, on the other hand, helped learners to get support from the language learning community. In brief, it is essential to develop learner strategies that empower the learner, encourage both cooperative and independent work as well as interaction on the Web. Learners are suggested to use the above learning strategies to overcome such limitations of feeling isolated or unconnected in the WBI learning environment [12].. Above all, the recent development of Web-based learning provides a promising autonomous learning environment in which learning strategy-based instruction will play an important role.

2. The role of teachers: Teachers have adopted new roles in WBI. Based on their quantitative investigations of students' perceptions about Web-based learning, Felix (2001) believes that the use of technology does not pose any threat to the survival of teachers. On the contrary, more and more practitioners and constructive critics are coming around to view that "the Web's best potentials lies in adding quality to teaching and learning environments rather than in replacing them" [28, p. 351]. Teachers, with the help of web technology, can serve as a "valuable source of feedback, guidance and answers to questions" [28, p. 349], and not just disseminators of information. They become facilitators and counselors to students' English self-study on the Web.

3. Portfolios as a learning tool: Portfolios will become a useful tool that facilitates English learning in WBI environments. Romero et al. (1999) describe the need to include mechanisms and feedback to improve students' self-regulation in a Web-based tutorial lesson [cited in 29]. Among the supporting mechanisms, portfolios are a useful tool that helps raise students' awareness about learning strategies, facilitate their learning process, and enhance their self-directed learning [30]. Therefore, future WBI instructional design may incorporate LSB instruction with Web-based language learning portfolio systems. The portfolio system may also serve as an important learning tool that satisfies learners' metacognitive needs, as identified by Healey [27]. That is, portfolios will help learners to know their path of learning and give them ways to judge their progress on the path.

4. Motivational design strategies: To design a Web-based instruction that motivates students, Cornell and Martin (1997) presented some key principles of motivational design strategies and indicated that instructors should provide variety and stimulate curiosity, make the course relevant and challenging, and provide positive outcome [for details, see 31].

5.2. Learner Autonomy Issues

Based on the above review and discussion of related literature [e.g., 12; 27; 32], the author found that a well-designed English WBI or WBT program should attend to three major areas: Content, technology, and learner. In each area, several issues that are related to learner autonomy should be addressed.

(1) Content: The contents of the WBI English program should contain motivating and challenging materials and instruction for English learning. Questions asked in this area may include:

- Are the contents selected based on careful analysis and assessment of the linguistic needs of the learner?
- Does the instruction offer learners choices in and control over their own learning, such as what, when, how and how often they will learn with English WBI or WBT?
- Does the design of the instruction and activities satisfy the learners' psychological needs for engagement and motivation?
- Does the instruction include appropriate information about the

concepts of autonomous learning and language learning strategies? Is this information introduced to the learners appropriately?

(2) Technology: The technology used, no matter it is software or hardware, should facilitate and support learner autonomy. Questions asked in this area may include:

- Does the technology offer feedback and summary for learner's self-assessment of their own performance?
- Does the technology meet the learners' metacognitive need by keeping track of and giving information about their progress?
- Does the technology facilitate the establishment of an online community that meets the learners' social needs?

(3) Learner: The WBI English program should offer services for learner development and provide feedbacks that engage and motivate learners' English learning.. Questions asked in this area may include:

- Are learners provided with appropriate support from the instructor or tutor?
- Are the demands placed on the learners properly recognized in WBI and WBT design?
- Do learners receive necessary support for learner development?
- Are language learning strategies incorporated into the whole WBI or WBT for English learning?

The overlapping area in the middle of the three areas is the most critical to an effective instructional design for any Web-based English learning programs. This is also the place where successful and autonomous English learning will happen in the WBI environment..

5.3. Concluding Remarks

To conclude, autonomous learning is not learning without teachers, learners still need appropriate guidance in the process of English learning. Similarly, Web-based instruction (or training) does not mean that the Web should be solely responsible for delivering English instruction.. A tutor or consultant (available online or in reality) could provide needed interactions for English learning and helped to build the sense of learning community. In brief, well-designed Web-based instruction may encourage learner autonomy development, while autonomous learners are most likely to benefit from Web-based instruction.

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